FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

FARMER ADVISORY SERVICES IN TAJIKISTAN (FAST)

Manual for the Feed the Future Tajikistan Household Farm Extension and Advisory System

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This manual was written by Dr. Don Van Atta, Dr. Peter Malvicini, Dr. Vickie Sigman, Dr. Paul McNamara, Mr. Ben Mueller, Ms. Catherine Liamzon, and Dr. Patrick Ludgate with annexes pulled from other sources, including the Modernizing Extension and Advisory Services project.

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Note on references

This manual was created using a variety of materials and care was taken to reference sources correctly. Should you identify any errors or omissions, please contact us with detailed information on the original source and we will make the changes as appropriate.

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In a few cases, sections of consultant reports have been used as the basis for a paragraph or section in the main text without specific credit to the author – who was one of the above – as the work was completed for FAST.

Please send any comments to: Office@program-fast.tj as well as Katy Heinz at heinz1@illinois.edu .

The Modernizing Extension and Advisory Services (MEAS) Consortium

Housed in the University of Illinois at Urbana-Champaign (UIUC), the Modernizing Extension and Advisory Services (MEAS) consortium includes over a dozen partners in the United States and abroad. It focuses on teaching innovation, sharing lessons, and applying them to the design of extension programs around the world. MEAS is the intellectual and practical engine driving the Farming Advisory Services in Tajikistan (FAST) program's work in designing and prototyping the Feed the Tuture (FTF) extension and advisory services (EAS) in Tajikistan. MEAS blends a pluralistic approach - multiple sources of knowledge and innovation with multiple beneficiaries - with participatory techniques. Smallholder farmers, particularly those in poverty, are central to farming and effective EAS decisions. MEAS has helped strengthen extension systems in Africa, Asia, the Middle East, Eastern Europe, and Central America that needed to undergo significant change if they were to effectively serve the food security and economic development needs of resource-poor farmers. These new approaches draw on the full breadth of resources in public, private, and civil society organizations and utilize available information and communications technologies (ICTs).

MEAS promotes and assists in the modernization of rural extension and advisory services worldwide through various outputs and services such as the FAST program. MEAS is a Center of Excellence that seeks to promote and support such endeavors.

MEAS Consortium: University of Illinois at Urbana-Champaign, Michigan State University, University of Florida, University of California at Davis, Cornell University, North Carolina A&T State University, Catholic Relief Services, Cultural Practice, Winrock International, Sasakawa Africa Association, Sasakawa Africa Fund for Extension Education, International Food Policy Research Institute, Alliance for a Green Revolution in Africa.

MEAS Consortium Associate Awards:

Farmer Advisory Services in Tajikistan (FAST) Program: awarded July 18, 2013.

Strengthening Extension and Advisory Services in Georgia (SEAS) Activity: awarded October 10, 2013.

Integrating Gender and Nutrition within Agricultural Extension Services (INGENAES): awarded September 8, 2014.

Please visit http://www.meas-extension.org/home for more information.

Abbreviations

EAS	Extension and Advisory Service(s)
FAST	Farmer Advisory Services in Tajikistan (USAID activity)
FFS	Farmer field school
FSA	Field Support Activity
FTF	US Government global Feed the Future initiative
FTF/T	Feed the Future Tajikistan
FY	Fiscal year
GAFSP	Global Agricultural and Food Security Program (World Bank-administered trust fund)
GEF	Global Environment Facility (World Bank-administered trust fund)
GoTJ	Government of the Republic of Tajikistan
JAS	Jamoat agricultural specialist (GoTJ employee)
JEC	Jamoat extension coordinator (FAST/follow-on project employee)
MEAS	Modernizing Extension and Advisory Services
NGO	Non-governmental organization
PAMP II	Second Public Employment for Sustainable Agriculture and Water Management Project (EU/GAFSP-financed project implemented through World Bank as a GoTJ-managed activity)
PAW	Crop Analysis Workshop (second FTF/T EAS activity in a new mahalla or with a new group)
PEW	Participatory Extension Workshop (first FTF/T EAS activity in a mahalla or with a new group)
PRA	Participatory Rural Appraisal
PLA	Participatory Learning and Action
RT	Republic of Tajikistan
TAFF	Tajik Agricultural Finance Facility (EU funded project implemented by EBRD)

TAG	Training and Advisory Group (extension and advisory units organized as part of TAFF)
TJS	Tajik Somoni (currency unit)
UIUC	University of Illinois at Urbana-Champaign
UN	United Nations
USAID	United States Agency for International Development
USD	United States dollar
WUA	Water Users' Association
ZoI	Zone of Influence (the 12 FTF/T focus raions)

100 Tajik Dirams = 1 Tajik Somoni (TJS)

1 TJS = 0.15 USD as of August 1, 2015.

Definitions

Household farm:	The area of land directly assigned to and used by a single household for agricultural purposes. This includes the land under the family compound (the "household plot," Russian *"priusadebnyi uchastok"),* "presidential land" taken from the large farm and transferred to household use in accordance with Presidential Decrees 342/1995 and 874/1997, and land from other households or the jamoat that the household may be renting. "Household farm" land is distributed by the jamoat from land assigned by the government to the jamoat and is not counted as "agricultural land" in the statistics. Household farms are legally defined as producing for non-commercial (subsistence) purposes. Household farm income is subject to income and other taxes applicable to all citizens of Tajikistan. Household farms pay the land tax. They do not receive the tax benefits given to commercial farms. Nor do they receive any services from the Ministry of Agriculture. According to GoTJ statistics, these farms produce about 61 percent of total agricultural gross output by value. For the household farms' contribution to crop production see Table 3. For their share of the country's total livestock holdings, see Table 4. Also sometimes called "private plots," "household gardens" or "homestead farms." Russian: домашнее хозяйство(а), домохозяйство(а) Tojiki: хонавода(ҳо)
Commercial farm:	A peasant *(dehqon)* farm or state-owned farm ("agricultural enterprise") producing for market. All farms except household farms are commercial farms. Table 1 at the end of these definitions presents a summary of the terms. The table in Annex 1 gives a more complete comparison of types of farms in Tajikistan.
Peasant or *dehqon* farm:	A farm established as the result of land reform in Tajikistan since 1992 under the provisions of the Law of the Republic of Tajikistan on the Peasant (Family) Farm. The physical, though not legal, successor of a Soviet era state farm *(sovkhoz)* or collective farm *(kolkhoz)* or a farm business created from some land and assets divided out of a collective or state farm. The farm or its members own its non-land assets as specified in the farm's charter. Its land remains state-owned. Legally defined as producing for commercial purposes. Subject to the agricultural single (land) tax. Eligible to receive

services from the Ministry of Agriculture and its subordinate agencies.

Peasant farms take several organizational forms as defined in the Law of the Republic of Tajikistan on the Peasant (Family) Farm, including "individual," "family," and "collective."

For purposes of FAST, these farms may be considered to be "private commercial farms," although "private" in this case should be understood in a weak sense as "not directly owned and managed by the state."

Russian: крестьянское (фермерское) хозяйство

Tojiki: хоҷагии деҳқонӣ (фермерӣ)

Large commercial farm: A commercial farm that concentrates its production efforts on cotton and grain and holds more than five hectares of arable land.

(Feed the Future Standard Indicator FTF 01 sets the size limit of five hectares or less of arable land for FTF target farms in all FTF countries.)

Small commercial farm: A dehqon farm that follows a diversified farming system and holds less than five hectares of arable land. Often aimed in fact at providing in-kind subsistence for the farm operators.

Farmer: A farmer is someone who operates any type of farm in Tajikistan. "Operation" includes some management responsibility, for instance deciding what to produce.

In Tajikistan, most commercial farmers are men. Almost all household farmers are women.

The English word "farmer" is not correctly translated by the Russian *"fermer."* In those languages, *"fermer"* is a word borrowed from English to denote specifically and only the owner/operator of a US-style family farm. The English word is broader in meaning.

Smallholders/small farmers: Operators of household and small commercial farms as defined above.

Table 1. Farm classification by form of ownership and legally-allowed purpose of production

		Form of ownership of non-land assets	
		State-owned	Non-state owned
Legally-recognized purpose of production	Sale (commercial)	Agricultural enterprise	*Dehqon* ("peasant"*)* farm
	Subsistence (auto-consumption)	None	Household farm

Since the state continues to own and manage all land in Tajikistan, farms that are "non-state owned" actually hold title only to their non-land assets.

Jamoat:

This term has four related meanings:

1. The smallest-administrative-territorial subdivision of Tajikistan into which the entire country is divided. (See Table 2, immediately following these definitions.)

2. The elected local council ("organ of local self-government") for that administrative-territorial subunit.

3. The officials responsible for local administration who are elected by the local council subject to informal confirmation by higher government authorities.

4. The office building in which the local council meets and the local officials have their offices.

The Law of the Republic of Tajikistan "On local self-government" defines the functions of the jamoat. A resolution of the Government (Cabinet) of the Republic of Tajikistan defines the standard structure for the jamoat – the number of paid positions it may have and those officials' general duties.

The jamoat chair presides over meetings of the jamoat council and acts as the jamoat's chief executive officer. All jamoats also have a secretary who issues official documents, and one or more specialists.

The law of the Republic of Tajikistan identifies two types of jamoats, purely rural or "village" jamoats, and "settlement" jamoats centered on a town. Settlement jamoats may include a rural hinterland or may be coterminous with the settlement boundaries. The Parliament of the Republic of Tajikistan confirms the list of villages and grants the status of "town" or "city."

So this document refers to "rural" and "settlement" jamoats. Some other USAID projects have translated these terms as, respectively, "township" and "town" jamoats.

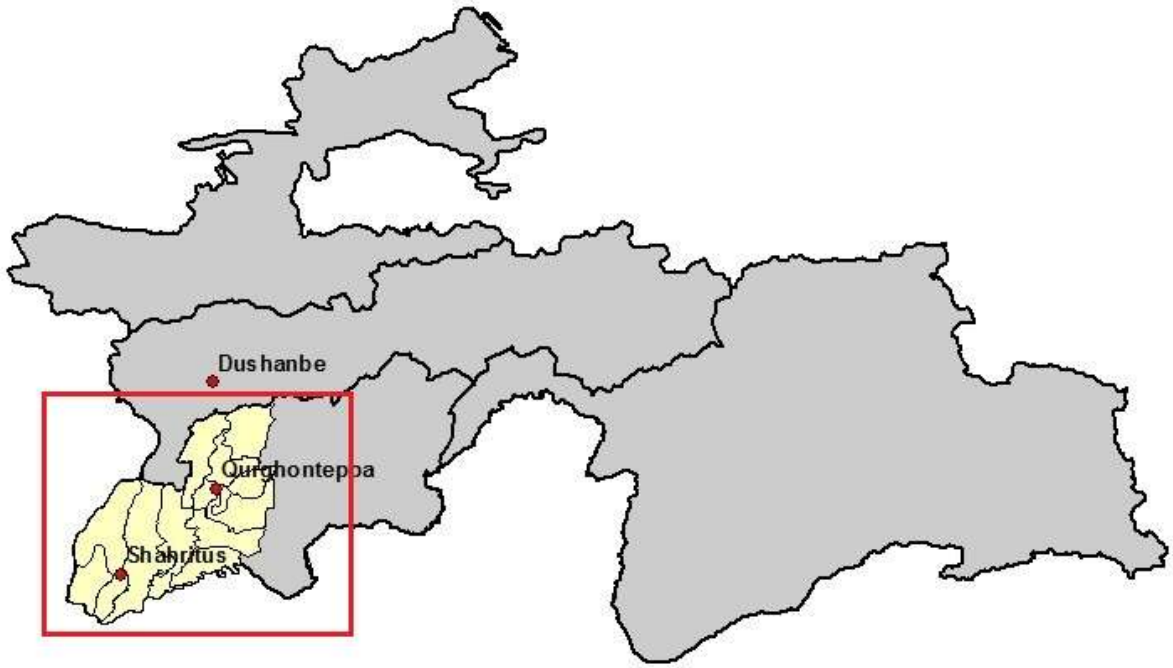
Table 2. Administrative and territorial sub-divisions in the Republic of Tajikistan

Generic English	Tojiki	Tojiki in English transliteration	Russian	Russian in English transliteration
Province(s)	Вилоят(ҳо)	Viloyat(ho)	Область (области)	Oblast(i)
District(s)	Ноҳия(ҳо)	Nohiya(ho)	Район(ы)	raiony
Sub-district(s)	Ҷамоат(ҳо)	Jamoat(ho)	Сельсовет(ы) / Джамоат(ы)	Sel'sovet(y) / Dzhamoat(y)
Village(s)	Деҳа (Деҳот)	Deha (Dehot)	Село (Села) / Кишлак(и)	Selo (Syola) / Kishlak(i)
Neighborhood(s)	Маҳалла (Маҳаллҳо)	Mahalla (Mahallho)	Махалла (Махаллы)	Makhalla (Makhally)

The Tajik village is a territorial but not an administrative unit. Administratively, each village is composed of one or more mahallas.

This document uses the Tajik or Russian word in transliteration but with the English plural ("s") rather than the Tajik or Russian one.

Figure 1. The FTF/T Zone of Influence in Tajikistan



I. Context of the FTF/T EAS

This manual describes and contains model documents for the operation of a participatory agricultural extension and advisory system (EAS) designed, developed and documented by the USAID-funded Farmer Advisory Services in Tajikistan (FAST) project. The EAS is to achieve the goals of the Feed the Future Tajikistan (FTF/T) Strategy in the 12 raions of the FTF/T "Zone of Influence" (ZoI) in Khatlon province of the Republic of Tajikistan.

The FTF/T EAS described in this manual is intended to reach predominantly smallholder household farms, which are almost entirely women's enterprises, with land sizes up to 0.03 hectares (ha) (sots). In its implementation FAST assisted 146 household farmer learning groups in development of this manual representing 3,400 household farmers over five growing seasons (three per year) or almost two calendar years in development. The EAS has also been developed in consideration of small commercial farms (dehkan) with land plots ranging from ½ to 5 ha, which are predominantly men's operations. The EAS was training and tested directly with 286 small commercial farmers. The household farm groups and small commercial farmers are located in 11 of the 12 ZoI raions.

In US Government Fiscal Year 2015, FAST continued to developand extend EAS for household and small commercial farms.

The participatory agricultural extension and advisory system is being developed through five stages:

1. The former director of the MEAS consortium visited Tajikistan and made initial recommendations in 2011 and 2012;
2. The MEAS Field Support Activity (FSA) identified recommended features of the system based on international and local experience in late 2012;
3. The FAST project defined methodologies and functions in detail in September-December 2013;
4. FAST is testing implementation and refining approaches and strategies in January 2014-September 2015 with up to 146 groups in 100 mahallas in eleven districts and 16 jamoats in the ZoI; and
5. A follow-on project may continue design refinements as it scales up and expands the system throughout the ZoI in late 2015 and subsequent years.

The EAS is not an end in itself. It is a means to the overall improvement of the rural population's food security in Tajikistan and to assist rural residents in bettering their lives and livelihoods. Without an effective extension system for smallholders, however, the goals of the FTF/T strategy cannot be met, rural lives and livelihoods will not improve, and smallholders will be unable to respond effectively to market incentives to transform their subsistence farms into farm businesses.

The EAS described in this manual is designed to reach a virtually invisible clientele, Tajik women who operate household farms. Through the household's women and their household farms, the improved system will affect Tajik families, allowing improvements in agriculture, incomes, and nutrition. Although they are the key to improving food security in Tajikistan and marketing Tajik agriculture, household farms have been ignored by government because they are not officially counted as part of "agriculture" and, until recently, they have been overlooked by most donors except when providing humanitarian assistance.

The EAS described in this manual reaches specific groups of the population. It is a part of an overall pluralistic EAS. It is not intended to supplant fee-for-service, private- and public-sector EAS throughout the country's agricultural system.

The EAS is based on modern, farmer-led, participatory methods that are recognized international good practices in EAS. Rather than experts telling farmers what to do, this learning system develops the initiative and interest of the farmers themselves. This approach is key to the sustainability of development efforts in the communities.

The EAS must provide an organizational structure that fits into Tajik society. Its critical work is undertaken at the community level, with individuals, households, and groups of households. The EAS identifies the local effects of general, systemic constraints on improving nutrition, increasing household income, and improving Tajikistan's agriculture, such as limited economic incentives, regulatory and legal problems, market failures, or inadequate training and knowledge. Once identified, such issues can be studied, generalized, and raised as policy questions that the Tajik political system can address and resolve.

A. Audience and purpose of this manual

This manual summarizes the design and implementation of the FTF/T EAS. It is intended for two broad audiences. First, it is to provide people involved in the operation and management of the extension, advisory and farmer training system with a guide for their overall activity. Second, it is to explain the overall system to other interested parties in the Government of Tajikistan, other stakeholders in Tajikistan, and internationally.

The manual includes a variety of supporting documentation, including guides to specific activities in the EAS, terms of reference, and excerpts from or links to relevant materials prepared by others, particularly the MEAS consortium. Excerpts from consultant reports and correspondence generated during the development of the EAS are included in order to clarify design decisions and to explain recommended best practices in the context of Tajikistan.

C. The FTF/T strategy

The US Government's "Feed the Future" (FTF) global nutrition and agricultural development initiative presently includes 19 focus countries and additional aligned countries and regional programs.

The FTF/T strategy stems from the observation that most citizens of Tajikistan are dependent on production from their household farms for their subsistence and much of their livelihood[1] Table 3 shows household farms' contribution to crop production in 2012. Household farms are reported to have produced almost 40 percent of the country's grain, including 36 percent of its wheat, almost 60 percent of its grain corn, more than half of its potatoes, and more than 60 percent of its vegetables in that year. As Table 4 shows, households also account for almost all the country's livestock production.

Rural households consume much of what they produce and sell the balance to obtain cash and additional foodstuffs. Therefore, the primary task of improving food security in Tajikistan is to help

[1] *Feed the Future: Tajikistan: FY 2011-2015 Multi-Year Strategy* (2 March 2012), especially section 1.3.

The "household farm" is defined in the "definitions" at the beginning of this manual.

those smallholders produce more crops with higher nutritional value for their own consumption and for sale. As they increase and improve the quality of their output, and as the ongoing agrarian reform in Tajikistan makes more resources available to them, smallholders can develop a more commercial orientation, increasingly producing for the market.

Table 3. Share of household farms in overall crop production in Tajikistan, 2012

		State-owned commercial farms	Private commercial *(dehqon)* farms	Household farms	All farms
all grain	000 tons	133.2	613.4	486.0	1232.6
	percent	11%	50%	39%	100%
of which wheat	000 tons	90.3	426.1	296.2	812.6
	percent	11%	52%	36%	100%
grain corn	000 tons	10.4	61.6	102.9	174.9
	percent	6%	35%	59%	100%
cotton	000 tons	84.0	334.0	0.0	418.0
	percent	20%	80%	0%	100%
potatoes	000 tons	66.8	387.8	536.4	991.0
	percent	7%	39%	54%	100%
vegetables	000 tons	82.9	443.8	815.6	1342.3
	percent	6%	33%	61%	100%
melons and gourds	000 tons	33.2	277.1	154.7	465.0
	percent	7%	60%	33%	100%
fruits	000 tons	29.6	79.2	204.4	313.2
	percent	9%	25%	65%	100%
grapes	000 tons	9.2	54.3	103.6	167.1
	percent	6%	32%	62%	100%

Source: Sel'skoe khoziaistvo Respubliki Tadzhikistan: Statisticheskii sbornik, 2013 [The Agriculture of the Republic of Tajikistan, Statistical Yearbook, 2013] (Dushanbe: Presidential Agency on Statistics of the Republic of Tajikistan, 2013), pp. 36-39.

Table 4. Share of household farms in livestock ownership in Tajikistan, 2012

		State-owned commercial farms	**Private commercial *(dehqon)* farms**	**Household farms**	**All farms**
All cattle	000 head	32.0	124.6	1886.2	2043.7
	percent	2%	6%	92%	100%
of which cows	000 head	9.7	32.8	1006.7	1049.2
	percent	1%	3%	96%	100%
Sheep and goats	000 head	272.3	529.1	3931.1	4732.5
	percent	6%	11%	83%	100%
Horses	000 head	5.4	15.3	56.0	76.7
	percent	7%	20%	73%	100%
Poultry	000 head	1679.0	188.5	2983.6	4851.1
	percent	35%	4%	62%	100%
Donkeys	000 head	0.0	0.1	173.8	173.9
	percent	0%	0%	100%	100%

Source: Sel'skoe khoziaistvo Respubliki Tadzhikistan: Statisticheskii sbornik, 2013 [The Agriculture of the Republic of Tajikistan, Statistical Yearbook, 2013] (Dushanbe: Presidential Agency on Statistics of the Republic of Tajikistan, 2013), pp. 49-50.

The FTF/T strategy has three pillars (Box 1), of which Pillar I directly aims to improve nutrition, production and incomes on small farm households. However, if the activities under Pillars II and III are not successful, then Pillar I efforts cannot succeed.

Box 1. The Three Pillars of the Feed the Future Tajikistan Strategy

Pillar I: Assistance to household and small commercial farms to increase food production for home consumption and cash sale in order to improve nutritional and health outcomes.

Pillar II: Building the capacity of local institutions and community-based organizations.

Pillar III: Completion of effective agrarian reform in selected districts of Khatlon Province.

Tajikistan has one of the lowest per capita GDPs among the 15 former Soviet republics. However, the agricultural sector offers a solid foundation for economic development. Therefore, the FTF/T strategy focuses on twelve administrative districts in the Qurghonteppa zone of Khatlon province.[2] This area is the FTF/T "Zone of Influence" (ZoI). The ZoI, with a population of almost three million people, occupies about the same area as the state of Ohio. Khatlon accounts for half of Tajikistan's agricultural and pasture land and about half its total agricultural production. The ZoI encompasses the country's most important cotton-producing areas.

The ZoI's population is unevenly distributed over its territory, a network of river valleys leading to the Panj River in the south, the border between Tajikistan and Afghanistan. People live mostly in the river bottomlands where extensive irrigation networks make crop production possible. The only major city within the ZoI is the provincial capital, Qurghonteppa. The city itself is not part of the ZoI.

Major armed conflict occurred in the ZoI in 1991-1997. Much of the population then residing in the ZoI was forced to flee during the war, mostly to Afghanistan. The effects of the fighting are still visible throughout the region. The ZoI is characterized by degraded agricultural land as a key factor leading to low agricultural productivity, as well as under-resourced farmers and low economic returns and incomes. Anthropometric data of children show high levels of stunting, indicating chronic malnutrition.[3]

The 12 focus districts are subdivided into 76 territories governed by councils *(jamoats)*, of which 71 are entirely or partially rural.[4] The territory of each rural council includes one or more villages. Villages are recognized territorial entities but not administrative units. The neighborhood *(mahalla)*, part or all of a village, usually centered on a mosque or other community building, is the lowest-level administrative unit.[5]

[2] See the table on page xviii for the hierarchy of territorial and administrative divisions used in Tajikistan. An administrative "district" is a *"nohia"* (Tojiki) or *"raion"* (Russian).

[3] Interviews with government officials responsible for the poverty statistics reveal that the poverty rates are based on the estimates in the 2007 World Bank living standards measurement survey. Since then, the GoTJ has annually reported poverty rates based on the assumption that a 1 percent increase in GDP directly causes a 0.62 percent decline in poverty.

[4] Five are settlement (town) jamoats without any rural hinterland -- they have no territory or authority outside the settlement boundary.

[5] The entire land surface of Tajikistan except for cities and bodies of water is divided up into jamoats. However, since mahallas are areas where people live, there are no mahallas outside inhabited areas.

As of the beginning of 2013 there were 727 state-owned farms, 22,743 *dehqon* farms and about 180,000 rural household farms in the FTF/T zone of influence (Table 5). About 40 percent of the *dehqon* farms hold less than 2 ha of arable land, while about 60 percent hold less than 5 ha of arable land.[6] The Government of the Republic of Tajikistan (GoTJ) continues to physically divide commercial farms' agricultural land into demarcated parcels for families or small groups, so the number of smallholder farms in the ZoI will continue to increase and their average size to decrease throughout the life of the FTF/T strategy and FAST. How to reach this large number of farms and families effectively is a key concern for the successful implementation of the FTF/T strategy.

Table 5. Number of farms in the FTF/T ZoI, 2013

District	**Commercial farms**		**Households (household farms)**	
	State-owned	**Dehqon**	**Rural**	**Total**
Bokhtar	26	1,011	24,840	27,063
Khurozon	31	1,113	12,859	13,486
Nosiri Khusrav	19	1,384	3,835	4,938
Jilikul	166	1,665	12,208	13,015
Jomi	34	1,672	15,528	17,570
Qumsangir	33	2,123	12,199	14,705
Qabodiyon	60	1,689	32,331	33,575
Rumi	37	2,435	17,211	21,054
Sarband	37	81	2,824	3,163
Shahritus	62	1,988	13,422	15,900
Vakhsh	28	4,850	18,551	21,302
Yovon	194	2,732	18,428	24,320
Zone of Influence Total	727	22,743	184,236	210,091

Sources: Number of state-owned farms as of 1 January 2013, from 2013 *Land Balance of the Republic of Tajikistan* (Dushanbe: State Committee on Land Management, 2013).

Number of dehqon farms from unpublished State Committee on Land Management report, 9 August 2013.

Number of households from Chislo i sostav domokhoziaistv v Respublike Tadzhikistan po dannym perepisi naseleniia I zhilishchnogo fonda 2010 goda [Number and size of households in the Republic of Tajikistan according to the data of the 2010 population and housing census] (Dushanbe: State Agency on Statistics, 2012). No direct data on the number of household farms exist, but it is safe to assume that every household has one.

In Tajikistan's patriarchal society, the will of the eldest male in the household is generally decisive. Women work the household farm and keep the household livestock. Men run commercial farms. Although men do most food shopping, nutrition decisions mostly fall to women given their role in food

[6] Feed the Future defines a smallholder farm as one with less than five ha of arable land.

preparation. However, the absence of nearly one million working age men due to labor migration who work outside Tajikistan changes the dynamics of many households and communities.

Most small commercial farms are likely to be similar to household farms (often referred to as backyard gardens) in their cropping patterns. However, the division of gender roles between the household farm and small commercial ones complicates the already formidable task of reaching Tajik smallholders and women in particular.

Almost all arable land in the ZoI is officially classified as irrigated, although a large portion of the irrigation networks are not usable due to limited or no maintenance to the facilities or electricity to operate pumping stations. To mitigate this constraint on production, the GoTJ established water users' associations (WUAs) to manage tertiary irrigation and drainage facilities, those formerly located on the territory of collective and state farms, throughout the ZoI. By law, WUAs serve only commercial farms. They are not legally concerned with potable water supplies to villages or irrigation water for household farms.

Ensuring that the overall irrigation and drainage infrastructure, and WUAs, are managed in ways that meet the needs of both commercial and household farms is a key requirement for the success of the FTF/T strategy. As part of FTF/T, USAID Tajikistan is continuing a long-term effort to create and support effective WUAs in the ZoI. The FTF/T strategy is also aligned with a recipient-executed World Bank project financed from Global Agricultural and Food Security Program (World Bank-administered trust fund) (GAFSP) and Global Environment Facility (World Bank-administered) trust funds (GEF), PAMP II, which supports the rehabilitation of irrigation and drainage facilities in much of the ZoI.

The difficulties of Tajikistan's rural areas are, in large part, the legacy of the Soviet system, the 1992-1997 civil war, and the subsequent land reform which broke up the collective and state farms. See "Annex 2. The Legacy of Command Agriculture in Tajikistan."

D. Agricultural Extension and Advisory Services

Given Tajikistan's dependence on agriculture, the path to food security and economic development leads through improved agriculture. The imperative for food security is to improve and increase household farms' output in cash and in kind. The imperative for growth and development is to improve farming practices and to create a policy environment in which farming is profitable for farmers.

Effective agricultural extension and advisory services are therefore fundamental to food security and development. They are pathways and systems for exchanging information, applying knowledge and technical production skills toward increased production and productivity. Agricultural extension and advisory services:

> are systems that facilitate the access of [subsistence and commercial] farmers, their organizations, and other value chain and market actors to knowledge, information, and technologies; facilitate their interaction with partners in relevant institutions

(such as research, education, finance); and assist them to develop their own technical, organizational, and management skills and practices.[7]

Modern extension systems emphasize farmers' leadership, innovation, and knowledge as starting points for sustainable systems. Tajikistan had a command agricultural system in which orders about what, how, and when to produce were passed down from the central authorities through the Ministry of Agriculture and its regional and local subunits to collective and state farms, and ultimately to their production brigades. Agricultural crops were collected, processed and transported by other state agencies back "up" for distribution to users and consumers. This system provided a conduit for approved innovations to be introduced by fiat throughout the command system.[8] All other concerns aside, there are now simply too many separate farms for this information system to function, although the state continues to try to administer the large cotton farms. As yet, however, nothing has replaced it: farmers have little access to knowledge, information and technical production training about how to improve the operation (optimization) of their holdings.

Tajikistan needs to develop new extension and advisory services and systems to meet current requirements for food security, improved nutrition and economic growth and development. These systems should be diverse. Rather than a single system, there should be multiple ways of providing commercial and subsistence farmer's access to agricultural knowledge, information and improved production technologies (innovations). Some of those pathways may be government-run and financed, some will be private 'for-profit', while others will be private non-profit. Some extension service providers will seek to recover their costs through user fees and payments, others will support themselves by profits on related input and service sales, and still others will be subsidized with minimal or no user fees or direct cost recovery.[9]

The new extension and advisory services should be participatory. Rather than advisors simply giving orders to farmers, farmers will decide what is best and the system will respond to what farmer's request, by what assistance farmers ask for from EAS providers or where they spend their money for inputs and paid services.

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[7] Ian Christoplos, *Mobilizing the potential of rural and agricultural extension* (Rome: Food and Agriculture Organization of the United Nations and The Global Forum for Rural Advisory Services, 2010), p. 3. http://www.g-fras.org/fileadmin/UserFiles/GFRAS-documents/Mobilizing_the_potential_of_extension.pdf.

[8] Don Van Atta, "Why do models succeed? Introducing organizational innovation in agricultural work," pp. 185-201 in Karl-Eugen Wädekin, ed., *Communist Agriculture: Farming in the Soviet Union and Eastern Europe* (London and New York: Routledge, 1990).

[9] For a discussion of pluralism in extension systems see for instance Burton E. Swanson and Riikka Raialahti, *Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems* (Washington, D.C.: World Bank Agriculture and Rural Development Discussion Papers, 2010), http://siteresources.worldbank.org/INTARD/Resources/Stren_combined_web.pdf. FAST has prepared a Tajik translation of this study.

E. Agricultural EAS in Tajikistan

In general, citizens, government and donors agree on the need for agricultural EAS in Tajikistan. Although poorly financed, the national Academy of Agricultural Sciences continues to support research on agricultural innovations. The Tajik Agrarian University continues to train substantial numbers of students in agriculture and agribusiness, although much of the curriculum needs updating. The jamoats have taken on much of the role of information provision and coordination of farm work formerly performed by the collective and state farm management. Recognizing this, the government established a civil service agricultural specialist position in each of the country's rural jamoats in 2011. The Government has approved a general concept for extension. The Ministry of Agriculture established an EAS Center as a Ministry unit in 2012.

The Ministry of Agriculture's provincial and district-level Agricultural Administrations provide a hybrid of command management of agriculture and extension. A typical administration has a staff of four to eight agronomists, horticulturalists, livestock specialists, and other production experts. They provide advice and assistance on demand, when they can find the information. Stringent limits on government spending restrict the Administrations to paying only for staff salaries, office utilities, and a landline phone. They have no transportation other than personal vehicles, and no access to the internet even if an Administration has managed to acquire a computer.

The provincial and district Agricultural Administrations require reports from all commercial farms on a regular basis. They convene meetings of the heads of all commercial farms in their territory at least once a month. The main purpose of those meetings is to ensure that government production plans are fulfilled. Government officials and farmers alike say that officials often provide useful information to farmers. They provide an opportunity for farmers to talk and to exchange news with one another.

Donor efforts at creating sustainable agricultural extension have been based on a combination of charging fees for service and subsidies by the donor(s). Almost all have aimed at commercial farms. All have strengths and weaknesses, and all have had some successes.[10] The FTF/T EAS design builds on this experience, seeking to improve it and use it to reach the smallholder clientele that previous and current EAS development efforts have not addressed. The FTF/T EAS is designed to supplement, not supplant, current efforts. However, so long as farming is unprofitable for farmers and households, as it has consistently been in Tajikistan since 1991, no fee-for-service EAS model can be sustainable.

F. A three-tier approach to EAS

Where clients can pay, fee-for-service models hold much promise for long-term sustainability of a broader pluralistic EAS system in Tajikistan. Unfortunately, the tendency has been to promote a one-size-fits-all system instead of distinguishing clienteles according to their needs for access to advisory services and their ability to pay for them.[11]

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[10] For a classification of existing types of EAS providers in Tajikistan, see "Annex 3. Approaches to and Providers of Extension Services." See also Petra Geraedts, *Survey of existing agricultural extension providers and related programs in Tajikistan* (Dushanbe: USAID Family Farming Program, January 2011).

[11] For the definition of "large" and "small" "commercial farms" used here, see page xiv above.

Little information on farm incomes is available. However, the analysis of farm size data completed by the MEAS FSA in 2012 showed that the distribution of farms sizes remains bimodal, as it was before the land reform began in Tajikistan. The large farms are now on average smaller than they were, but the essential distribution remains as it was.[12] There are few, if any "medium" commercial farms by size.

Large commercial farms

Large commercial farms are more likely to afford the services of full-time highly trained specialist to advise on farm production needs. Such advisors may be specialists in a particular commodity, in a group of commodities or in technologies such as irrigation or mechanization. They will be paid for their services and typically have a formal contractual agreement with the farms they serve. This is a fully private-sector model. In many cases the individual will work for an agricultural input supply company and their sales may contribute to their compensation. While the objectivity of the advice offered through this for-profit model can be questioned, if their crops and advice fail to benefit the farm, the advisors will lose their income. At present, the "Sarob" cooperative principally aims its services at such large farms.

Small commercial farms

Small but well-organized commercial farms may also be able to afford some advisory services. An entrepreneur with appropriate training and skills, who is either employed as an agricultural professional (in the public, private, or non-profit sector) or runs his/her own highly successful farm, could provide services on a part-time basis. Such a person would be likely to live in the area where they are providing extension and advisory services. They would be paid for services, but would not depend on this as a sole source of income. They could work independently but are more likely to be, or to work for, a local distributor of seeds or other agricultural production inputs. Like the full-time professional, on-going work depends on their reliability. However, it is more likely that such a person also has relationships to preserve in the larger community. The work agreement is likely to be more informal than that for large farms. FAST staffs know of a few examples of such EAS providers, and several donors, including USAID, have supported EAS to small commercial farms through local input supply dealers. However, in part because of the problem of low commercial farm profitability, there are still very few EAS providers targeting small commercial farms in Tajikistan.

Household farms

Household farms are the key to increased food security and improved nutrition in Tajikistan. However, very few of them can pay for extension services, even in-kind, and few household farms produce primarily for the market. A fee-for-service model is unlikely to be workable for household farms. Given this situation, and the importance of household farm agriculture's contribution to both food production and contribution to GDP to the country, the FAST EAS model for household farms assumes that (future) extension advisory services will be largely free. However, the model also anticipates that

[12] See Jovidon Aliev and Don Van Atta, "Farm size (arable land holdings) in the 12 FTF/T Tajikistan raions (1 May 2013)," formally submitted to USAID as part of the MEAS Field Support Activity Final Report (17 June 2013).

at least some household farm learning group farmers will make the transition to part-time sellers of agricultural crops in a model like that just described for small commercial farms.

II. Assumptions of the FTF/T EAS

USAID requested FAST to design and test an agricultural EAS that can be scaled up by other USAID implementing partners throughout the FTF/T ZoI and, ultimately, adopted throughout the Republic of Tajikistan. So the FTF/T EAS is designed to be scalable to those levels.

The FTF/T EAS is aimed primarily at serving household farms because they are the key to improved family nutrition and to increased household food security. When households are food secure, Tajikistan as a whole will be food secure. Therefore, the design and testing of the EAS has focused primarily on household farms with latter efforts including small commercial farms. Household farms are essentially women-managed and operated enterprises, while commercial farms are mostly managed by men with labor provided predominantly by women.

The FTF/T EAS design supplements previous efforts to develop extension and advisory services in post-independence Tajikistan, reaching household farms and stakeholders, primarily women, which have not been targeted as recipients of extension services, but are key to improving food security, increasing agricultural output and making farming profitable in the country.

Box 2 summarizes the key assumptions of the FTF/T household farm EAS design.

Box 2. Key assumptions in the FTF/T EAS design

1. To attain the scale needed to reach household farms throughout the Republic of Tajikistan, to ensure that the system actually serves its clients, and to increase the chances of its long-term sustainability, the FTF/T EAS should be participatory.
2. Household farms, which are already highly productive in aggregate, have not reached their production and income-generating potential given the existing constraints, so they can work better when given access to more knowledge, production skills and help with finding markets and inputs.
3. Women, who have been invisible to policy makers and commercial farmers except as manual labor for cotton farms and other commercial crop farms, are the key to improving food security and making agriculture profitable for farmers in Tajikistan.
4. Policy-makers' bias against small farms, an unquestioned legacy of the Soviet era, can be overcome.
5. Small commercial farms created as a result of land reform operate as, essentially, extensions of household farms—so starting with women engages men immediately and is a bridge to influence work and productivity increases on small commercial farms.
6. Participatory methods of community engagement can be used effectively to locate the needed women farmer leaders and to monitor the functioning of the system.
7. Motivated by community pride, social pressure and relatively small material incentives, an extension system relying on lead farmers can function effectively.
8. Community solidarity will prevent local elites from capturing the benefits of the EAS.

9.	Enough teaching, research, and innovation capacity remains in the system of agricultural education and research in Tajikistan to provide the knowledgeable backstopping the EAS requires and to train extension workers.
10.	The demonstrated effectiveness of the EAS in improving food security and rural development through increased agricultural production, will lead the GoTJ to provide continuing support to the system as a "public good." (See Annex 25.)

The FTF/T EAS is based on five observations. One is general: those participatory extension systems are acknowledged as an international best practice. The FTF/T EAS design is also based on four specific observations about the socioeconomic situation in Tajikistan: the role of women in the countryside; the role of the mahalla in rural society and the need to "group" EAS participants; how households now receive a kind of extension and advisory services from their neighbors; and the role of government. The following sections consider those five observations in turn.

A. Participatory extension

Much existing agricultural extension tends to be a top-down system focused solely on the transfer of technology to farmers. Pure technology-transfer extension allows limited space for the voices of stakeholders and serves smallholders poorly. Increasing farmer and other stakeholder participation in EAS gives voice to these stakeholders and improves extension accountability, responsiveness, and sustainability.[13] The importance of stakeholders' participation is central to the Global Donor Platform for Rural Development's 2009 Joint Donor Principles for Agricultural and Rural Development Programs (www.donorplatform.org).

Table 6 compares ideal types of "technology transfer extension" and "participatory extension." Any effective EAS system is a blend of the two. The design choice falls on a continuum between the extremes. However, modern international best practices in extension and advisory services puts great emphasis on farmer participation.[14]

[13] There is a large and rapidly growing literature critiquing traditional models and forms of extension. In addition to the materials cited on the websites of the Modernizing Extension and Advisory Systems (MEAS) Consortium (www.meas-extension.org) and the Global Forum for Rural Advisory Services (www.g-fras.org/en/), see, for instance, Vanessa Scarborough, Scott Killough, Debra A. Johnson and John Farrington, eds., *Farmer-led extension: Concepts and Practices* (London: Intermediate Technology Publications on behalf of the Overseas Development Institute, 1997).

[14] For an annotated list of materials on participatory extension more generally, see http://www.meas-extension.org/tip-sheets/participatory-methods-and-approaches.

Table 6. Characteristics of Technology Transfer and Participatory Extension

	Technology Transfer Extension	**Participatory Extension**
Main objective	Transfer of technology	Empower farmers
Analysis of needs and priorities	Outsiders	Farmers facilitated by outsiders
Transferred by outsiders to farmers	Precepts	Principles
	Messages	Methods
	Package of practices	Basket of choice
Menu of innovations	Fixed	According to choice
Farmers' behavior	Hear messages	Use methods
	Act on precepts	Apply principles
	Adopt, adapt, or reject package	Choose from basket and experiment
Outsiders' desired outcomes emphasize	Widespread adoption of package	Wider choices for farmers
		Farmers ability to adapt enhanced
Main mode of extension	Extension worker to farmer	Farmer to farmer
Roles of extension agent	Teacher	Facilitator
	Trainer	Searcher for and provider of choice

Source: Adapted from Robert Chambers, *Challenging the professions: Frontiers for rural development* (London: IT Publications, 1993).

It is sometimes argued that extension and advisory systems that follow a more participatory approach are not very efficient. At the outset, this critique may hold true. However, as groups grow stronger the learning curve is steeper and progress may be more rapid. Moreover, it is not possible to compare a system that depends on large-scale distribution of inputs to one that focuses on group capacity building. Experience shows that when input-driven projects end, and if inputs are removed, interest in activities quickly falls off. Projects that are less input-driven, but strongly controlled and owned by participants, may have less dramatic initial results but be better prepared and more willing to continue beneficial activities after the project's conclusion.[15]

The FTF/T EAS is participatory because it is farmer-driven, not a command system. It is also participatory in two other senses. First, it is participatory in that it relies on unpaid lead (model) farmers for much of its on-the-ground activity. Using lead farmers limits how much one person can do, but also greatly expands potential system reach by allowing more people to be involved than if paid staff performed all extension work. Second, the design also relies on participatory techniques for

[15] In *Krishna, A., Uphoff, N., & Esman, M. J. (1997). Reasons for hope: instructive experiences in rural development. Kumarian Press.* The authors identify 18 cases of small development efforts that have scaled up both in terms of size and influence—some eventually reaching millions of participants. In each case, local engagement and ownership were instrumental to their effectiveness and expansion.

much of its operational decision-making, such as the evaluation of new farming practices to be expanded[16], for obtaining smallholders' and other clients' feedback and for much of its monitoring and evaluation of results. This approach has begun to expand naturally in many groups who are actively sharing innovations with friends and neighbors across their mahalla and with other mahallas.

B. Role of women

During and following the 1990s civil war, as large farms were no longer able to pay their male workers, many left the country in search of employment. First skilled workers departed, then large numbers of less-skilled men left, mostly for Russia.[17] The out-migration of men continues in the present day. Women were and are left behind, to take care of the young and the elderly and to keep working for the cotton and commercial-sized crop farms during peak times. Those people who remain in the Tajik countryside have been forced to rely more and more on their household farm production and on uncertain remittances from the migrants for survival. Household farmers can no longer get inputs, assistance or advice from the disbanded large (state or collective) farms. The agricultural education and research system has also largely collapsed, and in any case still is oriented toward producing workers and innovations appropriate for collective and state farms. Nor does any government agency provide extension, information or input services to household farms. Indeed, the Ministry of Agriculture explicitly says that household farms, because they are legally for "subsistence," not "commerce," are not its concern.

Since managing the household farm is traditionally "women's work," the national government's failure to assist household farms, which are critical to national food security and are reported to produce more than 60 percent of all agricultural output by value, is a case of "gender-induced blindness." The jamoats, which are directly responsible for assigning land to households and for assisting them, show more interest in and understanding of household farms.

Gender issues are particularly difficult in Tajikistan because of its highly patriarchal culture. Gender issues need to be addressed in two parts. The first is what the FTF/T extension system does in its activities with its clients, counterparts, and stakeholders. Second is what the implementers of that system will do internally to maximize gender equity, make optimal use of all extension staff skills, and develop staff capacity. FTF/T EAS implementers should pay attention to gender issues among staff, so

[16] In the past forty years, smallholder extension in developing countries has adopted a range of farmer-led, experimenting farmers, and farmer-to-(neighboring) farmer approaches. Each emphasizes the importance of farmer choice and evaluation of any operational improvements. These approaches have been more sustainable and more effective at reaching smallholders than centralized approaches, such as the Train and Visit Extension developed during the Green Revolution.

[17] Students of off-farm migration have often observed that when farmers leave the land in search of work they do not go to the local town or small city, but to a major metropolis, because they know their chances of finding work there are better. It may be that the dynamic of migration directly from the farm to Moscow, without living for a while in a Tajik city, is a result of similar considerations. In any event, many of the migrants seem to be gone for good. Their seemingly permanent departure calls into question the utility of trying to create agricultural jobs to get them back. Certainly they will not willingly come back permanently to rural areas of Tajikistan until they see that farming is something at which the can make a good living.

those staff will do likewise in their relations with farmers. Gender issues cannot be left at the office by staff that return home and act as they always have.

Since household farms are primarily women's responsibility, the FTF/T EAS is itself a statement about gender policy. In at least some mahallas, only women extension staff will be able to work with household farmers. This makes the design and operation more difficult, complicated by the challenge of finding women agronomists. However, the balance toward women in the FTF/T EAS is reflected throughout the design. Apart from women's learning group meetings, FTF/T EAS activities do not exclude men. Where present, they are clearly full partners and support innovative practices in their fields. Whenever extension workers visit household or small commercial farms, both men and women are present.

C. Need to retrain extension staff

Most extension staff were schooled by the lecture method. This is the method they have practiced throughout their careers as "lecturing practitioners" giving instructions on farms and to groups of farmers. As experts, it was expected that they delivered answers instead of asking questions. Effective EAS work with household farms turns this upside down—specialists retain their expertise, but set it aside to first engage farmers in a process of analysis and shared decision making. They ask questions, even though they believe they may know the answers—it is important for groups to work the answers out in many cases. They may take a slower approach to arrive at a conclusion or decision for action—but the group owns the decision. Expert knowledge comes alongside important local knowledge and experience to result in a more useful understanding and adapted practices otherwise not possible. Once extension workers see the power in this approach in practice on farmer's fields, the wisdom of active learning and engagement is better understood. The only way to make this method work is to initiate training and retraining in its long-term effectiveness and sustainability, emphasizing that it does work.

D. Linguistic and ethnic diversity

The problem of assisting the very large number of farms in the ZoI is compounded by problems of language and limited media reach. Russian was the language of government and higher education during the Soviet period. Because of the mass emigration of the Slavic population, the destruction of the educational infrastructure during the Civil War, the lack of good teachers and limited exposure to the language in daily life, Russian has almost died out in the Tajik countryside. Most people can still speak a few words, but the general level of knowledge is too low to allow effective discussion of technical subjects, especially ones with which the audience is not already familiar.

The FTF/T ZoI also includes a large number of native speakers of Uzbek. The three southern raions of the ZoI, Shahritus, Qabodiyon and Nosiri Khusrav, are essentially Uzbek-speaking areas. Elsewhere in the ZoI, including the raions around Qurghonteppa, there are large numbers of Uzbeks and whole "Uzbek mahallas." This is not simply a technical challenge. The histories of these groups and their interaction lead to differences in trust, confidence, as well as privilege and access to goods and services.

E. Role of the mahalla

The mahalla is fundamental to rural social structure in Tajikistan. It is at the intersection of formal government and informal, "traditional" community structure. Technically, a "mahalla" is the area

served by one mosque – in English terms, a "parish." It may also be thought of simply as "the neighborhood." In Tajikistan, mahallas are villages or parts of villages. They have defined boundaries and are legally recognized and regulated. Each mahalla has a "chairperson" *(raisi mahalla),* who is appointed by the government, but also serves because of his or her position of respect among the neighbors. The raisi mahalla is similar in this dual role and dual accountability to the village head in pre-revolutionary Russia or some Western European feudal systems. In their role as community leader, the raisi mahalla will consult with and seek consensus with and among a commonly recognized group of local notables or elders. Depending on the mahalla, this group will probably include the local mullah, the schoolteacher(s), the former collective farm brigadier, a doctor or nurse, and some particularly respected members of the older generation. Many raisi mahalla are women, but it appears that the formal elders are almost always men.

According to staff from projects that have done extensive community development work in Tajikistan during the past two decades, most "Village Development Committees" and other grass-roots community-based organizations are expansions or formalizations of the mahalla elders or the mahalla committee. Because the formal government structure provides few services to rural residents, and because it is difficult for isolated individuals to survive in Tajik society, the mahallas have become more important as community support mechanisms in post-Soviet Tajikistan. Mahalla organization may be weak. It privileges men over women, and, probably, the relatively better-off over the poorest, but the mahalla is recognized and understood throughout Tajikistan. It is a community-level structure that helps preserve and reinforce community identity and social cohesion.

Because of the very large number of households and small commercial farms in the ZoI and the need to systematically reach rural residents in order to conduct effective training and skills development, EAS participants must be organized in a systematic and stable way. The mahalla provides an acceptable and accepted organizing concept for community activities and group formation. It should not be accepted or worked with uncritically, but it provides an entry point to the community and a basis for the formation of agricultural skills and information dissemination learning groups.

Raisi mahalla

The mahalla chairperson *(raisi mahalla* or *rais)* is the key to begin work in the mahalla. If the *raisi mahalla* is helpful, then the EAS can work effectively. If the mahalla chair is obstructive or tries to grasp all the possible benefits of the system for himself/ herself, then working in that mahalla will be difficult, if not impossible. However, because the *rais* is caught between the government and local community, the EAS can be presented as a useful way to help the *rais* serve the needs of both.

Accountability to the mahalla community

Although initially formed with the knowledge and assistance of the raisi mahalla, the FTF/T EAS household farm learning groups are self-selected subsets of the village. However, in order to avoid having the EAS captured by the people who are most active in it – who are likely, all other things being equal, to be better off than most villagers – the activities of the learning groups need to be regularly reported to, and examined by, the larger community. Most groups are not really new but a gathering of neighbors who have known each other over a long period in a small community. In turn, the group needs to share experiences across the mahalla. The community will also be asked to provide feedback on the EAS system using participatory techniques for monitoring and evaluation of the group activities, technologies promoted and production increases realized.

F. Role of government

An observation on which the FTF/T EAS concept is based is, perhaps, less a fact than an assumption and a normative statement about the role of government is that typically, donor development projects "cherry-pick," project locations by finding a receptive local official or resident and working directly with him or her as the local contact and organizer. The strategic choice in FTF/T to concentrate resources in one zone of influence makes that practice impossible for the developed FTF/T EAS. Ultimately, it has to work essentially everywhere in the ZoI. It will be visible and, hopefully, permanent. Local government will want to know about the project. It may, for a variety of motives, seek to control the activity's access to local communities, either to steer benefits to friends and away from enemies or simply because one does not show guests the worst as a matter of local pride. The developing EAS needs open access to local communities, so local officials need to understand its purposes and realize that it is not a threat to them.

Cooperating with local government

The EAS must engage as an agricultural knowledge and information sharing system with the government authorities. This engagement requires patience and diplomacy. There are protocols for interacting with local government, or even for visiting a locality, that should be observed both as a matter of politeness and in order to develop and retain access. Many of those protocols require informing the local authorities of the presence and intentions of an activity. Development workers in countries like Tajikistan often express reluctance to tell the authorities what they are doing on the grounds that local authorities all too often demand personal compensation for their support or impede project activities in other ways. While such things do occasionally happen, the EAS will have to work with government to explain its purposes and to create the space for EAS participants to act and begin to promote the prosperity of the farmers. This cannot be accomplished if the EAS is not in regular communication with the government authorities.

Officials at the jamoat level, and rank-and-file government employees at the raion and oblast' level, are generally from the local communities, born and raised in the communities they serve. Most of those officials are keenly aware of the problems of their regions and the government's limited resources for resolving them. If they perceive that the EAS can help them solve an agricultural production problem they are likely to be receptive. Moreover, the use of such management devices as co-locating staff with local officials can provide an opportunity to mentor and build their capacity and support. Such efforts need to be undertaken carefully to avoid local capture of the project, and to ensure that co-location and mentoring does not lead to substituting project employees' work for the tasks of government and government employees.

Winning the support of the national government

There are excellent reasons for the national GoTJ to support the EAS as envisioned herein. More than 50 percent of all Tajiks whom the government counts as employed actually work on household farms. Almost all Tajik families draw a large part of their food and income from their household farms. Given the number of farmers relative to the population as a whole it would serve, there is a clear case for why an effective EAS will improve household farms' operations, income, and family nutrition, as a public service that should be provided by the state. Moreover, extension is what economists call a "public good," something which benefits all market actors, but which, because of the individual cost relative to the individual benefit and, even more, because the information cannot be kept secret and used only by those who paid for it, and individual entrepreneurs will not provide. Tajik household farms can benefit enormously from a relatively small absolute increase in their production and income. However, neither the amount of the increase nor the total value of their production will allow Tajik households to pay enough for these extension services to recover the costs of an effective EAS.

In the nineteenth and twentieth centuries, all developed market economies provided some form of EAS to their farmers. As populations shifted from rural areas to urban centers and smaller percentages of people benefited directly from, and voted to support, EAS, the systems were often privatized, as in Western Europe, or sharply downsized while spreading their focus beyond traditional farmers, as in the United States.

Tajikistan has not yet begun the transition from rural to urban majority populations that caused public EAS to be abandoned or modified in OECD countries. Unfortunately, it does not seem to be near that point, and the lack of an EAS will retard these socioeconomic and demographic transitions.

The pluralistic, multi-faceted approach of FTF/T EAS melds public and private elements, through informal "public-private partnerships." In the process it offers ways to build the capacity of the jamoats and raion administrations to provide better local public agricultural extension and information services. It also empowers farm households by strengthening their voice and confidence so they can interact more productively with local government.

Ministry of Agriculture

The Ministry of Agriculture should be the guardian and chief advocate of the hybrid public-private EAS developed for the FTF/T ZoI. However, although it has set up an extension "sector" (by definition, the "sector" has only one or two professional staff) and a "Center" to coordinate agricultural extension, the organization of the Ministry could be strengthened to better support extension. Moreover, as already noted, it currently has no responsibility for household farms, although it does follow food security issues.

Ultimately, expanding the FTF/T EAS beyond the ZoI is unlikely without support from the Ministry of Agriculture and the other agencies in the "agricultural block" of the national government. Greater government support for extension will in turn further successful agrarian reform and agricultural development in Tajikistan.

III. Elements of the FTF/T EAS

Table 6 lists the major elements of the FTF/T EAS and the major contributing source(s) of each element.

Table 6. Major elements of the FTF/T agricultural EAS

Elements	**Sources**				
	Community members (EAS system participants)	**Tajik private sector**	**GoTJ appointee /employee /institution**	**FAST or other EAS project employee**	**Other USAID projects / other donors**
Mahalla learning groups	✓				
Learning group farmers	✓				
Learning plots	✓				
Learning (crop advisory) packages		✓	✓	✓	✓
In-mahalla experts	✓				
Group learning activities	✓	✓	✓	✓	✓
Accountability to the mahalla community	✓				
Raisi mahalla	✓		✓		
Jamoat agricultural specialist			✓		
Jamoat extension coordinator				✓	
Input dealers / “agro shops”		✓	✓		✓
FTF/T EAS model household farms	✓			✓	
Small community/group grants					✓
Roving subject matter specialists (“agricultural production specialists”)				✓	✓
Roving EAS facilitators				✓	
GoTJ testing stations			✓		
Other demonstration plots and testing stations	✓	✓		✓	✓
Nohia and viloyat Agricultural Administration subject matter specialists			✓		
Khatlon agricultural good practice council	✓	✓	✓	✓	✓
Academy of Agricultural Sciences research institutes			✓		
Other external sources of agricultural innovations		✓			✓
Agricultural junior colleges and Tajik Agrarian University			✓		
Ministry of Agriculture			✓		

The balance of this section discusses each of these elements in detail.

A. Mahalla learning groups

Learning groups comprised of household farmers are the foundation of the EAS.[18] They are formed from interested residents of the mahalla on a voluntary basis. (See "V. Implementing the FTF/T EAS" below.) They should include about 25-30 farmers, since larger groups are too large to work together effectively, and may tend to become lectures. Because household farms are traditionally women's work, these learning groups are essentially women's groups.

The starting point is women on the household farm coming together to learn. So these groups are formally called Household Farm Learning Groups (HFLGs). The lifespan of these groups is not fixed, and they will not be permanent. They form for a purpose, and when that purpose has been achieved, they are likely to dissolve. The HFLGs are, essentially, simplified farmer field school groups focused on women. Even if they only last several growing seasons—household farms in Khatlon have three growing seasons per calendar year—the strengthened capacity and the adopted innovations remain. The confidence, social capital developed and initiative to experiment will serve the mahalla for many years. For that reason, although the EAS teaches technical agricultural production skills, it does so based on demand and in the context of the group's applied production activities. Capacity development, too, is always provided on-demand in the context of improving the group's farming practices, not as a stand-alone activity.

Experience with the first year of the FTF/T EAS demonstrated that the groups exhibited initiative, a group learning attitude and a strong willingness to share experiences. This was the result of the EAS staff working intensively with the learning groups' leaders and other women farmers in determining their priorities and addressing their evolving technical training needs. The learning groups were linked to a broader network of farmers involving a wider segment of the community assessing results and disseminating their newly acquired production skills and knowledge to a larger audience. This process demonstrated the utility of developing model farmers' new production methods that were replicated in all of the learning group's members by both other members of the group as well as neighboring farmers. It was through these experiences that the lead farmers/EAS group coordinator farmers became effective extensionists.

Farmer-to-farmer training's multiplier effect

An effective EAS model focuses strongly on the dissemination and facilitation of the adoption of recommended technologies, developed with/by the farmers, and practices to achieve its objectives. The farmer-to-farmer demonstration extension model has proved a success worldwide and exemplified in Tajikistan's ZOI under the EAS FTF/T.

Improving productivity and production of household farm enterprises is the utmost aim of the EAS/FTF extension model. However, increased productivity does not depend totally on the efficacy of the

[18] For a general discussion of groups in working with smallholders, see Catholic Relief Services: *Skills farmers need for organizing and managing groups,* Lesson 1, pp. 9-11 (Annex 4). The full text is available at http://www.meas-extension.org/meas-offers/training/five-skills. FAST has translated many sections of the CRS five skills into Russian and/or Tajik. See Annex 5.

technology as is generally viewed. It will in addition depend on the management processes of the technology throughout the entire production cycle with consideration given to the output (i.e., tomatoes, potatoes, and fruit) produced and how the household farmers can best utilize this increased production. Consideration of family nutrition and its total food requirements on a yearly basis needs to be considered, as some portion of the production will be consumed fresh, some preserved and the 'surplus' sent to the market.

The FTF/EAS has proven effective as it has a clear and inclusive working philosophy. The failure of the progressive farmers' approach and most approaches modelled on the training-and-visit approach was blamed on the fact that it emphasized only the hardcore technical philosophy in disregard of other aspects necessary for effective dissemination of technologies, such as communication processes, leadership and institutional (farmer group) organization.

The FTF/EAS approach to sustainable development rests firmly on the principles of respect for traditional knowledge from the existing farmers; it also emphasizes farmer testing (learning), sharing of knowledge and innovations. There are numerous examples worldwide that indicate there is a higher level of adoption when new production technology options were introduced (and demonstrated) by fellow farmers than by external agents. Often when technologies were demonstrated in the communities by external agents, the focus was on the technology mainly, with scanty attention being paid to other aspects, such as finding a market for the produce or controlling diseases.

In the FTF/ EAS technology adoption model, the farmer is introduced to the technology he/she will be within the community and be concerned about what follows later, including the possible risks. By empowering farmers in terms of knowledge and innovations leading to better production, the productivity of extension workers (behavioral change) can be improved. Essentially, an approach which empowers farmers is likely to sustain a good and effective extension service. Therefore, the best way to increase the effectiveness of extension services is to increase the countervailing power of farmers to influence the extension services being provided (modeled under FTT/EAS).

Finally, effectiveness of any extension model will depend on the supportive policies covering fiscal and political dimensions to support the system. It will also depend on the effective operation of line institutions such as government ministries and programs plus a supportive implementation processes.

Neighborhood farmers who help arrange meetings convene the learning groups. The lead farmer are not paid, although they may be given mobile phone credits or reimbursed for small travel expenses. When the group chooses to work on a crop for its group learning, the lead farmers host group learning plots during their first season together, so the lead farmers ' families get the direct benefit of any agricultural innovation. Practice, however, indicates the learning group decides to share any additional production from the learning plot on a "share and share-alike" basis.

Lead farmers should be women who are passionate about improving household farms, but do not ask them to sacrifice income to be lead farmers. Some farmers may be slightly better off than others; or may benefit from early access to innovation; or can sell inputs or other support activities in the mahalla. Although with a different role, lead farmers should remain members of the group, not superiors. See the note on the role of lead farmers in Annex 6.

At the second meeting of new groups, or the first meeting of a group continuing for another season, the "Crop Analysis Workshop," each learning group is asked to identify three of its members as its lead

farmer conveners.[19] The group reaches consensus on those persons and the three in turn identify one person as a primary contact. The EAS facilitators note all their contact information. See the section "Participatory Extension Workshop agenda

Materials required *Duration - 2 hours 20 min.*

- *Markers*
- *Masking tape*
- *Flipcharts*
- *Notebooks*
- *Posters*
- Training materials

TARGET: Extension team from FAST program will introduce participants to the training program and schedule.

OBJECTIVES: *To help farmers share experiences on their household farms, and identify priority crops.*

Table 8. FAST Participatory Extension Workshop (Module -2)

Duration min.	**Activates**	**Key Concepts**
5	Welcome & Introduction	Extension team and women's group introduction
5	Ground Rules, Agenda Announcements & Purpose	Explanation of workshop activities & purpose
5	Brief information of «Farmer Advisory Services in Tajikistan» program.	Revision: Goals and objectives of program for newcomers
30	Discussion of household farms	Participants share experiences from their household farms (Group discussion)
30	Advisory services discussion	Agricultural Production Specialist provides advisory services based on women's group requests/ topics
10	Prioritizing & selecting a crop (s)	Participants identify potential crops for learning agro-technology cultivation of selected crop(s) (Group discussion)
10	Crop calendar of selected crop(s)	Agricultural Production Specialist discusses crop calendar with women's group
10	Selecting leaders of mahalla and demo plots	Participants select leaders of demo plots for agricultural trainings (Group discussion)

[19] In some similar EAS designs, what the FTF/T EAS calls "volunteers" are "lead farmers." Because the term "farmer" tends to conjure an image of a man on a tractor for English speakers, however, "volunteer" is the preferred term in this context.

10	Future workshop steps	Extension team and group makes plan for future workshop activities according crop calendar.
20	Demo plot selection	Extension team and group select demo plots according to criteria
5	Summary	1. Questions and answers 2. Achievement of goals

Note:

1. Participatory Extension Workshop Facilitator assisting Agricultural Production Specialist and facilitating groups during workshops, seminars and trainings
2. *Jamoat Extension Coordinator with mahalla leaders organizes the place for holding training activities.*

C. Crop analysis workshop" below.

Learning plots

A learning plot is a space that can be used to teach, experiment, and share ideas about agricultural (crop and livestock) practices. In the farmer field school approach to farmer learning, it functions as the "classroom." FTF/T EAS learning plots are limited to .03 hectare or even less for high-value crops like tomato.

Learning plots are located on the household farms of mahalla teaching group members, usually the three lead farmers. Regular training and discussion meetings are held on the learning plots every 10 days to two weeks. Having more than one learning plot allows learning groups to hold meetings on a rotating basis on different plots. Results may be different on different plots providing excellent "teaching/learning points" with specific examples to be analyzed and discussed by farmers. Because innovations may fail and poorer farmers are risk averse, the FTF/T EAS subsidizes the first season of experimentation/testing with a particular innovation on up to three plots. The particular input subsidy is given only for a season, then the group evaluates its effectiveness and if they value it, it is up to them to purchase the inputs with their own funds for the next season.

Learning plot logbooks: A journal should be kept for each learning plot. It should record all activities on the plot (time spent planting, weeding, inputs, etc.), record quantities of inputs applied and harvested, and include a section for visitors, including FTF/T EAS staff making routine visits and recommendations.

Learning (Crop Advisory) Packages

Learning (crop advisory) packages are the materials the FTF/T EAS creates or adapts to support farmer learning about a particular agricultural crop or activity. They include written materials on how to carry out specific activities such as growing tomatoes, plans for conducting a farmer field school session on the particular crop, and any other materials relevant to the activity. They are typically broken down to cover many stages of the crop cycle and thus support a single or several extension visits. Unlike most advisory materials, learning packages cover both content and process. The "Sample guide to develop an EAS learning (crop advisory) package: tomatoes" demonstrates the combination of technology resources and skills training needed to work with groups. (Annex 7.) The "packages" are

put together as a curricula so they are ready-to-facilitate giving the extension worker clues about engaging the group and supporting their initiative.

Written materials for learning packages go through several stages of development, from draft to completed versions that may be used generally in the FTF/T EAS and distributed on request to others.

Developed learning materials are available on www.fast-program.tj.

Before advisory packages can be publicly distributed or routinely used in the FTF/T EAS, the written materials must be approved by the Ministry of Agriculture of the Republic of Tajikistan. This approval is legally required.

In-mahalla experts

In most mahallas there is a web of exchange of favors and mutual assistance. There is usually a neighbor who has some agricultural knowledge. This is usually a man, since the person is often either a former collective farm agronomist or a production-related employee of a donor project. Because he is a neighbor, people go to him for advice and help when they have a problem on their household farm. Unlike veterinarians, who often are seen as professionals, and who can require at least some fee for their services, this "go-to person" receives little but his neighbors' gratitude. However, such respect is itself not a small payment. Such people generally say that they cannot refuse to help their neighbors even if they know they won't receive any direct payment for their assistance. Not to help would violate community norms and leave the agricultural expert alone the next time he needed help with something else.

These experts are natural candidates for FTF/T EAS jamoat extension coordinator (JEC) positions. Even if they are not absorbed formally, the JEC should identify them and mobilize them to assist learning groups. If they can be provided limited assistance and more access to information, then they can provide at least some of the front-line backstopping and consulting the system needs. There is a gender issue here, since most of these people are men and most of the agricultural EAS' clientele are women. But, depending on the specific situation, because the "expert" is a neighbor, the gender issue may be less sensitive.

The FTF/EAS is based on a whole-farm approach toward increased production, giving voice to the farmers' concerns, including crops and livestock. There have been numerous examples of "in-mahalla" expert(s) being requested to assist the learning groups, particularly for veterinary services. With livestock production often an integral part of the household's livelihood and nutrition, and the considerable family investment in each animal, the farmers will usually seek the advice of the local veterinarian as soon as an animal health issue arises. Fortunately, Tajikistan has well-established veterinarian services, although they are not evenly distributed at the mahalla level. In many cases, the FTF/EAS trainers have provided vital communication links between their farmer groups and the veterinarian services providers alerting them to an expressed need for their services. In one example, one of the mahalla group farmers described the symptoms in one of their cattle as hoof-and-mouth disease, a serious viral infection often seen in animals imported from Afghanistan. The local veterinary services were alerted immediately by the EAS trainers and a crisis was averted.

Group learning activities: experimentation and innovation

Group learning activities are the heart of the EAS. They take a variety of forms, depending on what production problem learning group wants to understand. The most common form is a modified farmer

field school approaches in which groups meet regularly at a group member's household farm to discuss common problems and seek solutions in a discussion facilitated by an expert from the mahalla or any of the other personnel listed in the table.

During the first season's testing, most group learning has been led by FAST agricultural production specialists, usually in combination with an extension facilitator, during roughly weekly sessions. Learning sessions (extension visits) have been held in response to specific issues, problems, or opportunities arising from the cultivation on the learning plots or an urgent farming situation (pest or disease infestation) where the team can advise. Advisory packages with participatory curricula are continually being developed; drafts have been field-tested and are being improved.

In the longer term, the responsibility for these regular meetings should shift to the learning group's own lead farmers and the jamoat extension coordinator with the government-employed jamoat agricultural specialist.

The discussion is to ascertain farmer ideas and opinions. The idea is to engage farmers in sharing what they already know, and in trying to find solutions to problems they are encountering. This may result in some farmers trying something different on their farms and reporting results back to the group. The Jamoat Agricultural Specialist or Jamoat Extension Coordinator may have a solution to try or they may invite an agricultural production specialist to visit the group to discuss possible solutions with him/her.

This approach is inspired by Farmer Field Schools (FFS). FFS methodology is very specific and is based almost entirely on farmer experimentation. (See Annex 8.) Within its resources, the FTF/T EAS is adapting a similar, simplified "experimenting farmers" methodology.

HFLGs are helped to innovate with crops they choose through an "experimenting farmers" approach. In this approach, a critical mass of women chooses to try new practices (sometimes adding their own variations), while the group evaluates their effectiveness. Informal farmer experimentation, trials, and technology development are key to farmer decision-making and leadership in the extension system. Women in Khatlon already experiment in their household farms—the EAS should build on and expand this practice.

The FTF/T EAS work starts with existing good practice in the mahallas and builds on it. Expansion of existing good practices in Khatlon has made up the majority of increased production and income during the two years of field work, with the remaining scope to test production techniques not tried locally. Some innovations will be rejected, others slowly adopted, while some quickly adopted and spread as farmers apply their own criteria of risk, cost / benefit, and marketability.

Incorporating more nutritious crops into household production systems

Undernutrition among women and children is a serious public health concern in Tajikistan, contributing to maternal and child mortality and perpetuating the cycle of hunger and poverty. Feed the Future is investing in a combination of food-based inputs, high-impact nutrition interventions, and targeted support for nutrition-sensitive agriculture to help Tajikistan address this issue.

The FTF/T EAS is helping to develop the fruit and vegetable value chains in the ZOI, which have the greatest potential for boosting the incomes of rural households and enabling them to produce and afford more adequate, nutritious food. The EAS is also helping diversify markets and reduce risk to provide rural households with access to the resources they need (i.e. production advice and information) to create a more productive and profitable agriculture sector.

The household learning groups within the EAS are, essentially, simplified farmer field school groups focused on women. Even if they only last several growing seasons the strengthened capacity and the adopted innovations remain. The women farmers have demonstrated very strong interest to learn about which crops are more nutritious during each of the three growing seasons, their best production practices and methods for preservation and storage to retain quality for each crop.

B. Jamoat agricultural specialists

The jamoat agricultural specialist (JAS) is a GoTJ employee assigned to carry out duties supporting agriculture in their jamoat as specified in their terms of reference. (See Annex 9.) In more populous jamoats the JAS holds the position of (First) Deputy Chair of the Jamoat.

The JAS' terms of reference contains about twenty duties. Facilitating the development of household farms is seventeenth on the list, but it is included. The JAS is supposed to help household farmers and to work with the private sector and civil society in agriculture.

The post is fairly new, and has not been filled everywhere. Moreover, it is a difficult job that pays relatively little. Some JASs will see it, if properly presented, as a way to help with much of their job by improving the mahalla's agriculture. Where that alliance can be built, the EAS can potentially work well and become rooted in the community.

One major issue in the EAS system design and functioning is whether or not the JAS will be available and can be trained to help organize and assist groups in the mahallas in the JAS' jamoat. This depends on the JAS' other duties, the support of the jamoat chair, and the JAS' belief in the value of the EAS activities. After several seasons of testing, no generalizations can be made. Some JASs in the jamoats where FAST has been developing the system work closely with the EAS, some ignore it.

C. FTF/T extension staff

The FTF/T extension system has three fundamental categories of professional staff employees. EAS facilitators and agricultural production specialists act as front-line extension workers during the initial establishment of the system and its initial entry into a new mahalla. They then serve to backstop the jamoat extension coordinators who, as the system takes root in a particular locale, largely take over the front-line role. In addition, the system needs one or more materials development specialists and a database manager or other record keeper.

EAS facilitators

The EAS facilitators conduct the Participatory Extension and Crop Analysis Workshops that begin the EAS' public work in each mahalla as well as follow up workshops as needed. The facilitators ensure that a participatory process and ethos are maintained and monitor the social dynamics of the HFLGs. The production specialists and facilitators must work closely together. The EAS facilitators also train JECs, JASs and learning group lead farmer facilitators in group facilitation and leadership.

The scope of work for an extension facilitator is in Annex 12.

Most of the facilitators FAST hired for the FTF/T EAS have had backgrounds as teachers, nurses or similar traditional helping professions, because such backgrounds give them an advantage in working with new groups. However, they are also systematically cross-trained in basic agricultural production skills. Although most or all come from rural families, and usually have their own household farms, they

need to know more about modern agricultural production techniques in order to properly interpret HFLG members' comments and to do their jobs.

In order to build personal relations with the farmer groups and the JECs, facilitators are assigned primary responsibility for one or several raions within the ZoI. They may work in other places as needed.

Training in group facilitation is also offered and routinely repeated. See the workshop design in assigned by the Chief of Party

Agricultural production specialists

"Agricultural production specialists" is the generic job title for a group with various technical production skills who provide skilled backup to farmer groups. They also directly assist with the initial group-formation and crop choice activities for learning groups. Theoretical discussions of analysis call people doing this work "subject matter specialists."

FAST's agricultural specialists must be agricultural production generalists who can advise across a range of crops. The team was selected for a variety of skills and experience. The specialists themselves decided whether they had: only personal practical experience with a crop; had provided services for a crop; or had formal training in a crop. They identified lead specialists on all the crops for which FAST provides information.

During the establishment of a new group, the facilitator and specialist team work closely. EAS facilitators have the leading role in the start-up workshop for new groups ("PEW"). The second group workshop ("PAW") leads to a more technical discussion on a particular crop. At both workshops the agriculture specialists backstop with information and technical agriculture skills. Throughout the season, innovations are demonstrated with a team approach. The end of the growing season evaluation workshop focuses on technical results then moves to reaching out to more women—so the skills of the agricultural specialist are needed alongside the EAS group facilitator.

The agriculture specialists drive the menu of innovations selected for a crop and help identify and test extension materials to support each aspect during the growing season. They often have located promising local innovations that are unfamiliar or out-of-use with the groups.

During FY 2014-'15, the agricultural specialists spent a great deal of time working directly with groups as first-line extension specialists. As the system develops and more groups are formed, the production specialist's role should become more that of a backstop, called in only when there is a problem that the JEC cannot handle or when new groups are being formed.

In order to build personal relations with the groups and the JECs, production specialists are assigned primary responsibility for one or several raions within the ZoI. They may work in other places as needed.

The scope of work for an agricultural ion specialist is

Annex 11.

Senior facilitators and production specialists

One of FAST's tasks in developing the FTF/T EAS during FY 2014-'15 was to train the staff to expand the system. The need for continuing training and mentoring of EAS facilitators and production specialists, clear assignment of responsibility for scheduling, quality control by random visits to group meetings, assistance with procurement of inputs and development of materials, and other administrative matters led to the creation of the post of senior EAS facilitator and senior production specialist. Two facilitators and two production specialists were given this title during October 2014. The precise division of labor and responsibilities are still being worked out in practice.

Jamoat extension coordinators

The jamoat extension coordinator (JEC) is the linchpin of the developed FTF/T system. The organization of Tajik local government often makes necessary a considerable amount of negotiation for groups to meet. The JEC carries out that "diplomatic" task. The JEC is the day-to-day contact with HFLGs. At the request of the HFLGs or on their own initiative, the JEC organizes and coordinates activities in the jamoat. The JEC acts as liaison with jamoat authorities. The JEC accompanies the FAST facilitators and production specialists on visits to existing groups. The JEC works closely with jamoat authorities and interested farmers, particularly HFLG members, to advance the interests of their jamoat.

The JEC is co-located with the jamoat administration, with an office in its building. The jamoat provides the office space as its contribution to the FTF/T EAS. The project implementing the EAS does some minor rewiring and other minor repairs to make those facilities safe and habitable. The JEC has limited project resources (a computer, a printer, an internet connection) for their work.

The JEC must establish a good working relationship with the jamoat staff. That task is delicate, since the JEC is there to build and sustain an EAS, not as additional labor for whatever the jamoat administration needs.

The JEC need not be an agriculture specialist, nor have a higher education. Given the constituency of the EAS, women are preferable as JECs. Newly-hired JECs begin employment with a month of work as a facilitator or agricultural production specialist in order that they can learn the EAS before working, in relative isolation, to implement it in their jamoat.

The scope of work for the JEC is Annex 10.

EAS for small commercial farmers

Following the Feed the Future standard that a "smallholder" is a farmer with up to five hectares of arable, the MEAS Field Support Activity determined in 2012 that 9,634 of the 14,549 private commercial *("dehqon"/"*peasant") farms listed in the 2012 Land Balance of the Republic of Tajikistan, 66 percent of all peasant farms in the ZoI, were "smallholder" commercial farms. The concentration of smallholder commercial farms varies greatly from jamoat to jamoat, as does the distribution of farm sizes within that category. Generally, however, there are at most 25 or 30 small commercial farms in a particular jamoat.

Almost all private commercial farms are, at least formally, run by men, for commercial purposes. Most of them have, at least until very recently, concentrated on commodity field crops -- cotton and wheat,

and to a lesser extent tomatoes, potatoes and sweet peppers. As the GoTJ campaign to replace cotton with horticultural crops and orchards has unfolded in the last five years, this crop mix has changed, but not consistently or everywhere in the ZoI. In many cases commercial farms lease out their land to households for horticultural crop production after the farm's main season is over.

Recently FAST staff began to work with groups of small commercial farmers in selected jamoats where the EAS is already working with household farmers. These training sessions are summarized in Table 7.

Table 7. FAST training events for small commercial farmers, April-June 2015

Date	District	Jamoat	Village	Number of participants		
				Men	Women	Total
23 April	Jilikul	Jilikul	Shodrez	20	7	27
28 April	Yovon	Sitorai surkh	Rudaki	28	2	30
06 May	Huroson	Hiloli	Mekhnat	19	0	19
06 May	Rumi	Frunze	Ittifok	16	6	22
12 May	Jomi	Yakkatut	Yakkatut	22	2	24
15 May	Jilikul	Nuri Vakhsh	Nuri Vakhsh	25	5	30
21 May	Qumsangir	Pianj	Rudaki	20	0	20
26 May	Vakhsh	Tojikobod	Fidokor	14	3	17
26 May	Jomi	Yakkatut	Gorky	22	0	22
28 May	Rumi	Navobod	Navobod	14	1	15
16 June	Nosiri Hisrav	Istiklol	Oltinsoi	13	1	14
17 June	Rumi	Tugalan	Tugalan	20	2	22
19 June	Yovon	Sitorai surkh	Dehqonobod	20	1	21
Total				**253**	**30**	**283**

As a result of these initial training sessions, it appears that small commercial farmers most need and want training in:

- How to choose good vegetable seed
- Good practices in storage of fruits, vegetables and other crops
- Proper crop rotations
- Proper use of fertilizers on horticultural crops
- Proper use of commercial crop protection chemicals
- Integrated pest management

These are generally the same topics pursued with HFLGs. There is clearly demand for a farmer field school approach to working with small commercial farmers. In many ways, they are an easier audience if the trainers are properly prepared, since they provide their own fields without requiring any project contribution of inputs and are more articulate in expressing their desires for training and information.

Cooperation with CIP and the AVRDC

The EAS staff cooperates closely with the International Potato Center (CIP) project in Tajikistan, although CIP now has its own staff to organize and present field days on its commercial farm demonstration sites. All but one of the CIP field days in May 2015 was held in a village where FAST is active. CIP and the FTF/T EAS worked together to supply seed potatoes to FAST HFLGs. All FAST seed potatoes came from CIP.

The Asian Vegetable Research and Development Center/World Vegetable Center (AVRDC) provided FAST with enough vegetable seedlings in April to meet about 40 percent of FAST's needs. Both cooperative arrangements were proven to be productive toward increase crop production in the ZOI.

Cooperation with USAID's Farmer-to-Farmer Program

USAID's Farmer-to-Farmer program offered excellent technical support to the EAS by hosting 12 volunteers during piloting of the EAS and training over 1000 farmers (700 men and 300 women) with the majority being small commercial farmers in orchard management, vegetable production and marketing.

Environmental compliance

All EAS activities were conducted in accordance with USAID's environmental requirements outlined in the FAST Environmental Manual. The FAST Project Environmental Officer had been monitoring FAST activities for environmental compliances that are reflected in the Environmental Checklist. FAST's environmental specialist reports that FAST has applied 100 percent of the mitigation and environmental compliance requirements required by the checklist.

EAS materials development specialist

Several donor projects and GoTJ agencies have, over the past decade, developed information about improved production techniques. In addition, FAST's production specialists have compiled a series of short brochures about the agricultural crops and production problems on which FAST provides advice to the HFLGs. Moreover, there are many related materials available on the web. The EAS materials development specialist ensures that FAST is not duplicating work already completed by someone else or even within the project, as well as checking the quality of all EAS items.

The scope of work for FAST's extension materials development specialist isin Annex 13.

EAS database manager

EAS staff must record their interactions with the HFLGs. Unless the history of work with each group is available for others, anytime a new person works with the group things must in many ways start over. So keeping the institutional memory (digitally) of what has been done, when, how and by whom with each HFLG is essential.

Records are presently kept in a formal database, and filed by group and date EAS. Because of the frequent power problems, records are kept in electronic form and in hard-copy files. Russian is the standard language for reports.

The database manager also archives the originals of PRA materials.

D. EAS materials

Every crop chosen requires a commensurate set of extension materials to support it. The Extension Materials Development Specialist locates, adapts, and publishes local, regional, and international materials that support the activities. These materials contain both the technical substance and suggested process needed to work with the groups. However, they are only guides - not scripts - and require creative and sensitive extension staff to be used effectively. FAST materials should increase the group's technical and organizational effectiveness.

Sources of innovation and dissemination

FAST agricultural specialists found that household farms were not applying many locally available production technologies and innovations. The extension workers set out first to identify these good practices and introduce them in their fieldwork with groups. During FYs 2014-'15, for many crops, the application of multiple innovations in combination exceeded the expectations of the team and the women's groups. As FAST exhausts local solutions, it also determines which agricultural problems are not well addressed. This then leads to a broader search by FAST's extension staff for regional and international good practices starting with the resources of the MEAS consortium and the University of Illinois Urbana-Champaign. FAST does not seek to apply every possible innovation but searches those that would leverage gains in areas most needed and spread learning across the ZoI.

E. Media strategy

Mass media technologies can greatly supplement, but not replace, face-to-face contact between extension workers and extension system clients. The continuation of FAST's EAS work gives the project an opportunity to make much more use of media.However, effective use of media in the FTF/T ZoI faces some considerable problems. The uncertainty of electrical supplies (officially, four hours a day are provided throughout the country in winter, but in practice power may be off throughout the day) makes use of any devices that require electricity uncertain. The poor quality of the power when it is available may also quickly damage electrical and electronic devices due to power surges.

The imperial language, Russian, has largely fallen out of active use in the Tajik countryside. Many rural residents have a passive knowledge of Russian, but they may not be able to understand technical terms. A great many people in the FTF/T ZoI are native speakers of Uzbek with little or no knowledge of Tajik. Moreover, because Uzbek and Tajik were not languages of education instruction under Soviet rule and the village educational system in the ZoI was badly damaged during the 1990s civil war, there are significant differences in the Tajik – and to a lesser extent, the Uzbek – spoken in various places even within the ZoI.

For these reasons, the FAST media strategy relies heavily on print media. In particular, FAST will produce and widely distribute many more copies of its own extension materials. It will explore cooperating with the USAID Farm Restructuring and Land Reform Project, which already publishes a newspaper, to place materials in that publication. FAST will contract with the local Khatlon newspapers – which have limited circulation but correspondingly low costs – to routinely cover FAST activities. FAST will also work with the Khatlon TV stations to increase coverage of local events and produce low-tech programs, such as title cards with voice overs. FAST staffs are already frequent guests on Tajik national TV shows related to agriculture. The project will make more systematic use of their appearances to extend the reach of its messaging.

Although the cost of producing instructional videos is high, recording a learning group session using existing digital camera equipment is relatively simple; requiring mainly the camera, a tripod, and a place where sound can be recorded. Blank video disks are inexpensive and easy to duplicate on FAST's existing computer equipment.

During FY 2015 FAST developed the capacity to use "amateur" videos to supplement in-person cross-training visits. This was done with existing project staff and skills. However, the MEAS Consortium at UIUC now employs a staff member who specializes in digital media production. If needed, she will be brought in on a brief STTA to assist FAST staff with these media products.Wide distribution of the resulting DVDs will minimize the technical issues noted above, since they can be watched repeatedly at the viewers' convenience.

F. Periodic consultation with the raisi mahalla to discuss learning group results

These informal meetings should occur at least once a growing season. However, it is likely the *rais* will be present at different times and may be able to have a side conversation gauging perceptions of the group's effectiveness in the mahalla. If a pressing issue emerges, it should be addressed during the next extension visit or by telephone.

IV. Structuring the overall EAS system

The structure of the EAS "above" the mahalla is in some ways simple, as it follows the structure of the GoTJ through its administrative-territorial hierarchy. However, the real point of the structure is to open pathways for information flow between specialized agencies and units. The activity to create and sustain that structure is a recurring set of capacity assessments, diplomacy and information exchanges, and capacity-building activities. At the time this manual was drafted, much of that institutional/administrative capacity building work remains to be done, although its contours are clear.

To identify what needs to be done, it may be useful to consider what the superstructure of the EAS must accomplish. Smallholder agricultural practices and technologies can be improved in different ways. Smallholders who are underutilizing a technology or practice – that is, not using an existing practice as well as they could, can be helped to improve that practice or technology. Or a technology or practice new to the community but used elsewhere (in Khatlon, Tajikistan, Central Asia, or internationally) can be introduced from outside and taught to the smallholding farmers.

Identifying, testing, and helping to apply new technologies from outside the country is challenging. One source of such technologies and practices are international consultants, who know world best practices that have not yet become known in Tajikistan. Another source of such technologies and practices is the country's own research capacity, particularly that of the Academy of Agricultural Sciences. However, the Academy's capacity needs to be evaluated, and its research potential rebuilt.

The province and district agricultural administrations can serve as sources of subject matter specialists familiar with current practices in Tajikistan. They, like their counterparts in the Ministry of Agriculture, are used to being the conduits for informing farmers of improved practices and new technology. However, their facilities are in need of renovation, the staff is aging, and they are used to giving orders to large farms, not listening to informational or training requests from smallholders. Their capabilities

and potential need to be assessed – and every administration will probably be different – their staff retrained, and their facilities upgraded.

The EAS' own production specialists, researchers from the Academy of Agricultural Sciences, and government officials should join with smallholders and large farmers, as well as other stakeholders in the agricultural sector, in the good practice councils proposed as part of the FTF/T EAS.

FAST is completing many of the assessments required and beginning to build the structures to bind the EAS together. However, the longer-term work needed to rebuild the agricultural education and research system in Tajikistan is beyond FAST's current tasks. Starting these reforms is a task for follow-on projects. It is also a task for the international development banks, which can design and develop longer-ranged and larger-scale projects than any individual donor.

A. Private extension resources

Input dealers / "agro shops"

Most household farm inputs come from saved seed from the previous season or small purchases of uncertified materials from the bazaar. However, Tajik entrepreneurs and a variety of donors have established small and medium-sized agricultural input stores in the ZoI. For the EAS, those "agro shops" are, first of all, a source of the certified and registered inputs that USAID requires be used. More fundamentally, however, they can be, if their proprietors are knowledgeable, another mechanism of support for mahalla-based learning groups. In at least a few cases, these shops are already trying to provide EAS to their clients. Creating linkages between them and the farmer learning groups is a way to expand that clientele. The agro shops are more interested in bigger customers, and will always respond first of all to large orders that are paid in advance.

Initial experience has been uneven. For example, "certified" corn seed from one shop had only a 40% germination rate. FAST staff and learning groups are compiling resource directories of dealers and shops in their jamoat and district as FAST staff work with merchants on sales opportunities offered by groups.

Extension NGOs

Other donor activities have helped to create and support a variety of non-governmental organizations to carry out extension activities on contract from donors or on a fee-for-service basis. There is no immediately obvious place for them in carrying out the FTF/T EAS work with household farms, since they add an additional cost and layer of management complexity to the activity. However, they can certainly benefit from the FTF/T EAS work in improving their skills to work with larger commercial farms.

Microcredit / microfinance

Several microfinance organizations, such as Imon International, have trained their staff in evaluating farms creditworthiness. In the process, they are moving closer to providing extension and advisory services. At present, these services are for larger farms, but they could be redirected to work with household farms as well. Similarly, the recently concluded TAFF project tied its lending to a requirement that its farms accept its agronomist's advice. Those agronomists have now established themselves in the Sarob cooperative.

B. Government resources in Khatlon

Provincial and District Agricultural Administrations

These administrations, already described, are the basic GoTJ resource in Khatlon.

GoTJ testing stations

The GoTJ had an extensive network of seed testing stations, local research and demonstration plots, and similar facilities. Most of them are gone, either destroyed during the Civil War, looted or broken up during the land reform process. However, one element of the EAS test is to see what may still be used to provide demonstrations, seed adaptation and technology localization, and similar support for the EAS.

Academy of Agricultural Sciences research institutes

The Academy of Agricultural Sciences of Tajikistan is mandated to conduct pure and applied research on agricultural-related topics at the request of, and with funding from, the Ministry of Agriculture. The Academy and its institutes are much reduced in stature and potential from what they were twenty-five years ago. However, they are the national research capacity, and cooperating with them, including possibly supporting specific applied research, should be explored. In many cases it is easier to rebuild institutional capacity than to build it from scratch.

Several Academy research institutes have branches in the FTF/T ZoI. They have provided seed to FAST, and as this manual is written FAST is negotiating with them to provide training for staff. Other avenues of cooperation are being explored.

Agricultural junior colleges and Tajik Agrarian University

The Bokhtar Agricultural College in Bokhtar raion of the FTF/T ZoI trains agricultural specialists for the region, while the Tajik Agrarian University trains specialists for the country. Both need significant assistance to modernize curriculum, modernize teaching methods, and upgrade instructors' skills. However, they are the existing educational base for Tajikistan's agriculture. No matter how well the FTF/T EAS may perform initially, if there is nowhere for it to get a continuing supply of new agricultural specialists, the system will collapse as the country's current agricultural specialists retire.

Overall, they need upgrading given their aging faculty and outdated curricula. Without these investments, the sustainability of EAS will be compromised, since there will be no qualified people to work in these institutions over the long term. Once again, a thorough evaluation is needed. One future possibility is a twinning arrangement with a US land-grant university, such as UIUC.

Interns from the Bokhtar Agricultural College or the Tajik Agrarian University should be utilized. Students are required as part of their course work to do an internship in the field. Students who received stipends are still required to spend several years at assigned work in the countryside. If they can do it in their home villages, then they become source of local expertise. Working with the FTF/T extension system can be a valuable internship opportunity. In addition to internships as part of their education, many Tajik youth already offer their services as lead farmers for donor projects in order to build contacts and work experience. Using such "lead farmers" in the FAST program is another teaching opportunity.

C. Khatlon agricultural advisory council

The FAST EAS is reviving an agricultural advisory council at the oblast' level in Khatlon, to include representatives of all stakeholders. The council will act as a combination steering committee for the EAS, community liaison with the Khatlon Administration and the oblast' agricultural administration and a place to exchange ideas about better agricultural practices, particularly for smallholders.

One of the policy analysts in the Khatlon oblast' Agrarian Reform Implementation Support Unit will act as convener and secretary of the council.

The name is chosen purposefully. Where many current production practices are poor, simply making moderate improvements will contribute significantly.

However, it seems likely that a raion-level version will be appropriate for the developed and scaled-up FTF/T EAS. The test will examine whether or not raion-level councils are possible and desirable.

V. Implementing the FTF/T EAS

Since the FTF/T EAS described in this manual is designed to work with households at the mahalla level, and to a more limited extent with small commercial farmers, it has to be carefully introduced in each new community. International experience with developing modern EAS, results of introducing EAS to commercial farms, lessons from community development efforts in Tajikistan, and conclusions drawn by FAST staff from initial experience with the methodology for introducing the EAS, all confirm that successfully introducing and extending the EAS is initially labor-intensive. However, introducing the EAS is no more labor- and time-intensive than distributing one-off humanitarian aid has been in Tajikistan. Unlike relief efforts, the EAS offers the chance to build enduring relationships based on learning, innovation, and mutual benefit. With continued practice and improvement, the time needed to introduce the EAS in a new locale is becoming shorter, but will never be insignificant. [20] However, as this is a system, the establishment process should need to be done only once.

The steps for establishing the EAS in a new mahalla are summarized in Box 3 and discussed further under the corresponding headings in this section. The content of activities evolves as the project learns to be more effective; groups refine and slightly adapt processes to each mahalla in real time. This "adaptive capacity" cannot be learned in a typical training program, but rather is gained through guided field experience. Although other dimensions of the EAS will likely work directly with small commercial farms in the follow-on project and link mahallas with "external" interested parties such as research institutions and input dealers, this section deals only with the procedure for beginning work in a mahalla.

[20] Experience with FAST groups is showing that, once staffs are well-trained, intensifying efforts and adding more groups to an area may be done more rapidly and with less staff. The ongoing support for well-established groups would require far less investment and would be managed by districts.

Box 3. General steps for establishing the FTF/T EAS in a new mahalla

A. Advance work in the mahalla

B. Participatory Extension Workshop

C. Crop Analysis Workshop

D. Extension Learning Activities / Fieldwork

E. End-of-Season Evaluation Workshop

F. Repeating the process with additional groups

These steps ensure that participants lead the process, drive the EAS, and that FAST and the later follow-on project only make commitments they can keep. Results will differ across groups and not every innovation tried will succeed. The purpose of the groups is not to simply adopt technology experts provide, but to choose and test innovations, deciding which will work effectively in their setting. A conventional approach will not create the skills needed to continue to improve household farms.

All FAST workshops integrate a set of adapted participatory rural appraisal / participatory learning and action (PRA / PLA) tools into carefully sequenced workshops. Combining tools creates a strong picture of the situation.

The use of PRA / PLA tools is not original. But those tools are structured, adapted, and arranged in particular ways to create a result at the end of each workshop or activity—a result that was shared and became a mutual platform for action. For learning groups the tools create opportunities to share perspectives, compare experiences, and discuss potential actions. The tools are not an end, but a means to a productive conversation leading to new action. For extension staff, the data generated become another point of analysis and comparison across groups—this larger look lets them integrate what is learned in a single group into approaches, materials, and understandings that inform work with groups across the system.

MEAS has produced many fact sheets on participatory tools and methods for extension.[21] Adaptations of some of those tip sheets for tools and methods used in FTF/T EAS design and developments are in

[21] Available online at: http://www.meas-extension.org/tip-sheets/participatory-methods

Annex 17 through Annex 21.

A. Advance work in the Mahalla

A senior implementing partner staff member, or, if the FTF/T EAS is already active in that jamoat and there is a jamoat extension coordinator, the JEC, is the first to visit a mahalla prior to forming a group. The JEC or other senior staff member meets with the mahalla chair (rais). The JEC or staff member explains the approach, gauges the interest of the mahalla, and if interested asks the *rais* to recommend an initial lead farmer to invite women and convene the first participatory extension workshop. Often, an EAS facilitator or agricultural production specialist will make an additional visit to meet a small group of women and prepare for the workshop.

FAST does not perform a means test or wealth ranking to ensure the number of poor participants; however, the initial lead farmer or small group is encouraged to seek out women from different areas of the mahalla who "face challenges in their households and farms and would especially benefit from a group." This request has normally been enough to obtain an appropriate level of socio-economic and geographic diversity in the group.[22]

B. Participatory Extension Workshop

The first public event by the FTF/T EAS in the mahalla is a Participatory Extension Workshop (PEW). The general agenda for the PEW is given in **Error! Reference source not found.** below. The complete P articipatory Extension Workshop Facilitator's Guide is in Annex 15.

. The PEW Observation and Documentation Guidelines for Field Notes (Annex 16) are provided for extension staff's first PEW workshops to capture strengths and weaknesses.

The local residents who have offered to help organize the event invite their neighbors to participate in the PEW. The primary purpose of the workshop is for women in the group to describe their experience on their household farms and collectively share and analyze what they do and their aspirations for improvement. They prioritize a first crop as a starting point. As they discuss, deliberate, and review the challenges they face, a group forms. This is often the first time anyone has asked them about their farming activities and almost none of them have ever shared these ideas within a group of women.

Another purpose of this event is for FAST's extension team to understand the agro economic situation of the household farms through careful listening and analysis of the results of the participatory exercises. The picture of the household and mahalla farming system that results is the foundation for future work and a strategic approach to improving farming practices. The time of rural women from poor households is precious and the relative opportunity cost much greater than wealthier

[22] Diversity is useful to the group. Most women are roughly in the fourth quintile of wealth; a few may be in the third and the fifth. Wealthier households may be far more aggressive at adopting innovation, as their risk is lower, while poorer households can be more risk averse. When the group is diverse, poor women naturally reach out to very poor women—even if they do not attend the group. After the group is established, women themselves begin to recognize this opportunity to spread ideas to all—and form more groups.

households,—therefore women should never wait for staff members to arrive. They are accorded the same respect as professionals provide to any client.

At the initial PEW, participants are given a lunch and a small present, normally school notebooks and a pen. The crop analysis workshop also often concludes with a lunch (see below). At later events, unless they run a-half day or more, participants receive nothing other than a tea break at EAS expense. At the first event, the participants are giving up their time, and, to some extent, their knowledge, for the EAS without knowing anything about it. Once the group is formed, the group works together to develop better production practices and receive knowledge. So it is appropriate to recompense the participants in the PEW, in a small way, for their time. It is not appropriate to do so for later events.

Women who return for the subsequent meetings learn that, for their time invested, the EAS shares information and supports innovation in a measured way, while distributing few inputs.

The initial PEW workshop also:

- Gives participants the chance to discuss their own situation
- Helps facilitators and FAST to understand the agro-economic situation
- Clarifies gender division of labor and outmigration issues
- Identifies other existing groups in the mahalla
- Identifies general needs/priorities
- Identifies more progressive household farmers, farms
- Identifies possible mahalla extension lead farmers
- Identifies possible resource persons in the mahalla

Of all FAST extension activities, the PEW requires the most staff support. Experience shows that the PEW needs different people:

- The jamoat extension coordinator from that locality if one has been hired;
- A senior FAST staff member to accompany the local leadership during the workshop. Where there is a JEC, the JEC takes on this role.
- Two EAS facilitators to conduct the workshop and document it afterwards
- A staff agricultural production specialist to co-facilitate and assist with technical discussions of farming practices.

Participatory Extension Workshop agenda

Materials required *Duration - 2 hours 20 min.*

- *Markers*
- *Masking tape*
- *Flipcharts*
- *Notebooks*
- *Posters*
- Training materials

TARGET: Extension team from FAST program will introduce participants to the training program and schedule.

OBJECTIVES: *To help farmers share experiences on their household farms, and identify priority crops.*

Table 8. FAST Participatory Extension Workshop (Module -2)

Duration min.	**Activates**	**Key Concepts**
5	Welcome & Introduction	Extension team and women's group introduction
5	Ground Rules, Agenda Announcements & Purpose	Explanation of workshop activities & purpose
5	Brief information of «Farmer Advisory Services in Tajikistan» program.	Revision: Goals and objectives of program for newcomers
30	Discussion of household farms	Participants share experiences from their household farms (Group discussion)
30	Advisory services discussion	Agricultural Production Specialist provides advisory services based on women's group requests/ topics
10	Prioritizing & selecting a crop (s)	Participants identify potential crops for learning agro-technology cultivation of selected crop(s) (Group discussion)
10	Crop calendar of selected crop(s)	Agricultural Production Specialist discusses crop calendar with women's group
10	Selecting leaders of mahalla and demo plots	Participants select leaders of demo plots for agricultural trainings (Group discussion)
10	Future workshop steps	Extension team and group makes plan for future workshop activities according crop calendar.
20	Demo plot selection	Extension team and group select demo plots according to criteria
5	Summary	1. Questions and answers 2. Achievement of goals

Note:

3. Participatory Extension Workshop Facilitator assisting Agricultural Production Specialist and facilitating groups during workshops, seminars and trainings

4. *Jamoat Extension Coordinator with mahalla leaders organizes the place for holding training activities.*

C. Crop analysis workshop

About two weeks after the PEW, another workshop is held with each new group. This second event, the “Crop Analysis Workshop” (PAW) is then repeated each subsequent season when the FTF/T EAS works with the same group. The outline of a PAW is Table 9.

Annex 22 contains the Facilitator's Guide for the Crop Analysis Workshop. Annex 23. Contains a MEAS fact sheet on Problem Tree Assessment. The Problem Tree is the main participatory tool used during the PAW.

The PAW builds on the PEW by focusing on one crop or group of crops identified and agreed upon by the group as a starting point for work together in the upcoming season. This PAW should occur at least a month before planting or commencement of field activities. This session continues the process of creating an autonomous group from what was a collection of neighbors.

The core purpose of the workshop is for the group of women to discuss the issues and challenges they face in production. These may be issues such as quality of planting materials, pests and disease, or cultivation techniques or they could involve issues around water and soil conservation and management or soil fertility. The issues are talked through and some potential solutions are raised. One tool used for this purpose is the problem / solution tree analysis. It has proven easy to learn and conduct. The resulting richness and complexity of such a tree is impressive.[23]

The extension system achieves its results, above all, by assisting smallholder farmers to innovate thereby increasing and improving their production for consumption and sale. Each new crop added requires intensive discussions among FAST staff, as they build on workshop results. They compare results of the crop analysis of the same crop across groups—together they create the extension "menu" which drives activity throughout the season. So the extension team then identifies innovations to address challenges and shares them selectively according to the needs of a particular group.

Although eventually the system should be able to provide assistance with a great number of crops and activities, it began by concentrating on a few promising crops. At this point there is a potential tension between the need to build the EAS on participatory decision-making by smallholders and their families in order to improve the chances for them to "own" the system and to sustain it, and the need to concentrate on a few things. In reality, for the first season, potatoes, tomatoes, or corn were high priorities for almost all the groups. After the first season, the menu of crops gradually broadened based on group demand and FAST's ability to align staff experience with needs of the groups.

Crops are planted across Khatlon during three seasons depending on suitability, preference, and availability of water—as a result, some areas only have one or two seasons.

Tajiks suffer both from a low intake of total calories and from poor overall nutrition. Livestock provide a significant source of nutrition (and wealth) for many households, but there is an enormous shortage of pasture and fodder in many areas. Although most participants consume a majority of what they grow, groups also emphasize the need to sell surplus for cash and grow more cash crops. Wheat, corn and alfalfa are also particularly suitable for the households' "presidential land."[24]

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[23] FAST staff sat down with staff of a CGIAR center and reviewed several problem trees around a particular crop. When the CGIAR staffs were asked to add additional problems, their response was, "the women captured them all."

[24] Presidential plots are taken from the large farms' fields for distribution to households.. It is often located far enough from the family home that it is difficult to work intensively or to guard against theft.

The PAW includes the group nominating three “lead farmers” from the group according to a set of criteria and ability to perform basic tasks:

- Experienced, respected, committed
- Live in different parts of the mahalla
- Like to try new things and can set aside a small learning plot to experiment and demonstrate new production practices
- Have enough available labor in their household to provide day-to-day care of crop on learning plot
- Can work a few hours per week on:
    - Their learning plot
    - Communicating with jamoat agriculture workers and
    - Gathering the group for regular meetings

The three nominated lead farmers then choose a primary contact person for FAST amongst themselves. The structure starts simple and the group selects not FAST.

At present, these “second phase” workshops require a FAST facilitator to conduct the workshop, and a FAST agricultural production specialist to co-facilitate the workshop, draw out deeper reflection on agronomic aspects, and document it afterwards. The mix of FAST staff provides the agricultural analysis with technical backstopping and allows the technical production staff to build facilitation skills needed for further work with learning groups. Facilitators with limited agricultural background also deepen their familiarity with technical production aspects. During testing, the resulting depth of knowledge on crops flowing from the group impressed our professional agronomists and partners from international research institutes. The workshop lasts about three hours. The following outline presents an overview of the PAW:

Crop Analysis Workshop agenda

Materials Needed: *Duration - 1 hour 20 min.*

- *Flipcharts*
- *Notebooks*
- *Posters*
- *Training program*
- Training materials (brochures)
-

TARGET: Extension team from FAST program will help household farmers increase and improve agricultural production for family consumption and sale.

OBJECTIVES: *To help household farmers to learn adoptable Agricultural innovations according to their demands.*

Table 9. Agenda for a Crop Analysis Workshop (PAW) (Module -3)

Duration min.	**Activates**	**Key Concepts**
5	Welcome & Introduction	Group of women welcomes Extension team
5	Ground Rules/ Agenda & Purpose	Explanation of Workshop activities & Purpose
10	Question and answers	Agricultural Production Specialist identifies women's group experience about selected topic(s) (Group discussion)
45	Providing Agricultural Innovations	Agricultural Production Specialist provides Agricultural Innovation for selected crop(s) on women's group demand. Theory and practical – depends on workshop activities.
5	Summary	1. Questions and answers 2. Achievement of goal 3. Quality of the work

Note:

1. Participatory Extension Workshop Facilitator assisting Agricultural Production Specialist and facilitating groups during workshops, seminars and trainings
2. *Jamoat Extension Coordinator with mahalla leaders organizes the place for holding training activities.*

D. Extension activities / fieldwork: experimenting with innovations

In 2014-'15, a demand-driven list of crops for learning group extension expanded (see Table). Though more choices were available, groups limited their choices to ten crops.

Table 10. Crops with which FAST is assisting HFLGs in 2014-15 (next page)

Crop \ Намуди маҳсулот	**Season 1 harvest date \ Мавсими 1 вақти ҷамоварии ҳосил**	**Season 1 Planting date \ /Мавсими 1 муҳлати кишт**	**Season 2 harvest date \ Мавсими 2 вақти ҷамоварии ҳосил**	**Season 2 Planting date \ Мавсими 2 муҳлати кишт**	**Season 3 harvest date \ Мавсими 3 вақти ҷамоварии ҳосил**	**Season 3 Planting Date \ мавсими 3 муҳлати кишт**
Маккаи дон \ corn for seeds			25 September to 15 Oktober\25 сентябр то 15 октябр	15 May to 10 July\15 май то 10 июл	0	0
Помидор \ Tomato	10 - 15 June \ 10-15 Июнӣ	5 March to 20 March /с 5 Марта по 20 Марта	20 August to 25 Oktober\20 Август то 25 Октябр	15 May to 10 July\15 май то 10 июл	0	0
Бодиринг \ Cucumber	10 - 15 June \ 10-15 Июнӣ	5 March to 20 March /с 5 Марта по 20 Марта	20 August to 25 Oktober\20 Август то 25 Октябр	15 May to 10 July\15 май то 10 июл	0	0
Макка барои хуроки чорво \ Corn for feed	20 - 25 July \ 20-25 Июл	10 Марта по 10 Апреля /10 March to 10 of April	25 Oktober to 15 November\25 октябр то 15 ноябр	15 May to 10 August\15 май то 10 август	0	0
Сабзи \ Carrot	20 - 25 July\ 20-25 Июл	20 September to 10 October /с 20 сентября по 10 Октября	25 Oktober to 15 November\25 октябр то 15 ноябр	15 July to 10 August\15 июл то 10 август	15 May to 15 June\15 май то 15 июн	10 Oktober to 20 Oktober\10 октябр то 20 октябр
Карам \ Cabbage	20 - 25 July\ 20-25 Июл	10 Января по 10 Февраля / 10 January to 10 of February	25 August to 15 Oktober\25 август то 15 октябр	15 May to 10 August\15 май то 10 август	20 November to 5 January\20 ноябр то 5 январ	10 September to 10 Oktober\ 10 сентябр то 20 октябр
Картошка \ Potato	15 May to 10 Jun\ 15Май то 1 Июн	25 November to 20 December /25 Ноября по 20 Декабря	25 Oktober to 15 November\25 октябр то 15 ноябр	1 to 10 August\1 то 10 август	15 May to 10 June\15 май то 10 июн	25 November to 20 December\25 ноябр то 20 декабр
Юнучқа \ Alfalfa	25 March to 25 November\ 25Март то 25 Ноябр	20 Август по 10 Октября / 20 August to 10 October	25 Oktober to 10 November\ 25 октябр то 10 ноябр	0	0	0

Гандум \ Wheat	15 May to 10 Jun	20 September to 25 November /с 20 Сентября по 25 Ноября	0	0	15 May to 10 June\15 май то 10 июн	25 November to 20 December\25 ноябр то 20 декабр
Лук / Onion	5 Сентября по 10 Октября /10 September to 10 October	6 Сентября по 10 Октября /10 September to 10 October	7 Сентября по 10 Октября /10 September to 10 October	8 Сентября по 10 Октября /10 September to 10 October	9 Сентября по 10 Октября /10 September to 10 October	10 Сентября по 10 Октября /10 September to 10 October

After the PAW, the JEC, and, as needed, either or both a facilitator and an agricultural specialist continue to meet with the group every one to two weeks for regular extension activities based on a crop cycle (from land preparation to post-harvest). The bulk of these activities are spent learning about innovations the group will apply on its three learning plots. Each group normally designates three learning plots per season of up to three hundredths of a hectare each (.03 ha) each. FAST does not provide inputs to all farmers in a group; it only supports experiments on the learning plots in order to mitigate the risk from the experiments. In most cases, group members do not wait until the season concludes but introduce most of the innovations on their household farms as well.

The problem and solution tree exercises from the PAW are the basis for developing extension materials to introduce innovation and support work with the group around their chosen crop. Once created, existing FTF/T EAS learning material allows extension staff to choose material that aligns with the problems the group faces. For example, whitefly may be a priority problem for one group producing tomato, while another group has the problem under control. In this case, the extension team does not impose predetermined curricula on the group, but chooses FAST extension material that fits the group's need.

The list below outlines the steps in the training process followed with the learning groups for the seasonal crop(s) selected and considerations for the farmers.

Topics for extension training and recommendations to the household learning groups

1. **Site selection**:
    - Geographic location: level, slop, location of trees, shading (make site map)
    - The state of the irrigation system (channels, hydro-technical installations, discharges and collectors)
    - Water (seasonal availability of water by month)
    - The level of groundwater
    - Salinity issues
    - Vegetation areas
2. **Crop rotation:**
    - If and how often to change the place for sowing crops (types of crops rotated and time intervals)
    - What size of the partition-sown area (for each crop separated as land and which crop is preferred).
    - In the plot used, manure turnover or not.
    - Is there a field record book of the annual crops sown on the farm?
3. **Selection and preparation of seeds:**
    - Organization of buying seeds, choice of purchases and local vendors
    - Buy seeds from Agro-branded stores, where there is the company's address, telephone number and other contact information
    - When you purchase seeds it is necessary to pay attention to the label on the package: there must the name of the seed variety, the harvest year, sowing date, seeding rate, seeding depth, resistance to some diseases and pests.

4. **Preparation of compost and use of seasoned manure:**

- What is compost and how is it prepared? (Compost is an organic fertilizer, prepared from decomposed plant residues).
- Methods for the preparation of compost (in concrete pits, in bags, on a level, elevated place in the open or in the planned sowing area).
- How much time is required for compost to be prepared (from 2 to 6 months during the summer time and in cool areas up to 1 year)?
- The common use of making compost in an unlined pit is not a good method, as much of the nutrients are lost to the soil.

5. **Preparing the ground for sowing:**

- The use of organic and mineral fertilizers
- Hand tilling or mechanized plowing
- Leveling the field
- Cutting irrigation furrows

6. **Sowing and planting crops:**

- Costing of seeds and seedlings
- Preparation of seeds for sowing: soaking in water
- The choice of method and planting scheme (Broadcast, close drill seeding scheme or in wide furrows, using tools to facilitate sowing or planting)
- The best time for planting seedlings and sowing seeds (evening or morning)

7. **Inter-cultivation of selected crops**

- Introduction of the first fertilizer dressing according to application rate and type of crop, making sure the soil is well-mixed after fertilizer application
- Cutting irrigation furrows
- The choice of method and when to apply the 1st watering (irrigation method through the rows or rows each, depending on the crop)
- The remaining row treatments carried out such as the method (in some cultures is carried out once, twice, sometimes three times and four times the inter-row cultivation, are only changing the time, the rate and method of providing water depending on the crop)

8. **Water requirements for various crops and irrigation intervals**

- Each crop has specific water requirements that should be maintained for good production and management
- Some crops are watered best at night and some early in the morning
- Test soil moisture before watering as too much water (or too little) can encourage plant pest and disease
- Consider inter-cropping to maximize production and water use
- Consider mulches and compost to help maintain soil moisture

9. **Diseases, Pests and their control:**

- Anticipating the appearance of diseases and pests
- Determine the threshold number or level of diseases and pests

- Selection of pesticides and application methods (Organic alternatives or purchased pesticides. Methods: of preparation and application rates)
- Select the timing and rate of pesticide applications for treatment against pests and diseases

10. Determination of the expected yield and the target harvest:

- Conduct testing before the harvest, it will give the result of the expected harvest and will provide information about the storage space required (and for seller's fields it will approximate the price of the gross harvest).
- Target collection dates: early collection for transport to distant markets, mature collection for fresh consumption.

11. Storage and processing of the crop:

- Each crop has its own specific storage methodologies: depending on temperature, humidity, terrain, light or dark areas. Some crops can be stored on the vine and under plastic film, like grapes.
- Crop processing depends on the type of crop, you can use a method of heat processing or cold/cool storage (before a heavy frost put in a bag), also methods of chemical treatment (SO4) - dehydration, caning, squeezing and bottling juice, if you have special refrigerators, crops can be stored fresh for long-term use.

At this point, extension activities and the introduction of innovation are ongoing. The PAW workshop or a version of it is repeated with each new crop a group works on in successive seasons. The goal of the extension work is twofold, growing food and growing the group itself. Successive seasons of working with the group are needed to develop a voluntary mahalla learning group solid enough to achieve its purpose with minimal external assistance.

Formal sustainability of groups will require some investment from government or donors in a support structure (see the sections below on scaling up and sustainability). Not all learning groups will become permanent, but the positive effects should be long-term—capacity to make better decisions, experiment with new production methods, and work together to achieve common goals. The gains in status should also be sustained beyond the life of the group. Attendance at regular meetings is the minimum that should be expected. During the season, these meetings may take place as often as once a week at a learning plot, depending on the crop, the group, and the assistance requested and offered. Depending on the need and moment in the growing season, these extension visits could last from an hour to half a day (or longer if there is a capacity development activity).

Learning group activities will depend on the goals of the learning group. They are likely to be based on a simplified farmer field school methodology. But they are not limited to the crop experimented with on the learning plots – the extension team fields any agricultural or nutrition questions the group has, and if they cannot be answered immediately, they return with answers on the next visit or contact a group member by phone.

E. End-of-Season Evaluation Workshop

At the end of every growing season FAST holds an End-of-Season Evaluation Workshop (ESEW) with each group. **Error! Reference source not found.** is the agenda for this workshop. The complete End-o f-Season Evaluation Workshop Facilitator's Guide is included in Annex 24.

This participatory evaluation workshop allows the groups to evaluate the innovations and quantify them with a simple cost-benefit analysis of results for the season. They also discuss their perceptions about the program, make recommendations, and start to discuss ways they wish to reach other women. This is a careful and thorough four-hour process. While the group is the primary focus, the event also generates data on innovations adopted for the project's performance monitoring plan.

Materials needed: *Duration - 1 hour 20 min.*

- *Markers*
- *Masking tape*
- *Flipcharts*

TARGET: Extension team of FAST program will help household farmers to evaluate adopted agricultural production technologies (innovations).

OBJECTIVES: *To helping household farmers identify adoptable Agricultural Innovations, and to calculate expenditures and income from their crop(s).*

Table 11: End-of-Season Evaluation Workshop (ESEW) (Module -4)

Duration min.	**Activities**	**Key Concepts**
5	Welcome & Introduction	Extension team and women group introduction
5	Ground Rules/ Agenda & Purpose	Explanation of Workshop activities & Purpose
20	Type of production techniques learned from the FAST program	Understanding of technologies adopted by the women's group and their impact on households' farming, discussion / assessment about effectives or limitation of the innovations (Group discussion)
45	Income-expenditure analysis	Analyzing the result of harvest (Group discussion)
5	Summary	1. Interview of participants 2. Achievement of goal

Note:

1. Participatory Extension Workshop Facilitator assisting Agricultural ion Specialist and facilitating groups during workshops, seminars and trainings
2. *Jamoat Extension Coordinator with mahalla leaders organizes the place for holding training activities.*

VI. Expansion and scaling up throughout the FTF/T ZoI

Continued focus on women

With an efficient well-organized structure and a seamless transition from FAST to the follow-on project to implement the FTF/T EAS throughout the ZoI, scaling up to reach all villages in the entire ZoI should be possible. A group or groups will still need to be formed in each mahalla. A typical mahallas will need about one farmer learning group for every 100 households to saturate the mahalla and serve the needs of household farms well. In practice, the initial creation of groups has turned out to be relatively straightforward. The workshops require relatively little time, yet they jumpstart group formation and help the group focus squarely on practical concerns around farm production.

Reaching the entire FTF/T ZoI is an on-going process. Once the work of a season (of which there are three annually) with groups is underway, the balance of the season can be used to begin work with additional groups. Losing this time, for instance if the handover of the FTF/T EAS from FAST to the follow-on project is not managed seamlessly, will mean adding at least a season and probably a year to the time needed to attain the full spread of the system—and the greater risk of losing the momentum and trust of groups.

A subsequent step, which there has not yet been time to work out and test, involves helping learning groups evolve to a more sophisticated approach actively participating in the market beyond current informal activities. This process will have to be explored during the scaling-up activity. Baseline data gained from PEWs shows most households are in fact subsistence, consuming nearly all of what they produce and selling any small surpluses curbside or in a community market.

Group-driven strategy for reaching more women

By the end of a second season, many groups began to exhibit significant initiative to reach out to friends and neighbors and either form completely new groups or divide their group into two or three and grow new groups around them. Either strategy is possible as women identify new lead farmers among themselves to hold new groups together. This kind of group formation is highly preferred to project-driven approaches. Natural spread ensures greater connection between groups and a much better chance of sustainability.

Therefore the project should only launch one group per mahalla (or even village if the mahalla are in close proximity). Encouraging and supporting natural intensification is more sensible. If groups fail to multiply, others can still be initiated by the project later.

Organized cross-visits between an established group and a new mahalla are another effective way to initiate group formation by creating demand from positive exposure to other groups' success.

Time and staff resources

For the first test participatory extension workshops in November 2013, the EAS facilitators, with international STTA guidance, required about eight working days to completely prepare, hold and document the event. This time has fallen to two days as documentation has been simplified and the teams have become more effective.

Given the need to document each workshop and organize materials, this workload will require a growing number of extension facilitators and production specialists. Once groups have been formed and strengthened—a process estimated to take four or five seasons of interaction over the course of

two years—the maintenance of groups will require far less staff. Long-term support should require as few as one person per jamoat or a three-person team per district (36 – 76 extension field staff). The potential gains to Khatlon's agriculture sector and for poorer household farms, would cost roughly between US$.5 million and US$1 million per year. The focus of this phase would be introducing new innovation.

As the jamoat extension specialists are hired and trained, regular work with the mahalla learning groups largely shifts to them. However, both the facilitators, skilled in group formation and dynamics, and the production specialists will continue to be called on to back up the JECs.

There are approximately 750 mahallas in the ZoI. So a JEC in each jamoat, plus 12 facilitators and 12 agricultural specialists, should be able to form and sustain groups with an average of a visit every two weeks and 4 to 4.5 days per week in the field with two to three visits per day. As noted above, for good saturation, many mahalla will need more than one group. These are large numbers of staff, but if they do their work well enough to interest communities in the EAS, and if the overall EAS adequately supports the mahalla learning groups, the group formation should be a one-time investment.

Annex 1. A Taxonomy of Post-Reform Farm Types in Tajikistan

	Government farm	Subsidiary farm	Dehqon ("peasant") farms				Household farm	
			association	collective	family	individual	household plot	presidential land
administered by	Ministry of Agriculture	other Ministry or government agency	member farms	members	family	owner	family	family
reports to	Ministry of Agriculture	other Ministry or government agency	Goskomstat, Tax Administration	Goskomstat, Tax Administration	Goskomstat, Tax Administration	Goskomstat, Tax Administration	jamoat	jamoat
land owned by	State	State	State	State	State	State	State	State
land administered by	Goskomzem	Goskomzem	Goskomzem	Goskomzem	Goskomzem	Goskomzem	jamoat	jamoat
non-land assets owned by	State	State	member farms	farm, farm members	farm, family	owner	family	family
land-use shares determined?	no	no	yes	yes	yes	yes	n/a	n/a
land plots demarcated?	no	no	yes	no	no	yes	yes	yes
number of land-use shares farm uses	n/a	n/a	usually one per member farm	unlimited; one per member	unlimited; one per member	one	n/a	n/a
is legal entity?	yes	yes	perhaps	perhaps	perhaps	perhaps	no	no
legal purpose	commercial farming	subsistence farming (production for use by administering agency)	commercial farming	commercial farming	commercial farming	commercial farming	subsistence farming (autoconsumption)	subsistence farming (autoconsumption)
farming system	mixed crops and livestock; employees have own household farms	mixed crops and livestock; employees have own household farms	mixed crops and livestock; each member farm managed and operated independently, probably as unit with each member's household farm.	mixed crops and livestock; members have own household farms	crop farming; livestock held on household farm; may be managed as one unit with household farm	crop farming (livestock held on household farm); probably managed as one unit with household farm	mixed crops and livestock	crops
comment	seed farms, breeding farms, etc.	such a farm supplies the cafeteria in the Presidential Administration, others serve hospitals, rest homes, military and border guard units, etc.	legal form in which a central administration provides services to group of individually owned and managed farms that are physically demarcated. Rare in Tajikistan.	basically a renamed collective or state farm, but with fewer institutional constraints on the manager's power	"family" implies a blood relation but the "family" is usually much bigger than a nuclear family. May be a whole *avlod* and differ little in practice from collective dehqon farm.	Formed by one person who has seceded from a large farm with the right to use one physical land share.	the land on which the family home is built. Usually a walled or fenced compound including various farm outbuildings. Again, may be a multi-generational or very extended family.	Formerly "Land of agricultural purpose" taken from large farms for distribution to families by presidential decree. Rarely contiguous with household plot.
Russian term	Государственное хозяйство	Подсобное хозяйство	Ассоциация дехканских (фермерских) хозяйств	Коллективное дехканское (фермерское) хозяйство	Семейное дехканское (фермерское) хозяйство	Индивидуальное дехканское (фермерское) хозяйство	Приусадебный участок	Президентские земли
Translation comment	The literal English translation would be "state farm," but these are not the traditional "state farm (советское хозяйство, совхоз)."						The whole unit is the "household farm" ("домашное хозяйство, домохозяйство"). Although this is in the fundamental sense the "family farm," "household farm" is the preferable English translation to avoid confusion with the dehqon farm.	
							Before reform, when this kind of farm was symbiotic with the collective or state farm, it was called a "personal subsidiary farm" (личное подсобное хозяйство) or "private plot."	

Annex 2. The Legacy of Command Agriculture in Tajikistan

The territory of the contemporary Republic of Tajikistan (RT) was incorporated into the Russian Empire and later the Soviet Union for one economic purpose: to produce cotton for the country's needs. Especially under the Soviet command economy, production and opportunity costs were ignored in favor of producing the "needed" amount of output. The party-state governmental machinery in Tajikistan had little systemic or systematic capacity to conceptualize policy alternatives, to make reasoned policy choices, or to monitor implementation. It functioned, essentially, to carry out orders from "the center" in Moscow. The basic directive was "produce cotton."

To the extent there was monitoring of the results of policy implementation during the post-Stalin era, it was done by the Communist Party apparatus. However, the general assumption was that central orders were carried out, and, generally, reports back up the chain of command showed that. Because of the lack of effective feedback about the real effects of policies and their practical implementation, there were periodic scandals when large-scale malfeasance was uncovered. In Soviet Central Asia, such malfeasance usually involved claiming that much more cotton had been produced than was actually the case.

As of 1 January 1991, the rural territory of the Tajik SSR was organized into a network of 985 agricultural enterprises: 201 collective farms, 529 state farms and 255 "other" enterprises. "Other' enterprises were mostly inter-farm organizations for specific purposes, such as feed lots or construction organizations.5F[25] The collective and state farms were the effective local government in rural areas. Rural areas were administratively and often physically separated from urban ones by a network of residence and movement restrictions. Until 1978, collective farm members throughout the USSR were not issued identity documents – "internal passports" – and required passes from their farm managers to leave the farm. The highway police stations at district and provincial boundaries, which still can and do turn back people or goods that the local authorities do not want to be allowed out of their home territory, are a remnant of this system

[25] In the USSR all land was state-owned, as it still is in the contemporary Republic of Tajikistan. Under Soviet rule, collective farms *(kollektivnye khoziaistva,* kolkhozes) nominally held title to the farm's non-land assets (tractors, buildings, crops in the fields, etc.) and paid their members based on their work. Non-land assets on "state farms" (literally "Soviet farms *[sovetskie khoziaistva],"* sovkhozes) were government-owned. Sovkhoz employees were paid a wage or piece-rate like all other Soviet workers. State farms tended to be organized in places where collective farms were not even nominally profitable. What current Tajik statistics and donor discussion call "state farms" are still state-owned, but they are not sovkhozes. For simplicity, further references are to the "collective farm system" or "command agriculture."

The preponderance of state farms in the Tajik SSR indicates that the central planners in Moscow did not believe that cotton cultivation in Tajikistan could be or was profitable given the terms of trade between Soviet cotton mills and the farms. The main reason for farm unprofitably was almost certainly the high cost of irrigation facilities and the resulting need for state subsidies for irrigation.

Cotton is a particularly labor-intensive crop. Although elsewhere in the world cotton picking was successfully mechanized in the mid-twentieth century, Soviet practice continued to rely on manual laborers for planting, thinning, weeding, and, especially the repeated passes through the field required for harvest. Manual laborers, almost all women, still do this work in contemporary Tajikistan.

Whether to maintain this farm labor force, because of ethnic or colonial bias, or simply because of popular resistance to leaving home, Soviet Tajikistan did not experience the migration of labor from rural to urban areas that, despite residence restrictions, characterized the majority-Slav regions of the former USSR. In fact, planners moved labor into cotton regions from elsewhere. By 1989, 65 percent of the Tajik population was still living in rural areas.

The Tajik Soviet Socialist Republic (SSR) enforced the restrictions on creating rural employment other than farm work common throughout the USSR. The only work available in the countryside was farm labor. Except for farm accountants, managers were overwhelmingly male. Most skilled jobs, such as machinery operators and veterinarians, were also men's work. Women and children did most of the manual labor, particularly at planting and harvest. Overuse of pesticides and other chemicals on the cotton contributed to catastrophic maternal and child health problems as a result of their employment in the fields and the poor quality of drinking water, often drawn from irrigation canals.

Skilled workers were trained only to a narrow specialty, and the success of the farm depended on its having enough workers that all major specialties were represented. Manual workers generally had secondary (8- or 10-year) education, but no formal job training. Such narrow education made sense as a policy when it was necessary to rapidly transform an essentially illiterate population to deal with modern technology, but it did not create the kind of all-round knowledge or encourage the initiative needed by a Western-style family farmer. The contemporary Tajik educational system remains this focus on producing narrowly-specialized graduates.

The collective farms were economic, political, administrative and social units, which organized the whole lives of their residents. The farms built and maintained childcare facilities, schools, medical clinics, clubs, stores and restaurants, sewers, potable water supplies, and public utilities on their territories. Farms maintained internal bus systems, and were responsible for the roads across their lands. They also were responsible for maintenance of irrigation facilities within their boundaries and often funded part or all of their construction. The formal local government, the rural council *(sel'sovet,* after 1994 called the *jamoat)* handled little beyond vital statistics (births, deaths, marriages and the issuance of internal passports) and military conscription. The various ministries responsible for social services did nothing directly in rural areas. They merely dispatched personnel who were expected to serve for several years at their assigned rural posts in order to repay the state for the cost of their education.

Collective and state farms paid a small stipend to all their members, who included both skilled and unskilled laborers, those who on farms elsewhere would be seasonal or casual labor. They also gave each family a plot of land on which to build a house and cultivate their own micro farm. These small farms, often miscalled "kitchen gardens," were literally "personal subsidiary farms," that is, attached to a family and subsidiary to the collective farm. Since there are no longer collective and state farms for them to be "subsidiary" to, these operations, which now often include small areas of former collective and state farm land President Rahmon ordered assigned to households in the late 1990s ("presidential lands"), are now called "household farms."

The collective or state farm gave household farms, either officially as a benefit or unofficially by theft, the inputs they needed. Collective farm tractor drivers plowed the household farms, and collective farm agronomists and veterinarians provided advice and assistance – effectively, informal agricultural extension services – to households. Those farm members who were actually only employed part time on the collective farm, particularly women, spent their "spare" time working on their household farms. Households ate some of what they grew and sold the balance to the Federation of Consumers' Cooperatives of Tajikistan, which ran the retail stores in the countryside and sold the farmers' spare household-farm produce in city markets.6F[26] Even under Soviet rule the household farms were regularly reported to produce over half of total agricultural output by value.7F[27]

From the late 1920s on, the area irrigated for cotton cultivation continuously expanded. As cotton cultivation expanded in the lowlands following the construction of new irrigation works, whole highland villages were forcibly relocated to provide the labor for the new cotton area. A village generally was moved as a unit and so its residents became the population of a new state or collective farm. Since the planners moved labor from wherever it could be found to wherever it was needed, neighboring collective farms often turned out to be composed of different, sometimes antagonistic ethnic groups or people from very different regions of the country.8F[28]

Because of the area's asserted unique suitability for cotton, Tajikistan under Soviet rule was never self-sufficient in major foodstuffs. Instead, it imported food from elsewhere in the USSR in return for cotton lint. Since at least the 1950s, most milling-quality grain consumed in Tajikistan has come from western Siberian regions of the Russian Federation and northern Kazakhstan.

The 12 raions of the FTF/T "zone of influence" are the heart of the region opened for cotton cultivation in the valley of the Vakhsh River by the Vakhshstroi project. Between 1928 and the present, the entire region was irrigated, regraded, settled, and turned into the principal cotton-growing region in

[26] Despite its name, the Federation of Consumers' Cooperatives was and is a government agency, responsible for fulfilling purchase and sales plans.

[27] This claim should not be uncritically accepted. State-set prices are used to value all the produce. Household consumption of their own crops is valued at that arbitrary price.

Although now called a "forecast," the Republic of Tajikistan retains annual agricultural output plans, now set in terms of sown areas and yields rather than volume of production. Because of the intrinsic difficulties of accurately measuring the production and consumption of millions of household farms, planners have tended to ascribe production of the "needed" quantity of foodstuffs to households in order to "make" the annual plan.

Because it is processed from the farms' seed cotton by ginning, an industrial process, Tajikistan's cotton lint output is included in the national statistics as an industrial crop, not an agricultural one.

[28] This process of planned movement of people to provide cotton labors continues in modern Tajikistan. People whose homes are or will be drowned by the lake behind the Rogun Dam are being moved to the Dangara steppe, where irrigation facilities for additional cotton land are under construction.

Tajikistan.9F[29] As on other giant Soviet-era construction projects, much of the work before 1956 was done by forced labor. Once the project was approved, human and economic costs were secondary to its completion, operation and successful production.

When the USSR collapsed in 1991, the agricultural sector in all the successor states faced a sudden, radical change in its terms of trade, the amount of crop a farm exchanged for its inputs. Although the effects were not immediately obvious since the government of newly-independent Tajikistan initially maintained a state monopoly on input supplies and produce sales and continued to subsidize production, Tajikistan's cotton farms were especially vulnerable to the change. Their suppliers and markets were now in a different country, and had themselves largely been put out of business by the changes. Neither farm managers nor government officials had any knowledge of the world market or any contacts with suppliers or buyers, and few international cotton traders even realized that Tajikistan was not Uzbekistan.

Most "European" Soviet citizens left Tajikistan in the early 1990s around the time of the Soviet collapse, leaving the country short of experienced managers and skilled workers.

In 1992, a civil war erupted in Tajikistan. Among its many unhappy results, the civil war severely damaged the country's agriculture. Local leaders, who quickly became, in effect, warlords, led militias in conflicts over control of territory, including cotton and the means to produce it. Fighting was particularly intense in the Vakhsh Valley, where what Olivier Roy calls the "war of the collective farms" erupted over water, land, personal feuds and ethnic conflicts between settlements.10F[30] Many residents fled. For instance, according to the United Nations, by 1995, some 95 percent of the population of Bokhtar raion, which surrounds the provincial capital Qurghonteppa, had become internally displaced persons or forced to flee to Afghanistan.

The post-colonial elite that emerged victorious from the war was based in the Kulob oblast', now the eastern part of Khatlon. The Civil War settlement required them to share government power, including some government posts, with the losers: roughly, elites based in the northern Sughd oblast'; late-Soviet era "democrats"; and the Islamic Renaissance Party of Tajikistan and its supporters. For instance, the Prime Ministership and the post of Minister of Agriculture are "northern" posts. Although those various defeated groups were given a share of government jobs, posts reserved for, or agencies headed by, representatives of the losing groups lack real, as opposed to formal, power and authority in the present regime. Understandably after a prolonged series of conflicts which almost tore the country apart, the government is also highly centralized and very distrustful of attempts to introduce elements of local control or decentralization into government.

Tajikistan had begun a process of land reform following a model that began to be applied in the USSR in 1989 and was generalized after the USSR's collapse. At the end of the war in 1997, at the suggestion of the international financial institutions, a more radical reform model was introduced. The model was

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[29] Murat Aminjanov, *История развития орошаемого земледелия в Вахшской долине [A history of the development of irrigated agriculture in the Vakhsh valley]* (Dushanbe: MEAS FSA, 2012). An English translation is being prepared.

[30] Olivier Roy, *The New Central Asia: Geopolitics and the Birth of Nations* (New York and London: New York University Press, 2007).

based on one originally developed in Latvia, adapted by the Russian Federation and then by other Soviet republics and post-Soviet states, including Azerbaijan. It was intended simultaneously to be equitable, by ensuring that all former collective and state farm workers received something, and to increase efficiency by making land and non-land assets more mobile so that more efficient successor farms could be organized.

The land reform model separated rights to land – which had been nationalized at the time of the Russian Revolution – from those to other farm property ("non-land assets"). All adults involved in agriculture – essentially all kolkhoz members and all sovkhoz workers – were to be given an equal share of agricultural land, adjusted for quality and type. Non-land assets were distributed among the same population, but in proportions based on contribution to their creation. In practice, non-land assets were to be distributed in proportion to each individual's total earnings and/or their total period of service *(stazh)* on the farm. Since non-land assets were given out in kind, a mechanism for trading physical non-land assets, or, alternatively, a mechanism for auctioning off physical assets to eligible farmers who received bidding points, was utilized.

Every post-Soviet state debated whether or not the determination of national "land shares" should be followed by their physical demarcation on the fields. In some countries, such as Georgia, where the land reform was essentially ratifying facts established by rural residents who had already effectively taken their land, full physical breakup of farms was done. In others, such as parts of Russia and Ukraine, notional land shares were not given physical form but committed to larger operating units which paid rent to the owners of the land shares.

This land reform mechanism, difficult to apply fairly and expeditiously in the best of circumstances, has not worked smoothly in Tajikistan. In Russia and Ukraine, land share sizes were determined based on the amount of agricultural land in all farms of a given raion. In Tajikistan, land share sizes were determined for each farm individually. This tended to make distribution within a district less equal. In Tajikistan the process of determining who was eligible was interrupted by the Civil War. Farm records were often lost or destroyed, and armed men sometimes dictated new ones. Most of the farms' non-land assets were destroyed or stolen

Given Tajikistan's very young population, with a current median age of 20, the length of time farm restructuring has been going on, from 1991 until the present, poses another problem. There is no clear mechanism for inheritance of land or non-land asset share rights or for giving them to people born on the former farm's territory after the eligible list was determined.

Anecdotal evidence and limited statistics suggest that very large numbers of people originally listed as eligible did not receive land shares. It is generally claimed that women were denied their land rights with particular frequency. How many people were left landless is hard to determine, since farm restructuring surveys have focused only on people who did receive land. However, it is reasonable to assume that many of those who did not get any land were the farm manual workers, those who would have to be paid year round but work only at peak times. The tendency to deny manual workers and "casual" farm members and employees their shares was commonly found in other, better studied post-Soviet land reforms. Since Tajik farm laborers are mostly women, gender bias and power relations undoubtedly both drove the denial of land share rights to many people.

The new "peasant *[dehqon]"* farms – what FAST ordinarily terms "private commercial farms" -- formed as a result of the land reform were not legal successors of the old farms. Since almost all collective

and state farms were heavily indebted by the time the land reform began, the new dehqon farms were nominally not responsible for that debt. (In other post-Soviet countries, the legal successor of the farm did not inherit the old farm's debts. Instead, the debts remained with the predecessor farm, which was declared bankrupt and liquidated.) However, the Tajik government imposed liability for a share of the old farm's debts on the new farms on a per-hectare basis.

The international community required collective and state farm restructuring in Tajikistan by making it a condition of assistance to the Tajik government following the Civil War. Donor support to land reform in Tajikistan has been based on full or near-full parcellization. The current World Bank land reform and titling project's maximum size is no more than 25 land shares per successor farm.

From an outside perspective, the need to break up the large, inefficient collective farms is clear. But neither Tajik rural residents nor the Tajik government ever had much of a choice in the matter. The government was presented with conditions on foreign assistance, which, realistically, it could not and would not refuse, and the rural population has simply been subjected to another top-down "campaign" in which the latest centrally-ordered innovation is generally implemented. For most rural residents of Tajikistan, the farm restructuring has been done in the same way as Nikita Khrushchev once forced their grandparents, and all farmers throughout the USSR, to grow corn.

Almost all rural social services evaporated at the time of farm reform. At the time the land reform program was instituted, in 1997, the various Ministries involved in rural services were ordered to take over "their" agencies and enterprises on the territory of the former farms. The Ministry of Education was to assume ownership of the schools, the Ministry of Health was to take ownership of hospitals, the Ministry of Land Reclamation and Water Resources was to take ownership of the irrigation facilities, etc. However, the decree ordering the Ministries to do this did not give them any funding to carry out the work of actually legally assuming ownership, to pay for the upkeep of the facilities, or to pay for their staff. As a result, most ministries simply failed to carry out the order, leaving the various farm facilities "without an owner."

In particular, the Ministry of Land Reclamation and Water Resources did not take over operation and upkeep of irrigation and drainage facilities that had been within the boundaries of the former state and collective farms. It apparently did not do so because its management knew that the irrigation facilities had been heavily subsidized and, without some source of continuing subsidy, the Ministry could not operate or manage the facilities. Even without responsibility for those tertiary irrigation facilities, the Ministry has been unable to collect enough from irrigation water users to balance its budget. It has an enormous debt for electricity to operate its pumping stations, even though electricity rates in Tajikistan are far below the cost of production and operation of the electrical system.

The local governments were also to assume new social service functions, but were not given the budgets, the staff, the clear legal mandate, or the training to do so.11F[31]

[31] Legally, the rural jamoats are successors of the Soviet-era rural councils *(sel'skie sovety).* However, many Tajik government officials talk about the jamoat being formed "from" the administrative apparatus of the collective or state farm(s) formerly located on the territory of the rural council. Certainly the jamoats took over many of the production management and other economic functions of the former state and collective farms, as well as their social-service functions. People in the ZoI still commonly give directions to a place located "on the territory of the second brigade of the Kirov sovkhoz" or "near the central village of the Lenin collective

Most upstream and downstream farm service, transport and processing facilities were "built monopolies." One cotton gin, one grain elevator, one major equipment shop, one trucking enterprise, one fuel depot, etc., served a given area, usually an administrative district. In the late 1990s, as the farm reform was being accelerated, all those facilities were sold for cash as part of enterprise privatization. Whoever had available cash acquired the facility, and with it, an effective monopoly of that service within a district. Farmers are always short of cash money, in Tajikistan as elsewhere in the world, thus few farmers were able to buy these facilities.

The various activities of rural reform were intended to be coordinated. In practice, they were not. The institutional structure of the Tajik state made coordination very difficult because of its highly-centralized decision making and the narrow specialization of its various ministries and departments. Senior decision makers had no lived experience of developed market economies, and so could not, at a visceral level, understand how a market mechanism could work, much less trust that it would. Nor did senior Tajik government decision makers, or the civil servants who had to implement the decisions, understand the overall logic and purpose of the changes they were implementing.

Although the international donor community in Tajikistan originally set much of the post-1997 agrarian reform in motion, they could not coordinate or manage it either. Aside from the international community's conviction that donors should not do so, that the recipient government should take the lead in designing and coordinating reform, the high turnover of donor staff and their focus on specific, narrow projects that take years to design and contract makes the donor community as a whole unable to design overall reforms or coordinate their implementation.

For several years in the early 1990s the government tried to continue directly providing inputs to farms in return for crops, but the effort did not provide enough inputs or generate enough products to pay the farms debt. So it created large farm debts to the government and government debts to international suppliers. However, the government argued that although the farms were unprofitable, they were the only work available in the countryside. The irrigation systems had continuing large costs whether the land they served produced anything or not. Cotton was vital to the national economy and its balance of trade. So, decision-makers said, it was better to produce something even if at a loss. This argument is still often advanced by GoTJ spokespersons.

Efforts to provide farms with non-government financing led to the proposal that land share rights become mortgagable securities. The assumption was that mortgaging land shares would allow the new farmers to raise working capital. The presumption was wrong—in market economies, the farmer who mortgages his land to raise working capital to put in his next crop is already, effectively, bankrupt.

As the farms were no longer able to pay their workers, they left. First skilled workers departed, then almost all men left, mostly for Russia.12F[32] Women remained behind, to take care of the young and

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farm." It is not clear whether there is actually a GoTJ decision that formally transferred these functions or whether this is simply a survival of traditional references. But the survival of this way of conceptualizing rural geography, a generation after the fall of the USSR and almost a generation after de-collectivization in Tajikistan, is striking.

[32] Students of off-farm migration have often observed that when farmers leave the land in search of work they do not go to the local town or small city, but to a major metropolis, because they know their chances of finding work there are better. It may be that the dynamic of migration directly from the farm to Moscow, without

the elderly and to keep working for the cotton farms at peak times. Those people who remain in the countryside are also forced to rely more and more on their household farms. Since they can no longer get inputs, assistance or advice from the disbanded large farms, productively operating a household farm has become much more difficult. Nor does any government agency provide services to household farms. Indeed, the Ministry of Agriculture explicitly says that household farms, because they are legally for "subsistence," not "commerce," are not its concern.

Since keeping the household farm is traditionally "women's work," the failure by government to assist household farms that are critical to national food security and are said to produce more than half of all agricultural output by value is a case of gender-induced blindness.

The large cotton farms have so far been least touched by land reform and parcellization. They are smaller than they were, but they are still very large enterprises. GoTJ officials continue to insist that cotton farms need to be large and run on the labor gang system—indeed, some have said the whole farm breakup effort is a temporary expedient that will be reversed in time, since the global historical trend is towards larger farms, not smaller ones. Smallholder cotton production is difficult, especially because of the imbalance of power between input suppliers, cotton gins and marketers, and the small farmers. But there are places in the world where smallholders profitably produce cotton on a few hectares. Indeed, the family and lease contract systems of sharecropping introduced in the late 1980s on farms in Tajikistan were, essentially, smallholder-cotton production in which the land was not physically parcellized.

The large river-bottom cotton farms continue to employ the remaining rural residents, almost all women, as casual labor. Since they are likely not to be farm members any more, they get little beyond a few diram per kilo of cotton picked and the right to collect the cotton stalks for fuel. Yet they must work on the cotton when the farm needs them, which is likely to be when they should be working on their household farms. So in recent years rural families who are integrated into the market economy through their work on the cotton farms have generally been less food secure than families living in areas, such as hillsides and highlands, where they have nothing but a household plot and a hectare or two of dehqon farm that does not produce cotton.

Since 1991, the government of Tajikistan has been able to do little but react to external forces. Reform and marketization were inevitable with the collapse of the USSR, but the government has never been able to get ahead of the process far enough to understand all the issues and to direct developments. The donor community cannot do so. So twenty years after the reform process began, Tajikistan is stuck on a treadmill of continuing change with no clear end and no very clear goals. Indeed, the most recent plan for agrarian reform, prepared by the Ministry of Agriculture, proposes "completing" reform only by 2020.

The problem of assisting such a large number of farms as now exist in the ZoI is compounded by problems of language and limited media reach. Russian was the language of government and higher education during the Soviet period. Because of the mass emigration of the Slavic population, the

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living for a while in a Tajik city, is a result of similar considerations. In any event, many of the migrants seem to be gone for good. Their seemingly permanent departure calls into question the utility of trying to create agricultural jobs to get them back. Certainly they will not willingly come back permanently to rural areas of Tajikistan until they see that farming is something at which the can make a good living.

destruction of the educational infrastructure during the Civil War, the lack of good teachers and limited exposure to the language in daily life, Russian has almost died out in the Tajik countryside. Most people can still speak a few words, but the general level of knowledge is too low to allow effective discussion of technical subjects, especially ones with which the audience is not already familiar. The FTF/T ZoI also includes a large number of native speakers of Uzbek. The three southern raions of the ZoI, Shahritus, Qabodiyon and Nosiri Khusrav, are essentially Uzbek-speaking areas. Elsewhere in the ZoI, including the raions around Qurghonteppa, there are also large numbers of Uzbeks and whole "Uzbek mahallas."

Mass media reach, too, is limited. During the winter, rural areas have electricity only four hours a day, two in the morning and two in the evening. Few people can afford generators, so any communications strategy based on electronics problematic. The local Tajik TV channels (which do not broadcast in the three majority-Uzbek raions just mentioned) do not attract attentive audiences, as most of their content is considered to be repetitive and boring. Any family that can afford it has a dish antenna to receive TV from Russia (or Uzbekistan). Because those channels are broadcast abroad and have only an incidental audience in Tajikistan, they are an inefficient and expensive choice for reaching people in the FTF/T ZoI. Newspapers in Tajikistan are published weekly or biweekly, and most are hard to find outside Dushanbe. The Khatlon oblast' newspapers are official journals with limited press runs and distribution. Those papers are, essentially, pre-sold to government offices and large farms.13F[33] Nearly everyone has a mobile phone, and mobile phone messaging should be investigated. However, there are several companies active in the ZoI. Not one of them reaches all of it.

[33] Custom video messaging as part of farmer field schools on the model of Digital Green would seem to have considerable potential, but even that method requires infrastructure which will take time to develop.

Annex 3. Approaches to and Providers of Extension Services

Extension services provided by the National Association of Family Farms

The National Association of Family (Peasant) farms of the Republic of Tajikistan are a parastatal organization established in the early 1990s as part of the initial, Moscow-initiated land reform in Tajikistan. Its president is a former First Deputy Minister of Agriculture, and the Association acts in many ways like a Ministry for private commercial farms.

The association has a self-financing training center and representatives in most or all raions. They provide extension advice to commercial farms. The Japanese International Cooperation Administration (JICA) has supported the Association in expanding its extension efforts and developing crop advisory packages. Although the Association lacks funding and is focused on lobbying for its members more than extension as such, it has and continues to provide useful information and advice to its members.

Extension provision by local NGOs

Because of its history as a Soviet republic and then a country riven by civil war, Tajikistan has a very immature civil society. Voluntary organizations independent of state control are rare and often distrusted by the authorities and much of the public. However, the international community has often preferred to work with "non-governmental organizations," so significant numbers of NGOs have been established. Many of them are, essentially, for-profit businesses with the form of an NGO, and many exist only so long as donor funding is available. However, a few have managed to become locally rooted (see Annex 26. Local NGOs in Khatlon viloy).

Two European Union TACIS assistance projects sought over a four-year period until 2010 to develop NGOs as extension service providers. The model was fee for services to commercial farms. In addition to training NGOs, those projects supported the establishment the national association of fee-based agricultural extension providers (all NGOs!) "AgroDonish," and supported a discussion platform for parties interested in agricultural EAS, the "AgroPlatforma." Both are moribund, but could and should be revived as part of the FTF/T EAS effort.

In 2010, the USAID-funded Family Farming Program commissioned a thorough review of NGOs providing fee-based EAS to commercial farms written by the team leader of the second TACIS EAS project.16F[34]

Extension centers

Tajik NGOs have been funded to establish and operate extension and advisory service centers, usually located in oblast' or raion centers, that provide information and assistance to farmers who ask for help. These extension centers have sometimes been combined with centers to inform farmers of their land rights and to provide farmers with legal assistance in successfully asserting that right. At various times, European Union TACIS/Europe Aid, USAID, the World Bank, OSCE, and other

[34] Petra Geraedts, *Survey Of Existing Agricultural Extension Providers And Related Programs In Tajikistan* (Dushanbe: DAI, 7 January 2011).

donors have supported such centers. These centers have tended to close down when their donor support ended. It seems that the extension centers have largely drawn their clients from walk-ins, requiring the farmers to take the initiative to find the extension center and come to it. So their clients have been self-selected, probably from better off and more entrepreneurial individuals. Depending on the intended target audience this self-selection may not have been an issue. For instance, the explicit target audience of the extension centers organized by the World Bank/Asian Development Bank Cotton Sector Recovery Project was larger commercial cotton farms, not smallholders.

EAS through commercial input suppliers

EAS through input dealers is very important in developed market economies. Many donors have tried to promote this method of EAS provision in Tajikistan, where it may in part be the result of attempts to find a way to make the extension center model sustainable without continuing donor funding. The linkage between EAS and sales, then, has been reversed in Tajikistan from the usual one. In developed market economies, input dealers have added EAS because helping people see how to use the crop they have expands sales. In Tajikistan, EAS providers have at times added crop lines for sale to generate income to subsidize the EAS as a replacement for donor funding.

The IFC, the World Bank, USAID, and several international NGOs have supported the organization of "agro-shops," small or medium-sized storefronts providing certified and tested inputs and offering advisory services in their best use. Since the agro shops generally charge more than bazaar traders because they are stores, and have also often been dependent on donor subsidies, their long-term viability is unclear. Recent field work supported by Oxfam International in the ZoI shows that some seed dealers operating from bazaar stalls have developed quite sophisticated networks for obtaining quality seed from international suppliers.17F[35] Since they operate without donor subsidies they may be more sustainable businesses.

EAS through Water Users' Associations

Almost all crop production in the ZoI requires irrigation. The irrigation and drainage networks that were formerly located on and maintained by, the collective and state farms were left derelict by the land reform of the late 1990s. Following assistance from donors including the Asian Development Bank, the World Bank, Swiss Development Cooperation, UN Development Program and USAID, Tajikistan adopted a law on Water Users' Associations in November 2006. The law mandated that WUAs be set up throughout the country's irrigated areas. However, only commercial farms could join them and they were to serve only commercial agricultural operations. Moreover, the government-mandated WUAs were organized on administrative boundaries, not hydrological ones, and many of them served only as water bill collectors.

Donor efforts to create more solid WUAs have continued, however. As part of those projects, including the USAID Water Users Association Support Project and the Family Farming Program, WUAs have been

[35] Thanks to Patrick Tucker for making FAST aware of this Oxfam research.

supported in providing some limited extension services and training in good agricultural practices, both for commercial farms and for villagers.18F[36]

According to the Viloyat Khatlon government, there are 84 WUAs in the FTF/T ZoI as of June 2014. Fifty-seven of those are reported to have been organized or supported by USAID.

WUAs have an obvious interest in developing a sideline as EAS providers, since it could make them more attractive to their members by increasing farm income. Because the WUA must encompass all farms on its territory, large and small, and because it must serve only commercial farms, EAS through WUAs does not provide a very direct way of reaching household farms. However, as the process of division of large commercial farms into smaller ones continues and as the FTF/T EAS expands to cover small commercial farms, cooperation with WUAs should be explored.

Expanding private veterinary services to provide general agricultural extension services

The national Veterinary Service has largely been privatized and moved to a fee-for-service basis, although the government still provides funding for prophylaxis of six animal diseases. FAO, which led the successful veterinary reform, and other donors have made attempts to use the local veterinarians as the basis for fee-for-service extension. However, because of the collapse of education during the civil war in the 1990s the average age of rural veterinarians is now quite high and well-trained replacements are rare. Moreover, the veterinarians are not all-round agricultural specialists. So veterinary practices would need to be linked with other specialists in order to provide agricultural extension services for crops and livestock.

Field agents

The European Union TAFF Project operated from 2007 to 2012. Its principal purpose was to improve cotton farm finances. TAFF developed a system of field-agent based extension that has now been institutionalized as Public Organization "Sarob." Sarob itself handles central management functions. It forms and trains teams of field agents, who are legally independent contractors. Each field team is headed by a senior extension specialist and also includes two more junior specialists (crop scouts) and a business manager to handle arrangements and logistics. The senior extension specialist is often a former collective or state farm chief agronomist who is now paid to continue to work on his farm's former territory. Sarob teams charge a fee per hectare of crop under advisement. For the first three years of Sarob's operation, the donors subsidized the field team's work on a declining scale, so the viability of this fee-for-service model has not yet been proven.

Reflecting its origins in a project designed to improve cotton sector financing, this field agent model seems more oriented to monitoring the quality of work done by the farm in something like the old Soviet style of agronomy rather than introducing innovative crops. However, as Sarob develops independently it is likely to become more of a conduit for introducing innovation.

Demonstration plots

The GoTJ had a system of experimental stations and demonstration plots for new varieties that continued to operate until the donor project that supported the Ministry of Agriculture's Seed Testing

[36] *Assessment of Water User Association Support Program (WUASP)* (Dushanbe: Mendez England and Associates, 2010), P. 13.

Stations ended in 2010. Many donors have established demonstration plots for one or another crop or demonstration farms for particular animals. In many cases, they have hired local NGOs to find the plot locations and manage them. In part because they have been done through intermediaries, there is often little information about exactly where the plot(s) were established: on a commercial farm, an experimental station, a research farm, or a household farm. Nor can it be determined just what their intended audience was. It seems that in many cases plots have been established without at the same time trying to form a stable group around them. Without a stable group of learners in the neighborhood around the plot, using extension methods like farmer field schools is pointless.

Commercial farmer/household farmer groups

All the EAS considered so far have been aimed largely at commercial farms. However, the GIZ/DFID GREAT project, which began in January 2013, targets household farms for fee-for-service extension using a version of the demonstration plot model. It operates primarily in highland areas, although it also operates in Vakhsh district, overlapping in that one district with the FTF/T ZoI. Although different participants in the project describe the model in slightly varying ways, essentially GREAT seeks to develop a viable fee-for-services EAS serving household farms. It is using a number of established international NGOs as intermediaries so it can build the system on their existing village groups. The use of those groups would solve the problem of an unstable audience for the results of demonstrations. However, representatives of several of the NGOs involved expressed considerable doubt that it would be possible to organize groups large enough to actually recover a significant part of the EAS' cost.

Since 1997, many donors, including the World Food Program, FAO, the World Bank, USDA and a variety of international NGOs including Care International, Mercy Corps and Save the Children Foundation, have distributed small quantities of inputs to some subset of the population, usually families identified by the local jamoat as particularly needy. These efforts were often reported to be tied to establishment of demonstration plots illustrating better practices and/or to the creation of revolving seed funds. However, these have often been for one-off humanitarian assistance. The distribution has often worked through the formation of groups of small commercial farmers or household farms. The Agha Khan Foundation has also worked through community groups for a variety of humanitarian and development interventions, particularly in its Mountain Societies Development Support Program.

In most cases that can be identified, the community groups existed for the purpose of the program or project, and disbanded again as soon as it ended.19F[37] Since these were one-off distributions of humanitarian aid, it is not surprising that groups formed to receive that benefit, even if they formally relied on participatory approaches to group organization and decision-making, did not endure beyond the duration of the benefit they were receiving.

So long as farming is unprofitable for farmers and households, as it has consistently been in Tajikistan since 1991, no fee-for-service EAS model can be sustainable.

[37] A World Bank staff member commented to FAST in 2013 that it still might be possible to find groups that had participated in their recent emergency seed provision program in Khatlon province since "the project just ended and the groups haven't had time to fall apart yet."

Annex 4. Skills farmers need for organizing and managing groups

Catholic Relief Services, excerpt from Five Skills on Types and Uses of Groups for Developing Smallholder Agriculture

Source: Catholic Relief Services: *Skills farmers need for organizing and managing groups.* Lesson 1 pp. 9-11. (First volume of Five Skills for Rural Development)

Available at http://www.meas-extension.org/meas-offers/training/five-skills.

Types of groups

When we talk about "permanent" groups, we do not mean they have to last forever. How long they should last depends on what they do.

A farmer field school aims to help men, and then disband.

A savings-and-credit group helps its members save money and get loans. It must last for at least one loan cycle. But it will probably go through several cycles, and people may join or leave the group.

A marketing group helps its members market their produce. It must last at least one production season, but if it is to be effective, it will probably be active for many years.

A farmers' association is an alliance of different groups of farmers. It represents their interests to the government and other bodies. It will be a long-lasting part of the landscape.

Table 1 lists some types of groups that development organizations work with. […] Many other types of groups also exist, such as cultural groups, clan associations, security teams, and funeral associations. [omitted]

Why groups are good for their members

For a group to function, each member has to benefit from it in some way.

Here are some of the ways they do this.

Buy cheaper inputs. By buying in bulk, the group can get discounts from suppliers and share transport costs.

Get services and advice. Extension agencies and many other organizations are often willing to serve groups, but not individuals. Farmers can share the costs of getting these services (such as travel costs).

Build their capacity. Members can easily share information and learn from each other. New ideas spread quickly through meetings, training and working together.

Obtain financial services. An individual farmer may not have enough money to open a bank account or qualify for a loan. A group can get such financial services, and can acquire the skills to use them.

Get better prices for crops. By marketing through a group, farmers can share the storage, processing, transport and selling costs. By selling in bulk, they can attract new buyers and negotiate better prices.

Share the work burden. Group members can help each other with field work, harvesting, processing and administration. Members can focus on what they are skilled at, and leave other tasks to other members.

Do things not feasible for individuals. Some problems can only be tackled on a large scale. Examples are controlling erosion in a watershed, managing irrigation, and filling a truck with produce.

Get empowered. Groups can express their interests more effectively than individuals. They make it possible for members to negotiate, demand services, and lobby for policy change.

By sharing the costs among all members of the group, the cost for individual members is lower. In this way, small-scale farmers can get the benefits that are open only to large-scale farmers. These are often called economies of scale.

RATIONALE: ***Strong groups are the basis of many rural development activities. They can act as local partners for development organizations – helping to channel various kinds of assistance to those who need it. But more important, they can become self-driving engines for growth in the community, independent of any inputs from outside.***

Why development organizations work with groups

Development organizations like to work with groups for all the reasons above, plus some more...

Effectiveness. People often learn better in groups, and group pressure stimulates individuals to change what they do – and to continue doing it in the future. Organized groups are likely to be more effective than the same number of individuals working independently.

Cost-effectiveness. It is easier, quicker and therefore cheaper for a field agent to serve groups of farmers rather than the same number of individual people.

Scale and impact. Groups make it possible to reach many more farmers than by serving individuals. That multiplies the potential impact of an intervention.

Task sharing. Groups can take over certain activities, such as setting up demonstrations, doing simple tests, training and coordination, and spreading information to people outside the group.

Sustainability. Group initiatives can be more sustainable than individual efforts. People can take turns at tasks, encourage each other, and help each other to get things right. If one person drops out for some reason, the rest of the group can still carry on.

Feedback. Groups can give better and more useful feedback than individuals. That helps field agents and development organizations understand farmers' situations and improve the services they provide.

Annex 5. Available translations of CRS Five Skill Sets

Original title	*Volume number*	*Lesson numbers*	*Translated title/file name*	*Target language(s)*	*number of pages*
Introduction to five skills for rural development		**Entire**	Муаррифии панҷ малака барои рушди деҳот	Tajik	121
Skills Farmers Need for Organizing and Managing Groups	**1**	**2, 6, 7**	skills-farmers-need-for-organizing-and managing-groups-Lesson 2 "Role of group promoter"	Russian	
			skills-farmers-need-for-organizing-and managing-groups -Урок 6 - "Section on leadership" - русский		6
			skills-farmers-need-for-organizing-and managing-groups - Урок 7"Governing group" - русский		9
Natural Resource Management	**3a**	**3, 5, 6, 7**	skills-farmers-need-for-organizing-and managing-groups -Урок 3 "Mahaging Group" -русский	Russian	4
			skills-farmers-need-for-organizing-and managing-groups - Урок 5 "Soil composition" -русский		11
			Natural resources management - Lesson 6 Soil fertility		16
			Natural resources management - Lesson 7 Plant health		5
NRM tools for participatory projects	**3b**	**4**	Lesson 4 Mapping natural resource problems and opportunities -russian	Russian	5
Marketing basics course	**4**	**7**	Marketing-basics-course-russian - Lesson 7 Value chain	Russian	18
Promoting Innovation	**5**	**3, 4, 5 +**	promoting innovation course -Lesson 3 Find more information - русский	Russian, Tajik	3
			promoting innovation course -Lesson 4 Exploring possible solution - русский	Russian, Tajik	10
			promoting innovation course -Lesson 5 Designing research - русский	Russian, Tajik	6
			Promoting innovation course	Tajik	47

Annex 6. Household farm learning group conveners (lead farmers) and Jamoat Extension Coordinators

P. Malvicini. Roles, Responsibilities, and Qualifications of mahalla learning group conveners (volunteers) and Jamoat Extension Coordinators (JECs)

2 November 2013

Throughout this document, please read "farmer" as a person of the female gender.

Background

FAST desires to help increase production and income of household farms beginning with its Zone of Interest in Khatlon. Participation in the sustainable, participatory, and pluralistic extension system is a key way of doing this. Sustainability requires that groups of farmers persist in functioning and deriving benefits from the system beyond the project life of FAST. Participation requires, optimally, that farmers initiate, make decisions, and evaluate ideas and actions and their fit to and benefit for their farms—they lead extension with external support. This practical farmer empowerment is key to the success of the new extension model. A pluralistic system is fit to context including the source of farmer groups, the appropriateness of technologies and advice, and the sources of information and ideas from other farmers, civil society, NGOs, GoT, and other projects.

To be effective, the system should be developmental. That is, starting humbly with simple and basic ideas, actions, and structures—even when baseline capacity is seen to be low. Starting with existing demand and capacity, cycles of discussion, simple experimentation, learning from each other, and organizing as a group, would build experience, confidence, and the demand to learn more technology, extension processes, and group leadership skills—much of this will be learned by doing.

Countries tend to treat extension reform or decentralization as a technical problem of putting structures and management / financial systems in place. Research demonstrates if governments fail to embrace the significant shift in mindset that a new participatory extension system requires; it reverts to a top-down service delivery system that may be even less effective than what existed before.

Learning group conveners (volunteers)

The FTF/T EAS learning group conveners (volunteers) are farmer-extensionists or promoters, a practice widespread in Latin America and South / Southeast Asia in the 1970s and well-studied by the 1980s and 1990s. They were a direct answer to the failure of conventional government extension services, with their input-intensive, standardized, often inappropriate packages to improve production, particularly among small landholders. These movements built their success and spread around a range of participatory practices at the village and field level, summarized as "farmer-led" and "farmer-to-(neighboring) farmer" approaches. Farmer-extensionists are different from and not a replacement for professional extensionists. However an effective agricultural extension system, in this mode, requires a strong supportive relationship between the professional-

and the farmer-extensionist. Here are some points on the farmer promoter / farmer-extensionist / farmer-leader role. No one person would meet every qualification:22F[38]

Qualifications:

- The learning group convener (volunteer) is an active farmer themselves
- Reasonably successful farmer
    - Work hard on their own farm
    - Make the most of what is available in their present system
    - Have yields and sales per hectare that do not lag behind other local farmers
    - Able to devote at least half a day / week to work with other farmers
- Peasants (not a class above a typical farmer)
- A member of the community
- Acceptable to mahalla committee
- Friendly / approachable with positive personal relations
- Able to communicate, tell stories, discuss
- Functional literacy and numeracy
- Informally nominated by peer farmers in learning group (not power brokers)
- Energetic and enthusiastic
- Willing to experiment—not afraid to fail and learn
- Flexible
- Familiar with their community, farming situation, what works, and key challenges
- Potential for long-term engagement, beyond project, beyond tenure of Jamoat Extension Coordinators (JECs)

Role:

- Advocate and promoter—catalyst of local change
- Experimenters (first to adopt and adapt)—a "quick win" with a new technology / approach will attract farmers to their group (and might be done before any group formation attempt)
- Beneficiary and sponsor of experimentation and change
- Run a farm that is a demonstration and laboratory for innovation becoming a role model

[38] These lists excerpt and draw heavily from Scarborough, V., Killough, S., Johnson, D.A. & Farrington, **J.** (eds). 1997. Roles and responsibilities in farmer-led extension, Chapter 6, *Farmer-led Extension: concepts and practices*. London: Intermediate Technology Publications.

- Encourage existing village leaders to be early adopters and adapt technologies to fit their farm and situation
- Be inclusive of all potential group members (gender, class, ethnicity) in ways that are sensitive to village norms
- As a volunteer, be contact person for a single group of 20 – 30 farmers
- Motivate and encourage farmer group members and beyond to try new ways of technology and management to increase production, store, and market
- Listens to farmers without judging struggles / weaknesses (gently engages / guides)
- Help farmers explore ways of diversification and intensification of farming
- Help farmers explore more cost effective farm management
- Help farmers explore more cost effective ways to obtain inputs and better prices for their crops
- Help farmers consider better ways to manage natural resources esp. in terms of both soil fertility and diversification, and protection for future generations
- Work part time, but always be on the job as opportunities to discuss and share present themselves at normal social gatherings
- Partner with JECs, meeting weekly to discuss, plan, and troubleshoot.
- To work with two other like-minded partners from the learning group as co-conveners (volunteers)
- Gain practical knowledge to address the most common problems in the village
- Strengthen their knowledge and practice of their farming system and of specific technologies they experiment with
- Strengthen their practical knowledge of their community, farming situation, what works, challenges
- Know when to seek outside help through solutions and promising ideas and actions from JECs and others to be evaluated and tested by farmers
- Look to JECs and others to address farmer questions that can't be handled in the village

Farmer-Extensionists are NOT:

- Second-class extension workers (their work is different, complementary)
- Assistants to JECs
- Expected to have technical knowledge on many areas
- Errand boys or girls performing menial tasks

The volunteer should have minimal support to function (such as a transportation budget), so as not to be seen as different from other farmers. The progress of the promoter should be only one-step ahead of their group so as not to be too complicated and easy to imitate.

JECs (professional extension workers funded by FTF/T EAS for the present)

- Willing to relearn in order to work in a participatory manner
- Spend the majority of their time in the field with learning group conveners (volunteers) and learning groups in the villages
- Unusual amounts of patience to adjust to village pace and explain technologies repeatedly in ways people can understand
- Creating the enabling environment at the Jamoat level for the optimal functioning of the promoters (handling back-channel politics)
- Partner with learning group conveners (volunteers), meeting weekly to discuss, plan, and troubleshoot
- "Tour guide" to arrange farmer-cross visits for learning
- Open to learn from promoters and local farmers about their needs and perspectives in the communities
- Encouraging, supporting, and mentoring promoters on potential appropriate technology (especially more intensive and more diverse)
- Partner with government agricultural services in their jamoat to create demonstration plots when useful in training promoters
- Address farmer questions from promoters that can't be handled in the village either directly or by sourcing new information
- Gathering promising ideas from other JECs and the broader extension system including agricultural research organizations
- Channel of promising ideas and actions to promoters and others to be evaluated and tested by farmers (not requiring every idea to be adopted)
- Linking promoters to practical resources and knowledge for their community
- An agricultural specialist with a general knowledge of Khatlon ready to address a range of needs
- Beyond production methods, analyze, in the oblast, opportunities to obtain inputs at lower cost and market crops at better prices for farmers. This may include lower or more optimal use of external inputs
- Need to strengthen skills in analysis of farming systems and detecting agro-ecological problems
- Periodically gather farmers and promoters from across the raion and all of Khatlon to share, discuss, and recognize innovation.
- Document farmers' experiences in appropriate ways to share with other farmers

Motivations

The jobs of the learning group conveners (volunteers) and JECs will be hard work—hopes of salaries and perks are poor motivators leading to failure. The most effective promoters and JECs will be motivated primarily by their own self-development as farmers, satisfaction in helping other farmers, and prestige and respect they gain in the community (Bunch, 1982) as people who work with farmers to create solutions for agriculture—these solutions increase living standards.

Annex 7. Sample guide to develop an EAS learning (crop advisory) package: tomatoes

Crop Cycle	MEAS Consortium Crop-Specific Resources	MEAS Consortium Skills Development Material
Fact Sheet (tomato cycle) **Tomato management**	Tomato Fact Sheet – UC Davis Tomato Management – UC Davis Vegetable Diagnostic	
Learning Plot		CRS 5s 5 on Promoting Innovation Lesson 1. Exploring possible solutions ADD UC Davis
Natural Resource Management 1. Soil composition 2. Soil fertility	Tomato Production (PPT) – UC Davis (pest management, soil management, water management) Improved irrigation practices to reduce soil moisture Estimating Nitrogen fertilization needs - Annual crops	CRS 5S 3a NRM Basic Concepts and Strategies: Lesson 5. Soil composition (p.36) CRS 5S 3a NRM Basic Concepts and Strategies: Lesson 6. Soil fertility, nutrients and nutrient cycles (p.49)
3. Water • Water cycle • Watershed		CRS 5S 3a NRM Basic Concepts and Strategies Lesson 2. The water cycle (p.17) Lesson 4. Watersheds and watershed management(p.29)
Finance 1. Budgeting 2. Credit / Loans		CRS 5S 2b Part 2 Financial Education Lesson 3. Understanding income and expenses and creating a budget (p.21) CRS 5S 2b Part 4 Financial Education Lesson 8. Borrowing Concepts (p.116) Lesson 10. Your Ability To Take On A Loan (p.159) Lesson 11. Comparing Financial Services (p.174)
Preparation 1. Site selection	Field and crop rotation	
2. Field preparation		
3. Water management • Non-irrigated • Irrigated		CRS 5S 3a NRM Basic Concepts and Strategies Lesson 3. Managing water (p.25)
4. Planting Materials • Varieties • Seedlings	Use of resistant varieties	
Planting 1. Spacing 2. Staking 3. Sun/Heat	Problem with tomatoes include poor staking practices Training and Pruning Greenhouse Tomatoes	

4. Greenhouse Tomatoes		
Plant Health 1. Pests • Tomato Fruit worm 2. Diseases • Anthracnose • Alternaria canker • Blossom end rot • Damping Off • Early blight • Late blight • Fusarium wilt • Verticillium wilt • Spotted wilt 3. Weeds 4. Sunscald	Fact Sheets – UC Davis: Tomato Fruit worm Anthracnose Alternaria stem canker Blossom end rot Damping Off Early blight Late blight Fusarium wilt Verticillium wilt Spotted wilt Managing Tomato Diseases-MEAS UIUC Prof. Babadoost Publications | Integrated Pest Management Program MSU Tomatoes *in Tajik* (USAID-CRSP) Weeds Overview Sunscald	CRS 5S 3a NRM Basic Concepts and Strategies Lesson 7. Plant health (p.54)
Harvest 1. Time / length 2. Yield 3. Harvesting methods		
Post-Harvest 1. Storage 2. Drying 3. Transport 4. Processing	Fact Sheet on Postharvest Principles – UC Davis USAID Farmer-to-Farmer volunteer K. Penhallogon	
Nutrition 1. Food preparation 2. Water		
Marketing 1. Distribution 2. Advertising 3. Sale	Value Chain Analysis Fact Sheet – UC Davis (with tomato as an example)	CRS 5s 4a Marketing Basics Lesson 5. Adding value after harvest (p.67) Lesson 8. Developing marketing strategies (p. 97) Lesson 10. Entrepreneurial spirit (p.114)

Annex 8. Farmer Field Schools

Farmer Field Schools

Excerpt from unpublished paper

"Agricultural Extension and Advisory Services: Not Business as Usual"

by Vickie A. Sigman, April 2012.

Farmer Field Schools (FFS) began in the late 1980s in Indonesia as an organized method to addressing significant over-use of pesticides in rice production. The group-based participatory approach is based on adult non formal and experiential education principles. FFS promotes interactive farmer learning through field observation and experimentation. Since its original focus on integrated pest management in rice, it has expanded to include various other crops and livestock production as well as management practices such as soil and water conservation. Generic elements of FFS are group, field, facilitator, curriculum, and financing. For example, in regular sessions (often weekly) over a maize cropping season, a group of 25-30 farmers from a village or community gather to observe, analyze, and discuss what is happening in the maize field. The field is the classroom and learning is hands-on and practical. A trained facilitator, guided by an experientially-based curriculum which follows the natural cycle of the subject, supports the farmer learning process. The learning process is characterized by farmer experimentation to develop solutions to problems identified on the farm. The cost of FFS varies, depending on how schools are organized and conducted. Typically, there are significant costs associated with and time required for training the facilitator and developing the experiential curriculum.

FFS are now a very popular and widely-used extension method. In 2008, FFS were implemented in 87 countries and a roughly estimated 10-20 million farmers had graduated from FFS globally (Braun & Duveskog, 2008). In Sub-Saharan Africa, between 1993 and 2005, there were around 8,500 FFS in 26 countries (Braun, Jiggins, Röling, van den Berg, & Snijders, 2006).

Despite the popularity of FFS, there is little agreement on what should be measured in evaluating FFS impact or on how it should be measured. This is compounded by differences in FFSs that focus on integrated pest management and those that do not and by critiques of the rigor of studies that evaluate FFS impact. In many cases, FFS impact is measured by one or more of the following indicators: decreases in farmer pesticide use, increases in farmer knowledge, increases in farmer productivity, and/or knowledge diffusion from trained farmers to other farmers. There is considerable convincing evidence of these impacts (Braun & Duveskog, 2008; Davis et al., 2010; van den Berg, 2004; van den Berg & Jiggins, 2007). However, there are several early seminal studies that question or negate the continuing overall positive findings regarding FFS impact (Feder, Murgai, & Quizon, 2003; Feder, Murgai, & Quizon, 2004). Further, this group questions the fiscal sustainability of FFS (Quizon, Feder, & Murgai, 2001a, 2001b).

Regarding fiscal sustainability, Quison, Feder, & Murgai (2001a, 2001b) maintain FFS are costly and thus the feasibility of their use on a large scale is suspect. Key to FFS is the assumption that trained farmers will disseminate their knowledge to other farmers. This will expand coverage, reaching increasing numbers of farmers, while minimizing costs of coverage. The assumption is questionable.

Another line of thinking is gaining traction which emphasizes farmer education and social development aspects of FFS (van den Berg & Jiggins, 2007).

This view holds that there has been singularly little investment in farmer education. It asserts an important value of FFS is its development of farmer's critical thinking and analytical skills which enable their decision-making and understanding of complex agro-ecological systems. It suggests that learning is an individual proposition, even if carried-out in a group, and that the objective of FFS is not necessarily to disseminate knowledge to others. Their research found engagement in FFS built social capital, for example, increased self-regard, increased control over assets, enhanced social skills, and improved interactions with other farmers, service providers, and local governments. A global assessment of FFS confirmed this benefit, stating "a major strength of FFS is that it helps in strengthening civil society or social capital at village level" (Braun & Duveskog, 2008, p. 18). The assessment also indicated the FFS process builds self-confidence, particularly for women. This is substantiated by experience in Africa which revealed that FFS are indeed appropriate for reaching and for increasing the social capital of groups of women farmers (Davis et al., 2010). However, costing such benefits remains elusive.

FFS is built on specific principles and practices. The extent to which these are maintained in FFS delivery is related to the success of participant learning and behavior change. FFS should not be just another way to bring farmers together. FFS is susceptible to "drift" in that elements, such as a documented curricula and experiential learning, can fall by the wayside. The quality of FFS is an issue of considerable concern and monitoring of quality is a priority. Nonetheless and withstanding all debates, FFS is a contemporary extension method that has rapidly diffused to all parts of the world, as it should.

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Annex 9. Typical jamoat agricultural specialist job descriptions

The exact title of the jamoat agricultural specialist depends on the population of the jamoat. In jamoats with a large enough population, the specialist is given the title of jamoat deputy chairman. In smaller jamoats, the title is jamoat agricultural specialist. The two job descriptions in this annex are essentially the same except for the name of the position.

SAMPLE

Approved by a resolution of the chair of the

Jamoat of Oriyo Village

Bokhtar raion

of « ___» _____ 2011, No.___

JOB DESCRIPTION

OF THE

DEPUTY CHAIR OF THE JAMOAT OF ORIYO VILLAGE, BOKHTAR RAION

I. General

1. The position is deputy chair of the Jamoat of Oriyo Village, Bokhtar Raion.

2. This position is of the sixth category in the Position Classification of civil service positions of the Republic of Tajikistan.

3. The deputy chair of the Jamoat of Oriyo Village of Bokhtar Raion (hereinafter "Deputy Jamoat Chair") is appointed and released in accordance with the Law of the Republic of Tajikistan "On Civil Service."

4. The holder of this position is subordinated to and reports to the chair of the jamoat.

5. In the absence of the deputy jamoat chair, his duties are performed by the chair of the jamoat.

6. The deputy jamoat chair must work with the structural units of the management of the local executive authorities of the raion, the employees of the jamoat, the city and rural jamoats of the raion, institutions and enterprises, organizations and associations within the boundaries of the village.

II. Qualifications for the Position

7. The specific requirements established for the position of deputy jamoat chair are:

- Specialized higher education in agriculture or economics;
- Four years' experience as a civil servant or five years of work experience;
- Knowledge of history, culture, state values and the language, and one foreign language;
- Knowledge of the fundamentals of domestic and international policy of the Republic of Tajikistan;

- Knowledge of the Constitution of the Republic of Tajikistan, other laws and legislative acts, as well as international legislative acts accepted by the Republic of Tajikistan that regulate the duties of the deputy jamoat chair;
- Proven knowledge and experience of management, administration and planning work processes;
- Proven social skills, including the ability to organize cooperation in realizing the interests of the state;
- Proven experience of agriculture is desirable;
- Completion of a requalification course not less than once every three years;
- Ability to work on a computer.

III. Duties of the Deputy Jamoat Chair

8. Implementation of organizational activities for agriculture within the boundaries of the village.

9. To participate in planning of the activity of the jamoat and its committees.

10. To organize and ensure the fulfillment of normative and legal acts that relate to his responsibilities.

11. To ensure the fulfillment of normative and legal acts relating to the activities of agriculture with the limits of the competence of the jamoat.

12. To examine and interpret, [in order to] ensure the fulfillment of normative and legal acts relating to the activities of agriculture that are presented for examination.

13. To examine appeals from legal and physical persons relating to his [the jamoat deputy chair's] activity.

14. To participate in committees, working groups, gatherings, meetings, seminars and other events of the jamoat and raion.

15. To present quarterly and annual reports on work done to the chair of the jamoat at the appointed times.

16. To organize cooperation of the dehqon farms with providers of services to agriculture in the oblast' and the raion.

17. To help and give advice to the dehqon farms about the period to carry out the sowing, to organize crop rotations and to utilize modern techniques.

18. To facilitate the realization of agricultural reform.

19. To assist in the organization and activities of agricultural consulting services.

20. To coordinate work between government agencies and the private sector.

21. To ensure cooperation between the dehqon farms and the Consultative Council for Agricultural Management of the raion and oblast'.

22. In order to liquidate legal limitations and administrative barriers in the agro industrial and private sectors, gather proposals from farmers and farming businesses and present them to the Consultative Council.

23. To facilitate cooperation between water users' associations, dehqon farms, agricultural service providers, microfinance organizations, agricultural consulting centers and civil society organizations.

24. To facilitate the development of agricultural infrastructure, find needed materials, services, land and financial leasing opportunities and create farm service centers.

25. To cooperate with agricultural organizations and generalize statistical data about the agricultural sector at jamoat level.

26. To facilitate the development of household farms.

27. To participate in the application of international normative and legal acts in his activity.

28. To cooperate with and advise the population, together with the appropriate local organizations, about the prevention of various agricultural diseases.

- In accordance with the presentations of the dehqon farms and associations [of dehqon farms] and the public sector[farms,] for cooperation with the organizations [that] plan production, to be responsible for the forecasting of the development of agriculture.23F[39]

29. To participate in the work of sessions of the jamoat [council] and its committees.

30. To fulfill other tasks as assigned by the jamoat chair in accordance with the law.

IV. The rights of the Jamoat Deputy Chair

31. The jamoat deputy chair has the following rights:

- To participate in the examination of the appropriate issues and activity of the jamoat and its decision-making on them;
- To become familiar with [documentary] materials of which the jamoat disposes;
- To demand materials and information for the fulfillment of his job duties from state agencies;

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[39] *[Translator's note]* This point is bulleted rather than numbered, although it stands at the same level as all the numbered points, in the Tajik original. It seems likely from its placement that point 28 was originally the end of this section of the job description, and so the bullet was added during editing.

"The organizations of production planning," the literal translation of the phrase, means the Ministry of the Economy and Foreign Trade of the Republic of Tajikistan, the former State Planning Committee, and its oblast' and raion divisions.

The Law of the Republic of Tajikistan on Forecasts states that fulfillment of the "forecast" is still obligatory for all production organizations, of all forms of ownership, in the Republic of Tajikistan. In principle, the "forecast" is developed from the bottom up based on statements of their capabilities from the farms. In fact, it is done from the top down, by determining the national sown area for each major crop (with an anticipated yield) and then dividing that up among subordinate territorial administrative units down to the level of the individual commercial farm.

I would interpret this clause to mean that the jamoat deputy chairman is responsible for determining and then ensuring the fulfillment of the jamoat's agricultural production plan.

- To put forward proposals to eliminate deficiencies in the activities of central and local executive agencies regarding the fulfillment of normative and legal acts of agriculture;
- To organize and conduct meetings, gatherings and other events concerning agricultural issues;
- To make proposals concerning the improvement of his work within the limits of his job responsibilities and the activity of the jamoat to the jamoat chair;
- To represent the Jamoat to organizations, enterprises and associations within the boundaries of the village.

32. The jamoat deputy chair has other rights as provided for in the normative and legal acts of the Republic of Tajikistan.

V. Accountability of the Jamoat Deputy Chair

33. The jamoat deputy chair is accountable:

- For the presentation of incorrect information when hired as a civil servant or for his personnel file;
- For confirmed actions that violate the Law of the Republic of Tajikistan "On the Struggle with corruption" concerning his hiring for and work as jamoat deputy chair;
- For failing to observe the limits [on his activity] established by the Laws of the Republic of Tajikistan "On Civil Service" and "On the Struggle with Corruption";
- For revealing job-related secrets, state and other secrets that are protected by the normative and legal acts of the Republic of Tajikistan;
- For failing to observe the established norms of the "Code of Ethics of the State Servant of the Republic of Tajikistan" while engaged in the fulfillment of his duties.
- For failing to observe the requirements of the Law of the Republic of Tajikistan "On regulating traditions, celebrations and rituals";
- For failing to observe labor discipline and the rules for workplace conduct;
- For failing to file, and/or for filing incorrect tax returns concerning income, or incorrect Declarations of the Property of State Servants, within the established periods;
- For other forms of accountability established by the normative and legal acts of the Republic of Tajikistan.

34. The jamoat deputy chair is called to account before a court of law in accord with the law for failure to fulfill or improper fulfillment of his employment duties, violations of labor discipline or the rules of workplace order or for improper use or destruction of property that has been assigned to him for the fulfilment of his employment duties.

VI. Concluding Provisions

35. This job description is done in two copies. One copy is kept in the personnel department. The other copy, having been signed by the responsible personnel official and registered in the personnel department's official journal, is given to the deputy chair of the jamoat.

36. Should there be major changes in the job duties or rights of the administrative-civil servant as a result of attestation or the annual job evaluation, if the jamoat is reorganized, or in other cases that lead to a change in the job description of the jamoat deputy chair, a new job description will be drafted and confirmed.

SAMPLE

Approved by a resolution of the chair of the

Jamoat of Chashmasor Village

Faizabad raion

of « ___» _____ 2011, No.___

JOB DESCRIPTION

OF THE

LEADING SPECIALIST OF THE JAMOAT OF CHASHMASOR VILLAGE, FAIZABAD RAION

I. General

1. The position is leading specialist of the Jamoat of Chashmasor Village, Faizabad Raion.

2. This position is of the sixth category in the Position Classification of civil service positions of the Republic of Tajikistan.

3. The leading specialist of the Jamoat of Chashmasor Village of Faizabad Raion (hereinafter "Leading Specialist of the Jamoat") is appointed and released in accordance with the Law of the Republic of Tajikistan "On Civil Service."

4. The holder of this position is subordinated to and reports to the chair of the jamoat.

5. In the absence of the leading specialist of the jamoat, his duties are performed by the land survey engineer.

6. The jamoat leading specialist must work with the structural units of the management of the local executive authorities of the raion, the employees of the jamoat, the city and rural jamoats of the raion, institutions and enterprises, organizations and associations within the boundaries of the village.

II. Qualifications for the Position

7. The specific requirements established for the position of leading specialist of the jamoat are:

- Specialized higher education that ensures the effective fulfillment of the duties (preference is given to having an agriculture or economic specialization);
- Knowledge of history, culture, state values and the language, and one foreign language;
- Knowledge of the fundamentals of domestic and international policy of the Republic of Tajikistan;
- Knowledge of the Constitution of the Republic of Tajikistan, other laws and legal and normative acts, as well as international legislative acts accepted by the Republic of Tajikistan that regulate the duties of the leading specialist of the jamoat;
- Proven social skills, including the ability to organize cooperation in realizing the interests of the state;

- Proven experience of agriculture is desirable;
- Completion of a requalification course not less than once every three years;
- Ability to work on a computer.

III. Duties of the Leading Specialist of the Jamoat

8. Implementation of organizational activities for agriculture within the boundaries of the village.

9. To organize and ensure the fulfillment of normative and legal acts that relate to his responsibilities.

10. To ensure the fulfillment of normative and legal acts relating to the activities of agriculture with the limits of the competence of the jamoat.

11. To examine appeals from legal and physical persons relating to his [the leading specialist's] activity.

12. To participate in committees, working groups, gatherings, meetings, seminars and other events of the jamoat and raion.

13. To present quarterly and annual reports on work done to the chair of the jamoat at the appointed times.

14. To organize cooperation of the dehqon farms with providers of services to agriculture in the oblast' and the raion.

15. To help and give advice to the dehqon farms about the period to carry out the sowing and the use of modern techniques.

16. To facilitate the realization of agricultural reform.

17. To assist in the organization and activities of agricultural consulting services.

18. To coordinate work between government agencies and the private sector.

19. To ensure cooperation between the dehqon farms and the Consultative Council for Agricultural Management of the raion and oblast'.

20. In order to liquidate legal limitations and administrative barriers in the agro industrial and private sectors, gather proposals from farmers and farming businesses and present them to the Consultative Council.

21. Facilitate cooperation between water users' associations, dehqon farms, agricultural service providers, microfinance organizations, agricultural consulting centers and civil society organizations.

22. Facilitate the development of agricultural infrastructure, find needed materials, services, land and financial leasing opportunities and create farm service centers.

23. Cooperate with agricultural organizations and generalize statistical data about the agricultural sector at jamoat level.

24. Facilitate the development of household farms.

25. Participate in the application of international normative and legal acts in his activity.

26. Cooperate with and advise the population, together with the appropriate local organizations, about the prevention of various agricultural diseases.

- In accordance with the presentations of the dehqon farms and associations [of dehqon farms] and the public sector[farms,] for cooperation with the organizations [that] plan production, to be responsible for the forecasting of the development of agriculture.24F[40]

27. Participate in the work of sessions of the jamoat [council] and its committees.

28. Fulfill other tasks as assigned by the jamoat chair in accordance with the law.

IV. The rights of the Leading Specialist of the Jamoat

29. The leading specialist of the jamoat has the following rights:

- To participate in the examination of the appropriate issues and activity of the jamoat and its decision-making on them;
- To become familiar with [documentary] materials of which the jamoat disposes;
- To demand materials and information for the fulfillment of his job duties from state agencies;
- To put forward proposals to eliminate deficiencies in the activities of central and local executive agencies regarding the fulfillment of normative and legal acts of agriculture;
- To organize and conduct meetings, gatherings and other events concerning agricultural issues;
- To make proposals concerning the improvement of his work within the limits of his job responsibilities and the activity of the jamoat to the jamoat chair.

30. The leading specialist of the jamoat has other rights as provided for in the normative and legal acts of the Republic of Tajikistan.

V. Accountability of the Leading Specialist of the Jamoat

31. The leading specialist of the jamoat is accountable:

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[40] *[Translator's note]* This point is bulleted rather than numbered, although it stands at the same level as all the numbered points in the Tajik original. It seems likely from its placement that point 28 was originally the end of this section of the job description, and so the bullet was added during editing.

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The Law of the Republic of Tajikistan on Forecasts states that fulfillment of the "forecast" is still obligatory for all production organizations, of all forms of ownership, in the Republic of Tajikistan. In principle, the "forecast" is developed from the bottom up based on statements of their capabilities from the farms. In fact, it is done from the top down, by determining the national sown area for each major crop (with an anticipated yield) and then dividing that up among subordinate territorial administrative units down to the level of the individual commercial farm.

I would interpret this clause to mean that the jamoat leading specialist is responsible for determining and then ensuring the fulfillment of the jamoat's agricultural production plan.

- For the presentation of incorrect information when hired as a civil servant or for his personnel file;
- For confirmed actions that violate the Law of the Republic of Tajikistan "On the Struggle with corruption" concerning his hiring for and work as leading specialist of the jamoat;
- For failing to observe the limits [on his activity] established by the Laws of the Republic of Tajikistan "On Civil Service" and "On the Struggle with Corruption";
- For revealing job-related secrets, state and other secrets that are protected by the normative and legal acts of the Republic of Tajikistan;
- For failing to observe the established norms of the "Code of Ethics of the State Servant of the Republic of Tajikistan" while engaged in the fulfillment of his duties.
- For failing to observe the requirements of the Law of the Republic of Tajikistan "On regulating traditions, celebrations and rituals";
- For failing to observe labor discipline and the rules for workplace conduct;
- For failing to file, and/or for filing incorrect tax returns concerning income, or incorrect Declarations of the Property of State Servants, within the established periods;
- For other forms of accountability established by the normative and legal acts of the Republic of Tajikistan.

32. The leading specialist of the jamoat is called to account before a court of law in accord with the law for failure to fulfill or improper fulfillment of his employment duties, violations of labor discipline or the rules of workplace order or for improper use or destruction of property that has been assigned to him for the fulfilment of his employment duties.

VI. Concluding Provisions

33. This job description is done in two copies. One copy is kept in the personnel department. The other copy, having been signed by the responsible personnel official and registered in the personnel department's official journal, is given to the leading specialist.

34. Should there be major changes in the job duties or rights of the administrative-civil servant as a result of attestation or the annual job evaluation, if the jamoat is reorganized, or in other cases that lead to a change in the job description of the leading specialist, a new job description will be drafted and confirmed.

Annex 10. Scope of work for the Jamoat Extension Coordinator

Барномаи Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

Farmer Advisory Services in Tajikistan

Консультативные услуги домохозяйствам и мелким

дехканским хозяйствам в Таджикистане

Ӯҳдадориҳои вазифавӣ/Scope of Work/ Должностные Инструкции

ҲАМОҲАНГСОЗИ ЭКСТЕНШЕН ДАР ҶАМОАТ/JAMOAT EXTENSION COORDINATOR / КООРДИНАТОР ПО ЭКСТЕНШЕНУ В ДЖАМОАТЕ

Мутахассисон оид ба Экстеншен дар Ҷамоатҳо (МЭҶ) яке аз звеноҳои алоқамандкунандаи асосӣ байни мақомоти ҳокимияти маҳаллӣ ва минтақавӣ ва шарикони USAID, ки ташаббускории “Озуқа ба Хотири Ояндаи Тоҷикистон (ОХО/Т), Экстеншен ва Хизмати Машваратӣ (ЭХМ), айни замон барномаи FAST USAID-ро амалӣ менамоянд, ба шумор меравад. Онҳо дар ташкили гурӯҳҳои таълимӣ иборат аз деҳқонзанҳо мусоидат менамоянд, ё ин ки худ дар таъсис додани он замина мегузоранд.

Jamoat extension coordinators (JECs) are the main link between the USAID partners implementing the USAID Feed the Future initiative for Tajikistan (FTF/T) Extension and Advisory System (EAS), at this time FAST, and local and regional authorities. They assist to, or themselves directly organize household farmers’ (women’s) learning groups.

Координаторы по Экстеншену в Джамоате (КЭД-ы) являются основным связующим звеном между органами местной и региональной власти и партнерами USAID по выполнению инициативы USAID “Продовольствие во имя будущего Таджикистана” (ПВИБ/Т), Системы Экстеншена и Консультативных услуг (СЭКУ), в данное время FAST. Они помогают, или сами организовывают дехканские (женские) учебные группы.

Ҷои кор/Location/Место работы

Барои вазифаи мазкур ба роҳ мондани фаъолият дар ҷамоати дахлдори вилояти Хатлон пешбинӣ шудааст. Дар ҳолати зарурӣ, сафарҳои мунтазам ба ҳамаи ҷамоатҳо ва сафарҳои хизматӣ ба вилояти Хатлон ва шаҳри Душанбе, ки ба наҷша гирифта нашудаанд, талаб карда мешавад.

This position is based in the appropriate jamoat of the Khatlon region. Regular travel throughout the jamoat and occasional travel throughout Khatlon and to Dushanbe will be required.

Данная позиция базируется в соответствующем джамоате Хатлонской области. При необходимости, могут потребоваться регулярные поездки по всем джамоатам и незапланированные поездки по всей Хатлонской области и г. Душанбе.

Барои вазифаи мазкур воҳиди пурраи корӣ пешбинӣ карда шудааст. Корманд наметавонад ҳамзамон дар дигар ташкилотҳо, муассисаҳо ва ширкатҳо фаъолият намояд, ё ин ки тиҷорати шахсии худро пеш барад.

This is a full-time position. The employee may not simultaneously work in any other organization, institution or firm, nor carry on an independent business.

Данная позиция рассчитана на полную ставку. Сотрудник не может одновременно работать в других организациях, учреждениях и фирмах., ни вести собственный бизнес.

Ҳисоботдиҳӣ/Reporting and Supervision/Подотчетность

Ҳамоҳангсози Экстеншен дар Ҷамоат ба Муовини Байналмиллалии Роҳбари Барнома, ки барои системаи ЭКУ масъул мебошад, ё ба Муовини миллии Роҳбари барнома, ки барои вилояти Хатлон ҷавобгар мебошад, ё ба шахси дигар, ки аз тарафи Роҳбари Барнома таъин гардидааст, ҳисобот медиҳад.

The Jamoat Extension Coordinator reports to the international Deputy Chief of Party responsible for the EAS and the national Deputy Chief of Party responsible for Khatlon or to such other person as designated by the Chief of Party.

Координатор по экстеншену в Джамоате подотчетен Международному Заместителю Руководителя Программы, который несет ответственность за систему ЭКУ, или национальному Заместителю Руководителя Программы, ответственному за Хатлонскую область, или другому лицу, назначенному Руководителем Программы.

Вазифаҳои асосӣ/Main Tasks/Основные обязанности

- Нигаҳ доштани тамос бо мақомотҳои ҷамоатҳо, ноҳиҷҳо ва минтақаҳо
- Нигаҳ доштани тамос бо иҷрокунандагони маҳаллии дигар чорабиниҳо дар ҷамоатҳои худ, ки аз тарафи донорҳо маблағгузорӣ карда мешаванд
- Ташкили чорабиниҳои ЭХМ дар ҷамоатҳои худ барои хоҷагиҳои хурди фермерӣ (хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ) бо мансабдорони маҳаллӣ ва раисони маҳалла, ҳамчун як қисми «Экстеншен ва Хизмати Машваратии ПВБ/Т»
- Нигаҳдории тамосҳои рӯзмарра бо гуруӯҳҳои таълимӣ дар ҷамоатҳои худ
- Анҷом додан ва ё мусоидат намудан дар мавриди гузарондани чорабиниҳои таълимии нақшавӣ оид ба экстеншен бо гурӯҳҳои таълимӣ дар ҷамоатҳои худ
- Дар ҳамоҳангсозӣ бо идоракунии барномаи FAST, ташкил намудани гурӯҳҳои нави таълимӣ дар ҷамоат
- Омӯзондани ҳамоаҳнгсозон-волонтерҳои гурӯҳҳои таълимӣ дар ҷамоатҳои худ
- Кафолат додан оид ба он, ки гурӯҳҳои маҳаллӣ аз мавҷудияти худ бохабаранд ва амали худро мувофиқи барнома ҳамоҳангсоз менамоянд
- Дар ҳамоҳангсозӣ бо идоракунии барномаи FAST, осон намудани хариди захираҳои истеҳсолотӣ ва фурӯши маҳсулоти кишоварзии хонаводаҳо ба таври гурӯҳӣ, ки узви гурӯҳи таълимии барномаи FAST мебошанд

- Пешниҳоди иттилоот барои гурӯҳҳои таълимӣ оид ба таҷрибаи хуби кишоварзӣ, тамосҳои муфид, таъвилдиҳандагони захираҳои босифати истеҳсолӣ, имкони фурӯши маҳсулот ва ғайраҳо
- Дар ҳолати зарурӣ, шинос намудани гурӯҳҳои таълимӣ ба мақомоти ҳокимияти давлатӣ
- Шинос будан бо вазъхияти дар ҷамоат
- Расонидани кӯмак дар мавриди ҷамъоварии маълумот аз ҷамоатҳо барои таҳлил, мониторинг ва дигар мақсадҳо аз рӯи талаботи кормандони барномаи FAST
- Шинос будан бо *Раҳнамои Барномаи FAST оид ба Муҳити Зист*
- Мутмаин будан дар мавриди он, ки гурӯҳҳои таълимӣ талаботҳои *Раҳнамои Барномаи FAST оид ба Муҳити Зист* риоя намуда истодаанд
- Риоя намудани ҳамаи талаботҳои *Раҳнамои Барномаи FAST оид ба Баҳрабардорӣ*
- Иҷрои дигар вазифаҳо, ки аз тарафи Роҳбари Барнома таъин карда мешавад

- Maintain liaison with jamoat, nohia and viloyat authorities
- Maintain liaison with other agriculture-related institutions in the jamoat
- Maintain liaison with local implementers of other donor-funded activities in their jamoat
- Arrange EAS activities in their jamoat for smallholder farmers (household and small *dehqon* farmers) with local officials and mahalla chairs, as part of the FTF/T extension and advisory system
- Maintain day-to-day contact with learning groups in their jamoat
- Conduct or assist the conduct of routine extension learning activities with learning groups in their jamoat
- In coordination with FAST management, organize new learning groups in their jamoat
- Train the volunteer coordinators of learning groups in their jamoat
- Assure that learning groups in the mahalla are aware of each other and coordinate their activities as appropriate
- In coordination with FAST management, facilitate group purchase of inputs and group sales of agricultural crops from household farmers who are members of FAST learning groups
- Provide information to learning groups about good agricultural practices, useful contacts, vendors of quality inputs, sales opportunities, etc.
- When necessary, represent the learning groups to local authorities
- Be familiar with the situation in their jamoat

- Assist in the collection of data from the jamoat for analysis, monitoring, and other purposes as requested by FAST staff
- Be familiar with the *FAST Program Environmental Manual*
- Ensure that learning groups follow the requirements of the *FAST Program Environmental Manual*
- Observe all requirements of the *FAST Program Operations Manual*
- Perform other tasks as assigned by the Chief of Party.
- Поддержание связи с властями джамоатов, районов и регионов
- Поддержание связи с местными исполнителями других мероприятий, финансируемых донорами, в своих джамоатах
- Организовать мероприятия системы ЭКУ в своих джамоатах для мелких фермерских хозяйств (домохозяйств и мелких *дехканских* хозяйств) с местными чиновниками и председателями махаллы, в рамках системы «Экстеншена и Консультативных Услуг и ПВИБ/Т»
- Поддержание повседневных контактов с учебными группами в своих джамоатах
- Проведение или содействие в проведении плановых учебных деятельностей по экстеншену с учебными группами своих джамоатов
- В координации с управлением программы FAST, организовать новые учебные группы в джамоате
- Обучать координаторов-волонтеров учебных групп своих джамоатов
- Гарантировать, что учебные группы махаллы знают о друг друге и координируют свои действия в случае необходимости
- В координации с управлением программы FAST, облегчить групповую закупку производственных ресурсов и групповую продажу сельскохозяйственных продукций из домохозяйств, которые являются участниками учебной группы программы FAST
- Предоставление информации для учебных групп о хорошей сельскохозяйственной практике, полезных контактах, поставщиках качественных производственных ресурсов, возможности сбыта продукции и др.
- При необходимости, представлять учебные группы местным органам власти
- Быть осведомлённым о ситуации в джамоате
- Оказывать помощь в сборе данных из джамоатов для анализа, мониторинга и других целей, по просьбе сотрудников программы FAST
- Быть знакомым с *Руководством по Окружающей Среде программы FAST*
- Убедиться, что учебные группы следуют требованиям *Руководства по Окружающей Среде программы FAST*
- Соблюдать все требованиям *Руководства по Эксплуатации программы FAST*

- Выполнять другие задачи, назначенные Руководителем Программы

Тахассуснокӣ ва талаботҳо/Qualifications and Desired Competences/Квалификация и желаемые навыки

- Шаҳрванди Ҷумҳурии Тоҷикистон будан
- Иқомат намудан дар ҷамоати дахлдор (ҳуҷҷати зист дар ҷамоати дахлдор талаб карда мешавад)
- Доштани таҷрибаи назаррас дар соҳаи кишоварзӣ
- Шинос будан бо иқтисодиёт, ҷамъият, ҷуғрофия ва муносибати байнишахсӣ дар ҷамоатҳои худ
- Қобилияти самаранок ва мустақилона фаъолият намудан бидуни назорати мунтазам
- Доштани дараҷаи кофии касбӣ барои ҳамкории якҷояи самаранок бо мақомоти ҳокимияти маҳаллӣ ва минтақавӣ
- Қобилияти фаолияти самаранок бо занони деҳқойҳо
- Қобилияти фаъолияти самаранок дар гурӯҳи сермиллат ва анҷомдиҳии кор дар мӯҳлатҳои кӯтоҳтарин
- Донистани забонҳои русӣ ва тоҷикӣ талаб карда мешавад
- Донистани забонҳои узбекӣ ва англисӣ афзалият дода мешавад

- Be a citizen of the Republic of Tajikistan
- Live in the appropriate jamoat (must possess the appropriate residence permit)
- Have substantial experience in agriculture
- Be familiar with the economy, society, geography and interpersonal relations of their jamoat
- Be able to effectively work independently without close supervision
- Be of a sufficient professional level to effectively interact with local and regional officials
- Be able to work effectively with rural women
- Be able to work effectively in a multicultural team and meet tight deadlines
- Knowledge of Russian and Tajik is required
- Knowledge of Uzbek and/or English would be an asset

- Быть гражданином Республики Таджикистан
- Жить в соответствующем джамоате (потребуется соответствующий вид на жительство)
- Иметь значительный опыт работы в сельском хозяйстве

- Быть знакомым с экономикой, обществом, географией и межличностными отношениями в своих джамоатах
- Уметь эффективно работать самостоятельно, без постоянного надзора
- Иметь достаточный профессиональный уровень, чтобы эффективно взаимодействовать с местными и региональными органами власти
- Уметь эффективно работать с сельскими женщинами
- Уметь эффективно работать в многонациональной команде и уложиться в сжатые сроки
- Знание русского и таджикского языков обязательно
- Знание узбекского и английского языков приветствуется

— Revised Don Van Atta, 17 September 2014, 27 October 2014

—Аз тарафи Ҷаноби Дон Ван Атта санаи 1 Сентябри соли 2014 аз нав дида баромада шуд

Annex 11. Scope of work for the agricultural production specialist (in Russian and English)

Барномаи Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

Farmer Advisory Services in Tajikistan

Консультативные услуги домохозяйствам и мелким дехканским хозяйствам в Таджикистане

Ӯҳдадориҳои вазифавӣ/Scope of Work/Должностные Обязанности

Муттахассис оид ба Истеҳсоли Маҳсулоти кишоварзӣ/Agricultural Production Specialist/Специалист по производству сельскохозяйственной продукции

Шарҳи вазифа/Position Description/Описание Должности

Муттахассис оид ба Истеҳсоли Маҳсулоти кишоварзӣ рушди гурӯҳҳои таълимии хонаводаҳо ва тамоми системаи ЭХМ ОХО/Т-ро дастгирӣ менамояд.

The Agricultural Production Specialist supports the organization and development of household farm learning groups and the overall FTF/T EAS.

Специалист по производству сельскохозяйственной продукции поддерживает организацию и развитие учебных групп домохозяйств и всеобщей системы ЭКУ ПВИБ/Т.

Ҷои кор/Location/Место работы

Барои вазифаи мазкур воҳиди пурраи корӣ ба ҳисоб гирифта шудааст, ҷои асосии корӣ воқеъ дар дафтари Барнома дар шаҳри Қӯрғонтеппаи вилояти Хатлон.

This position is based in the Qurghonteppa office in Khatlon raion.

Данная должность рассчитана на полную ставку, основное место работы в офисе программы в г. Курган-Тюбе Хатлонской области.

Корманд ҳамзамон дар ташкилотҳои дигар, муассисаҳо, ва ширкатҳо кор карда наметавонад.

This is a full-time position. The employee may not simultaneously work in any other organizations, institutions and firms.

Сотрудник не может одновременно работать в других организациях, учреждениях и фирмах.

Ҳисоботдиҳӣ/Reporting and Supervision/Подотчетность

Муттахассис оид ба Истеҳсоли Маҳсулоти кишоварзӣ ба Муовини Роҳбари Барнома, ё ин ки ба шахси дигар, ки аз тарафи Роҳбари Барнома таъин карда шудааст, ҳисобот медиҳад.

The Agricultural Production Specialist reports to the Deputy Chief of Party or other person as specified by the Chief of Party.

Специалист по производству сельскохозяйственной продукции подотчётен Заместителю Руководителя программы или другому лицу, назначенному Руководителем программы.

Вазифаҳои асосӣ /Main Tasks/Основные обязанности:

- Беҳтар намудани қобилияти аъзои гурӯҳҳои таълимӣ дар мавриди самаранок идора намудани хонаводаҳои худ ва хоҷагиҳои хурди деҳқонӣ;
- Пешниҳод намудани иттилоот ва кӯмак кардан ба гурӯҳҳои таълимии хонаводаҳо, ҲЭҶ-ҳо ва ҳамсӯҳбатони системаи ЭХМ;
- Расонидани кӯмак дар тартиб додани ҷадвали корӣ оид ба истифодабарии воситаҳои истеҳсолоти кишоварзӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ;
- Дастгирӣ намудани робита бо Ҳамоҳангсозони Экстеншен дар ҷамоат;
- Муайян намудани зироатҳои афзалиятноки кишоварзи ва ҳам маҳсулоти чорводорӣ;
- Вохӯрӣ ва омода намудани ҳисобот оид ба вохӯриҳо бо аъзои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ ҳар ҳафта, ё аз рӯи зарурат;
- Омӯзонидан ва ҷалб намудани мутахассисони дигар барои таълими аъзои гурӯҳҳо ба коркард, ба фурӯш расонидан ва нигаҳдории маҳсулоти кишоварзӣ;
- Аз рӯи зарурат, омӯзонидан ба усулҳои халқии мубориза бар зидди зараррасонҳо ва касалиҳои зироатҳои кишоварзӣ ва чорво;
- Кӯмак расонидан барои ташкили гурӯҳҳои таълимӣ ва қитъаҳои таълимӣ, омӯзонидани технологияи киштгардон, бунёди гармхонаҳо ва усулҳои тайёр кардани компост;
- Омӯзонидан ба тартиби интихоб намудани тухмиҳо ва ниҳолҳои сертификатсияшуда;
- Кор кардан бо волонтёрҳо - ҳамоҳангсозони гурӯҳҳо (“деҳқонҳои пешбар”) ва расонидани кӯмак барои омӯзонидани онхо;
- Мусоидат намудан дар мавриди ташкили машваратдиҳии ҳуқуқӣ дар мувофиқа бо дархости хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ;
- Ба рох мондани робита бо муассисаҳои ҳукуматӣ, ташкилотҳои байналмилалӣ, ТҒҲ-ҳо, агромағозаҳо ва ғайраҳо;
- Донистани меъёрҳои USAID доир ба Ҳифзи Муҳити зист, ки барои иҷро намудани ӯҳдадориҳои вазифавӣ заруранд;
- Донистани *Дастурамали Барнома оид ба Ҳифзи муҳити зист*;
- Донистан ва риоя намудани тартиботе, ки дар *Дастурамали амалиётии Барномаи FAST дарҷ гардидааст*;
- Иҷрои вазифаҳои дигар бо дастури Роҳбари Барнома.

- Improve the ability of members of learning groups to effectively manage their household and small dehqon farms;

- Provide information to and help train household farm learning groups, JECs and EAS facilitators;
- Help schedule work for agricultural production input products for household and small dehqon farms;
- Maintain liaison with Jamoat Extension Coordinators;
- Determine priority agricultural crops and livestock products;
- Meet and keep records of meetings with household farmers and smallholders on a weekly basis or as necessary;
- Train and involve other experts to train group members in processing, sale and storage of agricultural crops;
- Train in biological and chemical-based methods of controlling pests and diseases of agricultural crops and livestock when required;
- Assist in organizing learning groups and learning plots, train in crop rotation methods, organization of green houses and methods of composting;
- Train in procedures for selection of certified seeds and seedlings;
- Work with and help to train volunteer group coordinators (“lead farmers”);
- At the request of households and small dehqon farms, assist in arranging legal consultations;
- Maintain contacts with government agencies, international organizations, NGOs, agroshops and others;
- Be familiar with USAID environmental standards, required for fulfilment of job duties;
- Be familiar with the *FAST Program Environmental Manual;*
- Be familiar with and follow the procedures given in the *FAST Program Operations Manual*
- Other tasks as assigned by the Chief of Party.

- Улучшить способность членов учебных групп эффективно вести свои домохозяйства и мелкие дехканские хозяйства;
- Предоставлять информацию и помогать обучать учебные группы домохозяйств, КЭД-ов и фасилитаторов системы ЭКУ;
- Оказывать помощь в составлении графика работ по использованию средств сельскохозяйственного производства для домохозяйств и мелких дехканских хозяйств;
- Поддерживать связь с Координатором по Экстеншену в Джамоате;
- Определять приоритетные сельскохозяйственные культуры и продукты животноводства;
- Встречаться и документировать встречи с членами домохозяйств и мелких дехканских хозяйств еженедельно или же по мере необходимости;

- Обучать и привлекать других специалистов для обучения членов группы переработке, реализации и хранению сельскохозяйственной продукции;
- По мере необходимости обучать народным методам борьбы с вредителями и заболеваниями сельскохозяйственных культур и животных;
- Оказывать помощь в организации учебных групп и учебных участков, обучать технологии севооборота, построению теплиц и технологии приготовления компоста;
- Обучать процедурам по отбору сертифицированных семян и саженцев;
- Работать с волонтерами-координаторами групп («ведущие дехкане») и оказывать помощь в их обучении;
- В соответствии с запросами домохозяйств и мелких дехканских хозяйств способствовать организации юридической консультации;
- Налаживать контакт с правительственными учреждениями, международными организациями, НПО, агромагазинами и др.;
- Знать нормы USAID по охране окружающей среде, необходимые для выполнения должностных обязанностей;
- Знать Руководство *Программы по Охране Окружающей Среды*;
- Знать и следовать процедурам, данным в *Операционном Руководстве Программы FAST;*
- Другие задачи по указанию Руководителя программы.

Тахассус ва талаботҳо /Qualifications and Desired Competences/Квалификация и требования:

- Корманд бояд шаҳрванди Ҷумҳурии Тоҷикистон бошад;
- Ба таҳсилоти олии кишоварзӣ бартарӣ дода мешавад;
- Доштани тачрибаи амалӣ ва малакаҳо дар мавриди истеҳсоли маҳсулоти кишоварзӣ;
- Донистани усулҳои пешқадами парвариши зироатхои кишоварзӣ дар Тоҷикистон;
- Доштани малакаи хуби муошират ва хушмуомилагӣ;
- Қобилияти фаъолияти самаранок кор кардан дар гурӯҳ, дар вазъиятҳои ғайри стандартӣ, иҷрои кор дар муддати кӯтоҳ;
- Донистани забонҳои русӣ ва тоҷикӣ ҳатмист;
- Донистани забонҳои англисӣ ва ӯзбекӣ писандида мешавад.

- Be a citizen of the Republic of Tajikistan;
- Higher education in the sphere of agriculture is preferred;
- Have practical experience and skills in the production of agricultural crops;
- Knowledge of good agricultural practices in the production of agricultural crops in Tajikistan;

- Be communicable and polite;
- Ability to work effectively in a team, in irregular situations; to execute the work in a short time;
- Knowledge of Tajik and Russian languages required;
- Knowledge of Uzbek and English languages is an asset.
- Быть гражданином Республики Таджикистан;
- Иметь высшее сельскохозяйственное образование предпочтительно;
- Иметь практический опыт и навыки работы по производству сельскохозяйственной продукции;
- Знание передовой практики в производстве сельскохозяйственных культур в Таджикистане;
- Быть коммуникабельным и вежливым;
- Способность эффективно работать в команде, в нестандартных ситуациях; выполнять работу в сжатые сроки;
- Знание таджикского и русского языков обязательно;
- Знание английского и узбекского языков приветствуется.

Annex 12. Scope of work for the EAS facilitator

Барномаи Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

Farmer Advisory Services in Tajikistan

Консультативные услуги домохозяйствам и мелким дехканским хозяйствам в Таджикистане

Ӯҳдадориҳои вазифавӣ/Scope of Work/Должностные Обязанности

Ҳамсӯҳбат/Facilitator/Фасилитатор

Шарҳи вазифа/Position Description/Описание Должности

Ҳамсӯҳбат дар системаи FAST барои ташаккул, фаъолият ва дастгирии динамикаи мусбати гурӯҳҳо бо муштариён масъул мебошад (гурӯҳҳои таълимии хонаводаҳо).

In the FAST system, the facilitator is responsible for the formation, functioning and maintenance of good group dynamics with client groups (household farm learning groups).

В системе FAST фасилитатор отвечает за формирование, функционирование и поддержание положительной групповой динамики с группами клиентов (учебные группы домохозяйств).

Ҷои кор/Location/Место работы

Вазифаи мазкур дар дафтари шаҳри Қурғонтеппа воқеъ аст.

This position is based in the Qurghonteppa office.

Данная позиция расположена в офисе г. Курган-Тюбе.

Барои вазифаи мазкур воҳиди пурраи корӣ ба ҳисоб гирифта шудааст. Корманд ҳамзамон дар ташкилотҳои дигар, муассисаҳо ва ширкатҳо кор карда наметавонад.

This is a full-time position. The employee may not simultaneously work in any other organization, institution or firm.

Данная позиция рассчитана на полную ставку. Сотрудник не может одновременно работать в других организациях, учреждениях и фирмах.

Ҳисоботдиҳӣ/Reporting and Supervision/Подотчетность:

Ҳамсӯҳбат ба Муовини Роҳбари Барнома, ё ин ки ба шахси дигар, ки аз тарафи Роҳбари Барнома таъин карда шудааст, ҳисобот медиҳад.

The facilitator reports to the Deputy Chief of Party or other person as specified by the Chief of Party.

Фасилитатор подотчетен Заместителю Руководителя Программы или другому лицу, назначенному Руководителем Программы.

Вазифаҳои асосӣ/Main Tasks/Основные обязанности:

- Мусоидат намудан дар мавриди ташкили гурӯҳҳои таълимӣ;
- Омода намудани маводи тахлимӣ ва ғайра барои маҷлисҳои гурӯҳ;
- Омода намудани ҳисобот доир ба корҳои анҷомдодашуда дар гурӯҳ ва якҷоя бо гурӯҳ;

- Муайян карда тавонистани волонтёрҳо дар гурӯҳҳо (“деҳқонҳои пешбар”);
- Таъмин намудани равандҳои муоширатӣ ва мубоҳисавии гурӯҳҳо;
- Дастгирӣ намудани динамикаи мусбати гурӯҳ;
- Донистани меъёрҳои USAID доир ба Муҳити зисти, ки барои иҷро намудани ӯҳдадориҳои вазифавӣ заруранд;
- Донистани *Дастурамали Барнома оид ба Муҳити зист;*
- Донистан ва риоя намудани тартиботе, ки дар *Дастурамали амалиётии Барномаи FAST* дарҷ гардидааст;
- Иҷрои вазифаҳои дигар бо дастури Роҳбари Барнома.

- Promote the establishment of learning groups;
- Prepare training and other materials for group meetings;
- Prepare reports on work done in and with the group;
- Identify the groups’ volunteer contact persons (“lead farmers”);
- Facilitate group discussions and communication;
- Maintain positive group dynamics;
- Be familiar with USAID environmental standards required for fulfillment of job duties;
- Be familiar with the *FAST Program Environmental Manual;*
- Be familiar with, and follow the procedures specified in, the *FAST Program Operations Manual;*
- Perform other tasks as assigned by the Chief of Party.

- Способствовать созданию учебных групп;
- Подготавливать учебные и другие материалы для проведения собраний групп;
- Подготавливать отчеты о проделанной работе в группе и с группами;
- Уметь выявлять волонтеров в группах;
- Обеспечивать коммуникационные и дискуссионные процессы группы;
- Поддерживать позитивную групповую динамику;
- Знать нормы USAID по окружающей среде, необходимые для исполнения должностных обязанностей;
- Знать *Руководство Программы по окружающей среде*;
- Знать и следовать процедурам, указанным в *Операционном Руководстве Программы FAST*;

- Выполнять другие задачи по указанию Руководителя Программы.

Тахассуснокӣ ва талаботҳо/Qualifications and Desired Competences/Квалификация и требования:

- Корманд бояд шаҳрванди Ҷумҳурии Тоҷикистон бошад;
- Доштани таҷрибаи корӣ дар соҳаи кишоварзӣ;
- Доштани таҷрибаи корӣ бо усулҳои “Баҳодии ҷамъиятӣ” писандида мешавад;
- Қобилияти гӯш кардани ҳамсӯҳбат;
- Доштани малакаи хуби муошират ва хушмуомилагӣ, ҳамзамон қобилияти мусоидат намудан ба фаъолияти гурӯҳ;
- Қобилияти фаъолияти самаранок кор кардан дар гурӯҳи сермиллат;
- Донистани забонҳои тоҷикӣ ва русӣ ҳатмист;
- Донистани забонҳои англисӣ ва узбекӣ писандида мешавад.

- Be a citizen of the Republic of Tajikistan;
- Preferably have experience in agriculture;
- Previous experience with participatory methods highly desirable;
- Ability to listen;
- Be sociable and polite but able to facilitate group activities;
- Ability to work effectively in a multinational team;
- Ability to work well under pressure;
- Knowledge of Russian and Tajik languages required;
- Knowledge of Uzbek and English languages would be an asset.

- Быть гражданином Республики Таджикистан;
- Желательно иметь опыт работы в сельском хозяйстве;
- Желательно иметь опыт работы с методами «Общественной оценки»;
- Умение слушать собеседника;
- Быть коммуникабельным и вежливым, но на ряду с этим уметь способствовать деятельности группы;
- Способность эффективно работать в многонациональной команде;
- Способность работать в стрессовых ситуациях;
- Знание таджикского и русского языков обязательны;
- Знание английского и узбекского языков приветствуется.

Annex 13. Scope of work for the Extension Materials Development Specialist

The Extension Materials Development Specialist is responsible for sourcing, compiling/editing and publishing: (a) materials supporting farmer extension activities (production, marketing and/or processing) focused on selected agricultural crops (crops and livestock) and (b) training materials for use by project extension staff to increase the effectiveness of training programs with the learning groups in the FTF/T EAS.

Location

This position is full-time, based in Dushanbe, with extensive weekly travel to the ZoI.

Reporting and Supervision

The Extension Materials Development Specialist reports to the Deputy Chief of Party for Extension or other persons as specified by the Chief of Party.

Main Tasks

- Prioritize materials for development according to the demand of FAST's extension system working closely and responsively as a fellow team member with the extension staff (facilitators, agricultural production specialists, and jamoat coordinators).
- Work just-in-time to have materials ready for a season of regular extension activities.
- Research and compile materials starting with those locally available in Tajik, Uzbek, Russian, etc., then regional and international sources for better innovation to fill information gaps.
- Develop a program template for extension materials that is simple and user-friendly.
- Develop (adapt, customize, write, test) materials to support extension staff's activities with learning groups: (a) curriculum with both agronomic content and suggested participatory process to use during a specific extension activity (visits), and; (b) a simple handout to give to learning group members to reinforce the activity.
- By the end of the FAST project, create project materials supporting 10 – 12 crops with 8 – 10 extension activities each/ growing season. Compile these in a compendium.
- Determine what skills development activity the farmer groups demand and can immediately apply. Adapt, customize, write, test, and revise appropriate material starting with the Catholic Relief Services / MEAS Five Skills Set (group management, finance, marketing, natural resources management, innovations). [41] Identify complementary training materials beyond CRS for development and inclusion.[42]
- Arrange all translations to support materials development and ensure their quality.
- Understand the application of FAST's environmental manual and assist with assuring all materials are compliant.

[41] Staff determined, in late 2013, some sessions on group formation and farmer experimentation would be most relevant. Some are translated into Tajik and Russian.

[42] Develop and field test approximately 50 training sessions of material.

- Other tasks as assigned by the Chief of Party

Annex 14. P. Malvicini, "Workshop: Learning how to facilitate"

I. Introduction (Pete) [10 minutes]

A. Personal introductions

1. Introduce Pete
2. Participants quickly introduce themselves – name, country, role/experience in FAST

B. As a result of this workshop, you will: (Trainer will present these off the Flipchart)

1. Lead more productive groups
2. Develop and manage an effective group agenda
3. Create a group environment that increases productivity
4. Promote collaboration within teams
5. Make groups more productive by the application of facilitation skills
6. Manage group/interpersonal conflict
7. Understand and balance different communication styles of participants
8. Make diverse teams more effective

- Question: Are there any that we need to add to our list based on what we heard here?

C. Logistics

1. Review the schedule (on a flipchart page)
2. Toilets
3. Introduce the Parking Lot (Place easel with flipchart, explaining it is for ideas to be dealt with later.

II. Facilitation as a way of working (Co-facilitator) [10 minutes]

A. Let's differentiate between several terms (at your table groups): What is the difference between:

1. Management – making decisions, directing the work of others;
2. Facilitation – Making easy, the process of helping groups carry out their own work

3. Note: We will think of these terms as "ideal types." They are a heuristic; ways of helping us see differences without assuming that they are 100% accurate.

B. Why are we talking about facilitation now (in FAST):

1. FAST's objectives
2. Workshops not as effectively run as they might be
3. Need/want new skills
4. Etc.

III. Group Modalities [10 minutes]

A. Present Matrix on White Board: way of explaining

		Group Members	
		Active	*Passive*
Leaders	Active	Facilitated	Directive
	Passive	Anarchy	Laissez-faire

IV. Effective Groups: (Pete) [20 minutes]

A. Groups – Types of groups (Put matrix on the white board and differentiate by presentation, between the different types)

1. Information sharing groups
2. Processing groups
3. Decision-making groups
4. Implementation/action groups

B. Challenges and strategies for making groups effective – Pete leads the discussion and Co-facilitator fills in the matrix on the white board; people work at their table groups and then report back

1. Challenges
2. Strategies

C. Group Planner: making Groups effective [Co-facilitator leads discussion]

1. Discuss briefly

2. Give handout [ACTIONS AND DECISIONS]

V. Creating a Climate for Productive Groups [15 minutes]

A. What is a group climate?

B. Elements of a climate conducive to change:

1. Physical climate
2. Social
3. Psychological

VI. Creating productive conversations (Co-facilitator) [15 minutes]

A. Facilitative approach

1. Issue introduced: problem stated
2. Process: facilitated discussion
3. Solution: created by the group

xxxxxxxxxxxxxxx

xxxxxxxxxxxxxxxxxxxxxxxxx

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

New xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx Decision

Topic xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx point

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Divergence Convergence

[HANDOUT: DIVERGENCE/CONVERGENCE]

B. Two Steps in the process:

1. Divergent thinking
   - Generating alternatives
   - Free-for-all open discussion
   - Gathering diverse points of view
   - Unpacking the logic of a problem
2. Convergent thinking
   - Evaluating alternatives
   - Summarizing key points
   - Sorting ideas into categories

- Arriving at general conclusions

VII. Developing facilitation skills [20 minutes]

A. Role play – (Co-facilitator lead role play in fishbowl environment)

1. Been asked to lead a task force; examine what FAST staff feel are the concerns that FAST staff have about living in Khatlon:
    - What are people's concerns?
    - What are they talking about
    - How do they feel?
    - Why are these concerns?
    - What are they doing about them?
2. Do it without making a single declarative statement;

B. Debriefing (Pete)

1. What did you notice about the process:
    - Questions are the most important tool
    - Co-facilitator asked only questions
    - Led group in the process
    - Came to a conclusion
2. What makes questions work?
    - Engages people in the analysis
    - Consistent with how people learn
    - Promotes a sense of ownership
    - Broaden the range of ideas available
    - Expands the range of ideas on the table
    - Etc.

C. Talk about questions (Pete)

1. Question: What types of questions did Co-facilitator use? [Distribute handout]
2. Present the types of questions: sequence, etc.

Questions and Facilitation

Type	Purpose	Examples
Observation	• Lay out and clarify the facts • Establish common base-line of information • Stimulate in-depth observation	• What is the situation here? • What did you see? • Can you describe the context? • What happened?
Reflective	• Get people to think about the issues • Elicit personal views • Stimulate critical reflection • Reduce emotional baggage by talking	• How do you feel about that? • What is your perspective? • Do you agree with what she said? • What comes to your mind?
Analytical	• Engage participants in analysis • Get people to think critically about issues • Stimulate more in-depth thinking • Challenge underlying assumptions	• Why do you say that? • What are the causes of such-and-such? • What is the argument for this? • What would explain that?
Application	• Help participants to personalize what has been discussed • Move from reflection to action	• What's our decision here? • Who is going to do this? • What is the next step? • Where should we start?
Bounce	• Redirect questions from facilitator to other participants • Keep facilitator out of expert role • Keep participants in engaged	• Great question: what do you think? • Do you think about his question? • Anyone want to take a shot at that question?
Linking	• Tie threads of the conversation together • Show progress in a direction • Keep people focused on the core issue	• How would you relate his comment with the one that she made? • Do you see any common themes emerging in this discussion?
Synthesizing	• Move the group toward closure • Show progress in the discussion • Focus on core issues; eliminate extraneous thoughts	• What is the most important thing you have heard in this discussion? • What is the core issue here? • What is our conclusion?

D. Strategies for asking questions

1. Move progressively from observation to action
2. When in doubt, ask “why?”
3. Asking questions is great fun/challenging!

E. Problems with asking questions: Questions are a learned skill

1. People answer the questions (have to do something with them)
2. Tendency of some people to dominate
3. Difficulty of asking good questions,

VIII. Opportunity to practice facilitation (Pete) [20 minutes]

A. Want to quickly note the roles that the facilitator may play while facilitating: [Distribute Handout: *ROLES OF THE FACILITATOR*]]

1. Establish the group context
2. Create and guide the agenda
3. Keep the discussion/group on task
4. Clarify and rephrase people’s comments
5. Equalize participation
6. Pace the group
7. Reformulate what people contribute
8. Identify and deal with communication problems
9. Summarize and synthesize
10. Manage conflict
11. Solicit feedback

B. Context – You are the leader of a task force: Your assignment is to identify the three, most important trends in Central Asia that you believe will affect FAST’s extension strategy over the next decade. This report will be used to stimulate discussion as part of the project planning process.

C. Several guidelines:

1. This role play will continue for 12-15 minutes.
2. One person will serve as the facilitator for the first half of the discussion; a second person will become the facilitator for the second part of the discussion. (When we ring the bell, please switch facilitators.) Please choose the two people who will facilitate this discussion.
3. Spend the first half of the discussion on divergence and then transition over to convergence.

D. Debriefing: process what you saw (Pete)

1. How did it go? How did you feel about it?
2. What worked well? What didn't work?
3. Facilitators – How did you feel about facilitating? What did you wish you knew or what additional skills did you wish that you had?

IX. Tools for facilitating conversation (Co-facilitator) [10 minutes]

A. Let's look at some common techniques that we are trying to use in this workshop. Think of them as tools for your own use.

Action	**Rationale**	**Methods**
Paraphrasing	• Listening skill • Calming • Clarifying • Thinking out loud	• Use own words to say what speaker said • Summarize long statements • Get agreement with accuracy of paraphrase
Drawing out	• Support people in taking the next step • Provide space for getting the entire idea out • Bring clarity	• Use alongside of paraphrasing, not instead of • "Tell me more…." • Use body language to get additional comments
Mirroring	• Capture people's exact words • Build trust • Speeds up discussion	• Repeat statements back verbatim • Repeat key words or phrases • Keep voice warm and accepting
Gathering ideas	• Collecting different views • Broadening range of options being considered	• Brainstorming; describe the task • Coach the group to suspend judgment • Honor all points of view
Stacking	• Let's people know their turn is coming • Keeps people patient	• Note who wants to speak • Indicate order of speakers • Honor the order given • Provide others with the opportunity to speak
Tracking	• Keeping track of the lines of thought • Show convergence of ideas • Let's everyone know their ideas are being considered	• Note the different themes • Provide periodic, internal summarizes • Check with the group to make sure of accuracy
Encouraging	• Create opportunities to participate • Engaging spectators	• "Who else has an idea?" • "What is your experience?" • "Anyone else feel the same way about that?"

Action	Rationale	Methods
		• "Who hasn't spoken yet?"
Balancing	• Making sure that other points of view are heard • Provides open environment • Engages people who might be marginalized	• "Anybody see things differently?" • "Does everybody agree with that view?" • "Let's take an informal poll."
Making space	• Letting quiet people join into the discussion • Brings in people who may be marginalized	• Watch body language • Invite quiet people to speak • Don't put people on the spot • Break up group into smaller groups
Intentional silence	• Provide change of pace • Let people reflect • Underscores significance of something being said	• Let time pass • Maintain eye contact and body language • Say nothing • Use hands for silence
Listening for common ground	• Break an impasse • Reduce sense of polarity • Instill hope	• Summarize similarities and differences • Note areas of common ground • Highlight likely agreements

Source: Drawn on Sam Kaner et al.: *Facilitator's Guide to Participatory Decision-Ma*

B. Which ones have you seen in this workshop

1. Are there some that you particularly noticed?
2. Have any questions or observations about them?

C. Dealing With Conflict

1. Acknowledge the conflict/difference of opinion
2. Return to the purpose of the group; focus on desired outcomes
3. Identify interests rather than positions
4. Construct scenarios; examine strengths and weaknesses
5. Build areas of agreement: identify and list
6. Change configuration of the group; create small groups, work teams, etc.
7. Change the venue
8. Postpone the decision; assign the problem to a task force and have the group report back at a future group.
9. Inject humor
10. Build in time for sharing feelings
11. Establish decision rules in advance

X. Understanding groups [15 minutes)

1. Orienting stage – determine what needs to be done
    - Establish goals and direction
    - Clarify expectations
2. Organizing – outline the rules under which we will operate
    - Defining roles and responsibilities
    - Making sure that everything necessary for the task are taken care of
3. Group building
    - Learn to know each other
    - See the cooperative nature of this relationship
4. Rebellion
    - Swing toward independence
    - Disagreement with leaders on rules, direction, process
    - Tempers flare; cynicism appears
5. Commitment and productivity
    - Sense of group identify emerges
    - Sense of pride in achievement emerges
    - Group spends its time in two areas:
        - Task – getting the job done
        - Maintenance of the group – caring for each other
6. Termination
    - Take pictures
    - Exchange addresses

B. Life Cycle of the group: What we can do about it

Working With the Life Cycle of Groups

Phase	Challenges	Facilitator Strategies
Orienting	• Identify purpose • Clarify goals • Set expectations • Establish norms	• Review purpose • Have participants identify own goals • Answer questions • Demonstrate processes
Organizing	• Identify roles • Defining outcomes • Spell out tasks • Lay out materials	• Have check list • Clear agenda • Process check • Answer questions • Break down tasks
Group Building	• Learn to know each other • Build relationships • Bridging differences • Establish trust	• Ice breaker • Name tags • Group task • Have a social event • Simulation/game
Rebellion	• Assert independence • Cynicism/anger • Test limits • Disagreements	• Don't panic • Acknowledge it • Understand process • Give space • Change the pace
Productivity	• Work gets done • Group identify emerges • Group maintenance • Focus on tasks	• Encourage participants • Acknowledge progress • Foster sense of group identify • Celebrate
Termination	• Come to closure • Develop follow-up strategy • Evaluation of process	• Synthesizing exercise • Summarize themes • Postcard to self • Schedule time for closure

X. Summary and Evaluation [5 minutes]

A. Summary

1. Write down: one thing you learned that can apply

2. Share a couple of these orally

B. Evaluation

Reference: Many concepts are adapted from the valuable work of Kaner, S., Lind, L., Toldi, C., Fisk, S., & Berger, D., *Facilitator's Guide to Participatory Decision-Making.* Jossey-Bass, 2007.

Annex 15. Participatory Extension Workshop Facilitator's Guide

PARTICIPATORY EXTENSION WORKSHOP
REVISED FACILITATOR'S GUIDE

Peter Malvicini
USAID FAST PROJECT

Workshop is designed for two consecutive days with 3.5 hours/day with lunch following27F[43]

[This guide needs to be updated, as FAST staff now does the entire entry workshop in one day—*ed.]*

DAY 1

7:30	**FAST team arrives at venue** Facilitators (2) FAST Agriculture Specialist (facilitates/probes during key sessions) Documenter Logistics/Admin
	Setup Before women arrive: a. Post flipcharts with: - Purpose - Ground rules - DAY ONE agenda b. Put blank flipchart pads on easels; markers, tape, scissors at the front within reach c. Arrange seating d. Prepare the sign-in sheet e. Set up flipcharts for session one and later sessions for smooth transitions between

[43] This format can be modified for use on one long day or non-consecutive days. It is timed for mornings, but could be adapted for afternoons.

8:15	**1.1 Gathering of Participants** 30 minutes Wide masking tape (5cm), markers, scissors, registration list Process: a. Greet women as they arrive b. As women arrive, help them make a name tag (first name) using masking tape c. Help women put their names on the sign-up sheet **d.** Seating arrangements: Try to keep participants close to the front, together, with a good view of flipcharts and visuals.
8:45	**1.3 Introductions** 20mins 30 cards (one color) ***Flipchart***—Enjoyable Activities: Share one thing you enjoy doing on your household farm. Process*: a. Give each woman a colored card and a marker b. Ask women to form groups of three (to avoid duplication by women copying others' response) c. Explain the Enjoyable Activities task. Ask them to focus on crops and animals on the household farm. d. Give them 5mins to discuss and write one card per person e. Go around to each group of three. Women share what they enjoy and introduce each other f. Receive cards from participants as you go and tape colored cards to flipchart *Note: If there are strong concerns about low literacy, adapt the introduction into an oral brainstorming or drawing exercise.

9:05	**1.4 Ground Rules** 5mins Read the Ground Rules, ask for questions

	Flipchart—Ground Rules: • Every contribution is important. Each person please share. • This is your workshop to discuss your experiences and ideas • You harvest what you sow • Share hopes first . . . • BUT, don't be shy to share your struggles on your household farm • Silence phones, do not call or text until the break. • Be careful with the markers – they might stain! • Feel free to talk • Enjoy yourself **1.5 Agenda DAY 1** 5mins ***Flipchart***—Agenda: (Write a simplified agenda for the day with 3 or 4 points of one or two words each) Process: a. Read Agenda b. Ask if there are questions c. Explain: each session builds on the one before, so it is important they return tomorrow **Announcements** • Please invite husbands to lunch tomorrow [INVITE IN ADVANCE, AVOID LOW TURNOUT] • Starting 8:30 tomorrow morning

9:15	**2.1 Household Farm Map** (village farming resource map)28F[44] *A resource map is not drawn to scale. It is not done by experts but drawn by local people considered to have an in-depth knowledge of their surroundings. It is accurate and detailed—but, reflects perceptions rather than precise measurements to scale.*

[44] Adapted from FAO PRA Toolbox; M. N. Reddy; For good explanation with examples see the PRA Facilitator's Manual at http://www.rdsikkim.org

Objectives:

- A broad understanding / baseline of physical and social aspects of household farms, their resources, and activities
- A basis for discussion on household farms
- Guide the process of focusing on specific farm products

Household Farm (Current Situation)

30mins

Flipchart—Household Farms (all seasons) [blank map; four pieces of flipchart paper taped together, 2x2 into a large landscape flipchart]

Flipchart—Draw a map (not to scale) that includes key features of each of your household farms over the past year. "There is no incorrect way to draw the map."

Flipchart—Your Household Farm Map May Include: [Simplify one or two words]

- Household farm locations
- Types of crops / livestock across farms
- Vegetation, trees, soils
- Land use, boundaries
- Pastures or grazing land
- Water resources, irrigation, rivers and drainage
- Topography, terrain and slopes
- Improvement / damage to natural resources
- Roads, schools, drinking water, community buildings
- Farm suppliers
- Farm implements (larger)
- Markets
- Processing areas
- Farm crop storage facilities
- Farm credit sources
- Advisory service providers

Process:* (see options below)

a. Explain the purpose of mapping

	i. Refer to the task on flipchart: Draw a Map ii. Put a marker in each hand and invite a first group of 7 or 8 women to draw the map. Include major resources and physical features of their neighborhood b. Review the flipchart <u>Your Household Farm Map May Include</u> i. Ask each woman, at minimum, to draw their farm features; focus on household livestock and crops instead of infrastructure, draw a sample house (as model) and a road or river (leaving ample space for household farms). ii. Allow the women to draw. Wait, then help by <u>asking questions</u> referring to flipchart of what the household farm map may include (Animals? Markets? Water? Where?) When needed, give them more time to discuss and agree what to draw. [Involve the FAST Agriculture Specialist in asking probing questions] iii. Listen carefully to what they discuss as they draw the map c. At the end, ask them whether anyone would like to change or add anything i. "Interview the map;" look for insights into the status of farms/resources. 1. Can you tell me more about…? 2. Can you explain it to me in more detail? 3. Whose house is this? What's happening there? ii. Ask the group to clap to recognize their work to create the maps *Process options: 1. Women could be given small sticky notes to place their home on the map (they could adjust their house's location before drawing it permanently). 2. It may be useful to group women with their closest neighbors, and then draw two or more maps letting more women participate.
9:45	**TEA [INFORMAL]**
10:00	**2.2 Household Farm Map—Future (next 5 years)** 30mins ***Flipchart***—<u>Household Farms –Future (next 5 years)</u> [blank map; four pieces of flipchart paper taped together, 2x2 into a large landscape poster] ***Flipchart***—<u>Draw a map</u> (not to scale) that includes key features of what you hope your household farms will look like <u>in five years</u>. Process:* (see options below)

	a. Follow the same general process of creating the first map above b. Ensure they are seated close enough to view the map(s) c. Clarify the focus is on household farms only and not all aspects of village life d. Focus map on specific changes to crops and livestock they would like to see * Option: create the second "future" map by using different colored markers and writing on original map to show changes. Or overlay with a transparency if practical.

10:30	**2.2 Identifying Potential Crops** (and aligning with FAST priorities) 30mins colored cards (blank) ***Flipchart***—What is different about your household farms in your future map than what you drew first (crops and animals)? ***Cards***—FAST initial crops [different color than blank cards] *Potatoes* • Tomatoes • Kidney beans • Alfalfa • Chickens • Wheat (flour and straw) • Managing fruit trees Process: a. Brainstorm, What is Different? And list on flipchart pad b. Focus on crops and animals on household farms c. If non-farm items are listed (school, clinic) write them on one card at the bottom d. When 10 or 12 are listed, introduce FAST initial crop CARDS as "six crops that may help household farms increase production" e. Place them next to matching crops from the women participant's list f. Probe and ask for explanations of why they included certain items

11:00

3.1 Discussion on Household Farms *(crops and animals)*

45mins

Flipcharts (10)—List one question from below / flipchart page; include Table: Number of Animals and Table: Size/Land Area Cultivated (in *sotka*)

Process:*

1. Split a large group of 20 or 30 into two groups (geographically, by streets or blocks) and facilitate smaller groups separately.
2. Go through the questions one at a time (one flipchart/table per question).
3. Probe responses by asking:
    a. "What else would you add?" or
    b. "How about another idea?" (Test for agreement and disagreement).
4. Probe for depth and clarity. Emphasize *current* situation of household farm, clarify your data is actual rather than a desired future result.
5. Use FAST Agriculture Specialist to help probe

Questions and Probes

a. Change: How has your household farm (crops and animals) changed in the past 5 – 10 years? [clarify FAST's definition of a 'household far']
When plant disease is mentioned, identify/describe the disease

b. What are the major winter and summer crops grown in your village?
Why do you choose these?

c. What kind of farm animals do you keep? How many of each? (list animal types on chart) [if they have no animals put a zero 0, do not leave blank)
    i. Separate milk and beef cows
    ii. Go one-by-one; record on flipchart, probe about poultry and how animals are fed

d. Which animals are more important? Why? Probe carefully, avoid rushed consensus.

e. How much household farm land do you usually cultivate (area)? Go around room, one-by-one; record on flipchart with two columns.
    i. Slow discussion down to get good data.

	ii. Clarify whether number is size of household property (including home) plus land cultivated; or only the size of land cultivated. iii. Check whether participants have both backyard and presidential land for farming. Get land size of both. f. Constraints: What constraints to production are you currently facing (crops and animals) on your household farm? Probes with examples: • "Lack of fertilizers" (What kind? Chemical? Organic? Specify. Availability? Cost? Transport?) • "Excess soil moisture?" Poor drainage? • "Lack of technology" (Which technologies? For what use?) • "Feed shortages/lack technology (What do you do? Ideas? What technology?) • "Lack of a shepherd (Who shepherds animals? Women? Children? Men? Hired labor?) g. What are you crops and animals used for? (Proportion of crops sold, used for home consumption [Meat? Milk? Wool? Hides?]; Probe how this varies in the group) h. Do you make money from your household farm? Why or why not? (Clarify if income is daily, monthly, seasonal, or yearly? Distinguish milk from beef cows.) i. Sources of information: From whom/where do you get new information on crops and animals? (*bazaar,* mahalla) j. When is the last time you tried new ways of growing crops on your HH farm? What did you try? (Seeds? Pest control? Disease control? Etc.) Why? i. If new crops are mentioned - Dutch tomato, cauliflower- ask what makes them new? ii. Advantages of new crops? iii. Timing. Clarify whether they are using new approaches to grow corn and alfalfa or using the crops differently postharvest. k. When is the last time you tried new ways of raising animals? What? Why? (Feeding? Health? Breeding? Etc.) [See (j i - iii) for probes under new crops.] *Note: If there are expectations or requests, gently say the project is not distributing large inputs or infrastructure, but supporting and encouraging new farming approaches.

Flipchart 3.1a: Number of Animals owned by Household

Household (number only, no names)	**Sheep**	**Poultry**	**Cows**	
			milk	**beef**
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12 et al				

Flipchart 3.1b: Size/Land Area Cultivated by Household

Household (number only, no names)	**Household Farm (*sotka)***	**Presidential Land *(sotka)***	**Household (number only, no names)**	**Household Farm (*sotka)***	**Presidential Land *(sotka)***
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24 (et al)		
Etc. Etc.			Etc. Etc.		

12:00	**3.2 General Seasonal Calendars***: These calendars show the seasonal distribution of agriculture including livestock activities and how they may change over one year.* 45mins ***Flipchart table***—General Seasonal Calendar, Crops: (see below) ***Flipchart table***—General Seasonal Calendar, Livestock, Fruit trees: (see below) Process: a. With women participants, identify and analyze typical crops and livestock. Identify major activities that change over the year, related to crops and animals. Write these on the calendar. i. Have one or more participants write on the calendar. ii. Involve FAST Agriculture Specialist in asking probing questions. b. Ask women participants when these activities and changes occur, noting this information on the calendar in a range (e.g. June – July). Standardize references according to how women describe main seasons (agricultural production, temperature, or rainfall/water availability). c. Consider differences i. Grains, vegetables, forage (Lucerne, corn)? ii. Commodity crops versus household use? iii. Annual vs. perennial? d. If discussed, list any problems on flipcharts. e. What are the interactions of crops and animals (and prevalence) during the year? i. Crop rotation? ii. Fallow periods? iii. Inter- or multi-story cropping? iv. Dependencies of animal marketing on forage production? Etc. f. Ask a woman volunteer to summarize the calendar, emphasizing the most important points. g. Write the data and the name of the mahalla on the calendar.

3.2a Flipchart: GENERAL SEASONAL CALENDAR (CROPS)

Date: _____ Village: _____

OVERALL QUESTIONS	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Four Seasons												
Water Source & Availability (incl. rain)												
When does the household have less food available? (lean/hungry season)												
Peak Labor Seasons												
CROPS -												
Land Preparation												
Planting												
Harvesting												
Selling												

3.2b Flipchart: GENERAL SEASONAL CALENDAR (LIVESTOCK & FRUIT)

Date: _____ Village: _____

LIVESTOCK - GENERAL	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Birthing Season												
Fattening												
Selling												
EXISTING FRUIT TREES – GENERAL												
Pruning												
Spraying												
Harvesting												

12:30	**Announcements** • Starting 8:30 AM DAY 2 • End with Lunch at 12:30 • Please ask your husbands to join!
12:30	**LUNCH WITH WOMEN** Observe lunch time conversations. Note women's discussion of aspects of farming or workshop experiences.

DAY 2

7:30	**Arrival of FAST team** Setup for DAY 2
8:15	**4.1 Gathering of Participants** 30mins Wide masking tape, markers, scissors, registration list Process: a. Greet women as they arrive b. As women arrive, help them make a name tag (first name) using 5cm masking tape c. Check their names against sign-up sheet from DAY 1
8:30	**4.2 Review of Day 1 & Ground Rules** 15mins Process: a. Ask women to stand up and review outputs (flipcharts) from DAY 1. Treat walkabout as a physical warm-up, encouraging seniors to readily participate. b. Physically move around the room. Asking:

	i. What did we do here? ii. What did we learn from this? c. Continue until all sessions are reviewed d. Quickly review the Ground Rules from DAY 1.
	4.3 Agenda DAY 2 5mins ***Flipchart***—Agenda DAY 2: [Write a simplified agenda for the day with 3 or 4 points of one or two words each] Process: a. Read Agenda b. Ask if there are questions
9:00	**5.1 Women, Men, and Children on the Household Farm** (gender analysis) 45mins We want to understand more about who does what on your farms. . ***Flipchart table***—(gender analysis) Household Farm & Presidential Land [crops] (see below) ***Flipchart table***—(gender analysis) Household Livestock (see below) ***Flipchart***—What work do women do off the farm? ***Flipchart***—What work do men do off the farm? a. Introduce your session: Explain what you are going to do in your own words. b. Ask women if there are other categories not listed (add these to the discussion) c. Now we are going to talk about what you and your family do on your household farm & Presidential Land, and in other parts of your life. d. For discussion, children are 16 years and younger (non-school age). Gently clarify the project does not encourage child labor apart from family chores. e. Ask follow up questions to gain greater clarity and depth. f. Who does this work if the men are away? How often are men away? During the following discussions, always ensure women participants "hold the marker":

	a. Who does what on their Household Farm & Presidential Land?—Fill in table b. Who does what with Livestock?—Fill in table c. What work do women do off the farm?—List on flipchart d. What work do men do off the farm? —List on flipchart

Flipchart Table 5.1: GENDER ANALYSIS (CROPS)

Ask the group what they do on their household farm.

ACTIVITY	Women	Men	Children
Land Preparation			
Planting			
Weeding			
Watering			
Harvesting			
Selling			
Processing			

Flipchart Table 5.2: GENDER ANALYSIS (LIVESTOCK)

Ask the group who does what with livestock?

ACTIVITY	Women	Men	Children
Feeding			
Pasturing			
Washing animals			
Milking			
Manure collecting			
Birthing			
Storage of food			
Selling			

9:45	**6.1 Prioritizing & Selecting a Crop** 20mins ***Cards*** with crops (DAY 1 output) ***Flipchart***—Which crop is the most important for your household? Why? ***Flipchart***—Criteria for priority crops: • The crop has realistic potential for improvement • You believe improving this crop will provide more food or income for you and your family (household) • You are willing to be involved in learning and trying new things ***Flipcharts***—2 blank flipcharts, to form one long flipchart to receive crop cards Process: a. Arrange cards at same vertical level on flipchart, showing no bias b. Read the question: Which crop do you believe is a priority? Why? c. Review Criteria from the flipcharts d. Review DAY 1 list (clarify where crops are grown [especially grains and fodder] and how many women grow or raise priority crops or livestock) e. Ask women which crops are more important (top/high), less important (bottom/low), and in the (middle/medium) according to the criteria. i. Ask women to call out. Look for agreement. Probe for other opinions. ii. Sort into 3 groups, (high, middle, and low priority). 3 clusters iii. Ignore the middle and bottom clusters and rank the high priorities iv. Keep adjusting top "important" cluster of cards, continually asking, 'Why is this important?' v. Probe to be sure the ranking of the top three is based on the criteria. vi. Get more than half the women participants to contribute—ask if anyone has a different idea? Pay attention to minority voices or outliers, as they often have perspectives and insights the main group is missing. vii. Continue adjusting until a clear ranking of the top cluster emerges **Note:** Within a week after the entry workshop (hopefully on same day), a small brief focus group involving several women leaders (including the volunteer, JAS, and mahalla leader) should revisit priorities against criteria and ground truth current situation on these crops. They may recommend adjusting the priorities, which should be by consensus at the next gathering. This could also be a subsequent workshop.

10:15

7.1 Influences on Household Farms (Venn diagram)

Purpose: This tool identifies groups and organizations in the village and institutions outside the village that are linked to the village. It shows the relative importance of each to participants. It identifies possible stakeholders to involve in activities.

60mins

Use three different colors of paper to prepare small, medium, and large circles

Flipchart—Groups and Organizations Inside the Village

Flipchart—Groups and Organizations (and Institutions) Outside the Village

Process:

a. Carefully explain the purpose is to understand how different groups influence what they do on their household farms—groups the way they actually are, not how they want them to be (ideal).

   i. Ask women participants: What groups influence your farming practice on your household farms?, listing existing Formal and Informal groups and organizations in the village that are important to them (and their household farms). Identify about 10 groups.

   ii. Then ask them to list the outside institutions (about 10) that are connected to the village that are important to them (and their household farms).

   iii. Help women place an organization in or outside the circle by asking, "Where is this group located?" When there is confusion, probe enough to clarify.

   iv. Probe carefully for the existence of mahalla-level groups, even informal ones, such as groups that pick cotton together, or have shares in the same dehqon farm—examples of women coming together for farming / non-farming activities.

b. Assign a number beside each group on the flip chart: 1 = most important; 2 = somewhat important; 3 = less important

   i. The number represents the relative importance of each group. Choose colored-paper circles of different sizes (small, medium, large). The larger the circle the more important the group. (see example on next page)

   ii. Write the name of the group, organization, or institution on the circle.

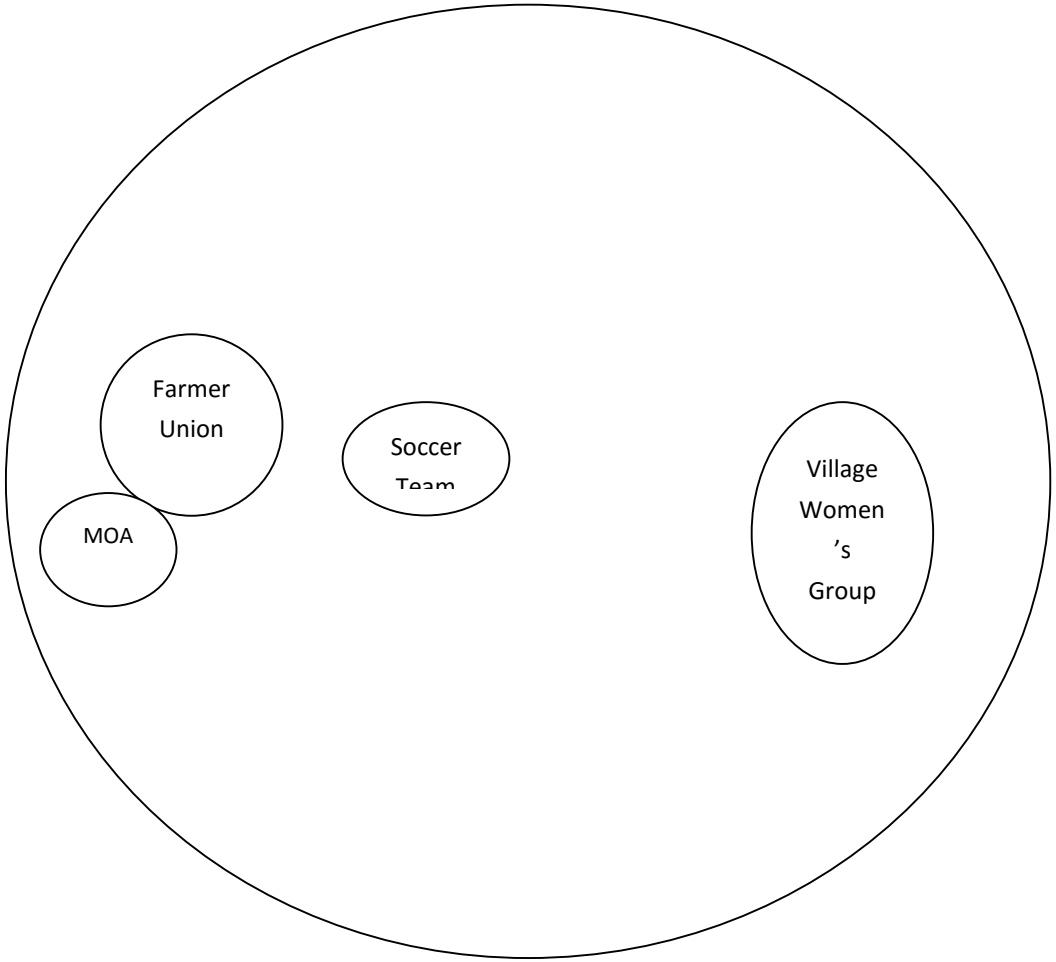
c. Discuss how important the different groups, organizations, and institutions are to women participants and the linkages between them. Ask why?

   i. Ask women participants to tape circles on the flipchart in relation to how important they are to them (groups inside the village should be inside the circle).

   ii. Then have participants show linkages among the groups. (Distance between circles shows relative strength of links; overlapping or closely touching circles show a close link

	between them.) Make sure they understand they are not marking the physical location of the organizations. Note: Consider further limiting or filtering the number of groups—perhaps not all items brainstormed need appear on the diagram (consider leaving out number 3 ranked organizations) or asking 'What is the link to your household farm?'

Figure 7: Venn Diagram (example)



11:15	**8.1 Single Crop Seasonal Calendar** (cropping and livestock, TWO GROUPS) 60mins ***Flipchart table***—Group A: Single Crop Seasonal Calendar: (see below) ***Flipchart table***—Group B: Single Livestock Seasonal Calendar: (see below) Process: a. This process is similar to the General Calendar on DAY 1, but the information is more detailed and it is for one single crop or a crop that is typically planted in rotation with other crops. Explain purpose of this final session to the group and take questions. Share the plan to return and build on this or other priorities. b. You may use the categories on the Table, or start with the months (refer to the categories to see if information is complete). c. Have one or more women participants write on the calendar. d. With women participants, identify analyze the crop or livestock. Consider the crop or livestock as part of a *system* – if they choose a crop, like wheat, is there intercropping? Crop rotation? Multiple uses of the crop? Is it fodder or livestock? e. Identify activities that change over the year, related to the specific crop or animals. f. Ask women participants when these activities and changes occur, noting this information on the calendar. Use probes from previous seasonal calendar session. g. If any problems are discussed that do not fit the calendar, list on separate flipchart. h. Ask a volunteer woman participant to summarize the calendar, emphasizing the most important points. i. Write the data and the name of the village on the calendar.

Flipchart Table 8.1: Single Crop Seasonal Calendar

Crops/Livestock	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Land Preparation												
Planting												
Weeding												
Harvesting												
Crop Processing												
Marketing												
Plant Diseases												
Water Shortage												
Labor Shortage												

Flipchart Table 8.2: Single Animal Seasonal Calendar

Animals	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Animal disease												
Supplementary feeding												
Buildings / Shelters												
Breeding												
Birthing												
Slaughter/process												
Selling												

12:15	**Closure** 20mins total **9.1 Wrap Up and Next Steps** 10mins FAST Agriculture Specialist • Questions and answers • Specify next steps in FAST project such as a focus group or crop problem/solution session with a general timeframe. Designate point persons in the mahalla, jamoat, and FAST who will share more as plans unfold. **9.2 Participant evaluation** 10mins ***Flipchart***—Which sessions were most useful? Enjoyable? • Review the agenda from DAY 1 and DAY 2 • Discuss with the group and list most useful and enjoyable sessions on the flipchart. Probe: What made specific sessions more enjoyable (and effective) than others? **9.3 Words of Thanks** JAS, Jamoat Administrator, or Mahalla Leader
12:30	**LUNCH W/ WOMEN PARTICIPANTS' GROUP (and families)** • Consider gathering men to eat separately discussing the workshop with husbands, village leaders, and JAS. Observe lunch time conversations. • Note women and men's discussion of aspects of farming or workshop experiences.

Annex 16. Participatory Extension Workshop observation and documentation guidelines"

Reports focus on outcomes, findings, results, conclusions, and recommendations to strengthen the substance of our extension workshop and the participatory process (workshops, training, demonstrations, and events). Your field and observation notes will supply the content of the workshop report.

Field Notes and Observation Notes

There will be at least two people facilitating, one documenting, and one observing all our workshop sessions / activities.

Take field and observation notes while the activity is taking place, as it is easy to forget important information. Review the activity with other facilitators and revise your notes the same day as well. As possible, type them up ***within the documentation guide*** as soon as possible.

Observers should include one paragraph per session / activity summarizing the larger results and findings of each session / activity. They are to be short summary paragraphs highlighting, for example, what was discussed that was of critical importance. What knowledge, attitudes, or practices were uncovered that will help build responsive agricultural programs? As well, if there were problems in carrying-out the activity, a brief description of the process problem should be included.

Guidelines for Field Notes (documenters) and Observation Notes

Include the following for BOTH Field Notes and Observation Notes:

- Date
- Time (start and finish)
- Village/Sub-district/District
- List of Participants (with male / female breakdown)
- Facilitator(s)
- Documenter
- Session Number and Tool(s)

IMPORTANT: Follow the Workshop Guide (and/or documentation outline) carefully. Use this as your outline to fill in for all documentation

Take <u>Field Notes</u> on:

- Include all outputs on posters, cards, tables, drawings, etc.
- Capture clarification and discussion points for each input (using the words of the farmers whenever possible)
    - Example: card says "land;" participant explains, "*our household land.*"
      Use italics to distinguish written from spoken.
    - You will not need to record the facilitators' instructions. But, when they interact or a participant answers a question, include the question in the response so the thoughts are complete.
- Take photos of participant outputs as a backup
- Bring all posters back to the office. DO NOT DISCARD.
- Note important questions, concerns, problems, constraints expressed
- Capture any commitments the team makes and give them to the team leader and the person who made the commitment for follow-up.)
- When possible, include observations about process [in brackets] as outlined below.

Take <u>Observation Notes</u> on:

- Non-verbal behavior, body language, social interactions, agreement/disagreement,
- What challenges do facilitators face handling a specific session/activity?
- Do the participants seem to understand the session/activity and its purpose?
- How many participants involved actively in the session/activity? Few? Many?
- Do many people seem to enjoy the session/activity?
- Is there adequate time for to do the session well (too slow? too fast?)?
- Do the session / activity seem to accomplish its purpose?
- What new insights / lessons should FAST learn from the activity?
- What key results were achieved for the farmer participant?
- How could FAST improve the session / activity? Be more responsive?
- Should the session be removed or replaced by a stronger exercise?

Annex 17. Resource Map

A Resource Map focuses on the natural resources in a community, like land, hills, rivers, fields, vegetation, etc. and may also cover habitation. Similar to a social or village map, it is not drawn to scale and is done by the local people because they have an in-depth knowledge of the surroundings where they have lived for generations. A resource map reflects people's perceptions of the reality of their natural resources rather than precise measurements.

Resource mapping helps gather village information on:

- Transport facilities
- Communication facilities
- Health and welfare societies
- Supply and service agencies
- Agricultural implements found in the community
- Animals used for agriculture
- Natural service vs. AI for various animals
- Marketing facilities
- Processing industries
- Financial facilities
- Advisory resources
- Community pastures or grazing land
- Labor availability for various purposes
- Storage or disposal facilities

Extension professionals can design and plan interventions in a village to improve extension and advisory services with this information.

Steps: The mapping process main steps include:

1. Consultation with the local community to identify an appropriate time and place for the exercise. Ensure that the time and location is suitable (good size, convenient, comfortable for all members of society) for as many people as possible.
2. Explain the purpose of the exercise to the participants. Ask them to start showing the major resources. Let them use whatever materials they choose (local or other materials) as creatively as possible. This may mean using twigs and rocks or yarn on canvas on the ground, or it may mean markers, depending on the community.

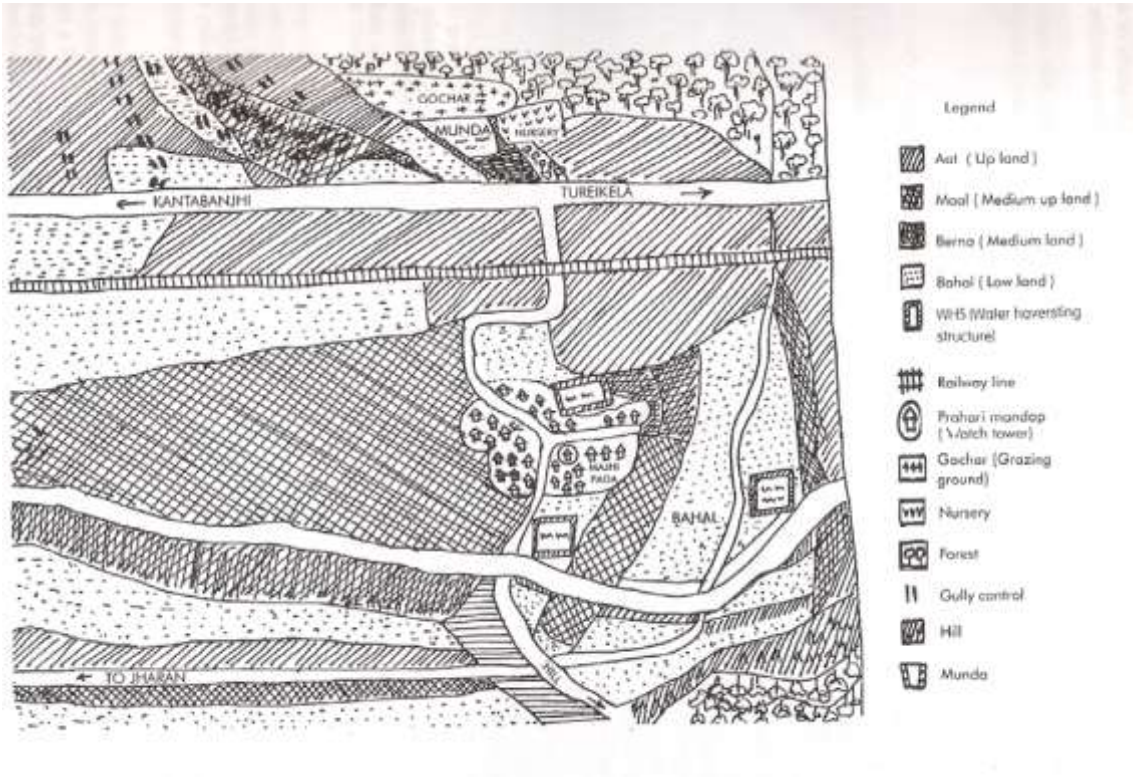
3. Watch the process carefully and take detailed notes. Don't rush things!
4. It is important not to disrupt this process – wait for a good time in the process if you must add or clarify anything and have patience if participants are not representing points in which you are interested.
    - Ask them: "What about …", "What does this symbol represent?" "Can you show me…in the map?" etc.
5. Ask them to depict and discuss the problems and opportunities in keeping with the objectives of the resource map.
6. Interview the map: ask specific questions so you can clarify your doubts and know about aspects you are interested in.
    - Ask them: "Can you tell me more about…? "This looks very interesting. Can you explain it to me in more detail?" etc.
7. Copy the map onto a large sheet of paper with all details, including legends. Also make a small sized copy for attaching to the report and for making copies.
8. Triangulate what is on in the map. One way is to go for a **transect**. The other way is to talk about the map with certain key people in the community and get their feedback.
9. Thank the participants for their active participation.

> **"Resource maps help to create a common understanding amongst the participants as well as a baseline for monitoring and evaluation. The process of creating a resource map is full of joy and it instils self-confidence amongst the participants, which later makes the interaction more meaningful."**

Example of a resource map

Villagers of Naupada of Bolangir district, Orissa, depicted the different land types, water harvesting structures, grazing land, roads, railway lines, and habitation. Participants then discussed in detail the natural resource situation in the village, talking about the effects of structures on resources. They considered soil erosion and loss of soil as two major problems, which a gully-control treatment was not solving. Overall, the resource map helped them see that mismanagement of natural resources and neglect of helpful structures, like those used for water harvesting, had led to perennial droughts.

Figure 1. Resource map of Naupada



Source: From a Distance Education program (PGDAEM) offered by MANAGE, India, used by permission by Dr. M.N. Reddy, October 2012. http://bit.ly/1yRvyXx. Prepared by Oliver Ferguson and Kathryn Heinz, July 2014
University of Illinois at Urbana-Champaign.

Annex 18. Gap analysis

Gap Analysis is a means of identifying blocks to achieving a desired goal. When a group needs to understand the gap between where they are currently and where they want to end up. Gap analysis lets you explore the missing steps and it forces a realistic look at the present. It is a planning tool that creates alignment between group members as to what steps need to be taken to eliminate the gap between where they are currently (present state) and where they ideally would like to be (desired future state).

Benefits

- Highly participative
- To create a clear, shared statement of the desired future
- Allows people to openly share their ideas
- Creates energy
- Gets people aligned
- Identifies a group goal
- Elaborates a shared vision

How does Gap Analysis Work?

Step 1 Identify the desired future state. Use visioning or any other approach that yields a picture of where the group wants to be in a given timeline. The description of the future must be detailed. Post the information on the right-hand side of a large work space on a wall.

Step 2 Identify the present state. How are things now? Describe the same components featured in the future state, only do so in real, present terms. Again be very detailed. Post the ideas generated on the left-hand side of the wall work space.

Step 3 Focus on the gaps. Ask members to work with a partner to discuss:

- What are the gaps?
- What are the barriers?
- What's missing?

Step 4 Share ideas as a group and post these on a wall between the present and the future.

Step 5 Once there is a consensus on the gaps, divide the large group into subgroups and give each group one or more gap items to problem solve.

Step 6 Reassemble the whole group to hear recommendations and action plans.

Step 7 Ratify the plans by getting acceptance from all other members; then create a mechanism to follow up.

Source: *Bens, Ingrid (2000). Facilitating with Ease! A Step-by-Step Guidebook.* John Wiley & Sons, Inc. Prepared by Oliver Ferguson and Kathryn Heinz, July 2014.University of Illinois at Urbana-Champaign**.** Available at www.meas-extension.org/tip-sheets.

Annex 19. Conducting focus group interviews

Focus groups are used to gather information from a targeted population about their experience and opinions on a particular topic. Its purpose is to promote self-disclosure among its participants and provide useful analysis of a program or problem. When deciding to use a focus group, it is important to determine, the purpose of the group, the specific kind of information needed from the group and how the information is to be used.

The group is carried through a facilitated discussion on a clearly defined topic. The goal is to solicit the opinions of the focus group members. Focus groups can be used for a wide variety of purposes such as:

- Determining program needs
- Program design
- Pilot testing
- Program improvement
- Policy making and testing
- Outcome evaluation

Choosing Participants: Members of a focus group should have some characteristic they share in common. Participants should be chosen intentionally and invited personally.

Conducting the Interview: Focus group interviews should last for no more than 90 minutes. A moderator would welcome the group, and ask between six and ten open ended questions, with an assistant who is recording or taking notes.

Types of Questions: The questions should be short, open-ended and address only one topic at a time.

Moderating the Group: An effective moderator allows each participant to give their view; looks at them while they speak; refrains from expressing personal views and has a working knowledge of the topic.

Analyzing Focus Group Data: Data from the interview is gathered from the moderator's memory, the assistant's notes and the recording. Analysis consists of:

Indexing: Assigning 'labels' to participant responses

Management: Grouping together responses within the same label.

Interpretation: Develop a summary statement which is true of each group of responses.

The success of the focus group method depends on the skillful moderation of group discussions. The moderator should be friendly, engaging and able to win the group's trust.

Source Rennekamp, R. and Nall, M., *Using Focus Groups in Program Development and Evaluation,* University of Kentucky College of Kentucky Cooperative Extension Service. Prepared by Oliver Ferguson and Kathryn Heinz, July 2014
University of Illinois at Urbana-Champaign**.** Available at www.meas-extension.org/tip-sheets.

Annex 20. Venn diagram

A Venn Diagram is useful if you want a simple participatory visual method and have a number of items to be studied (institutions, individuals, diseases, social groups, natural resources, etc. and any combinations) in relation to a few variables, preferably two, which could include importance, prevalence and perceived proximity.

Objectives

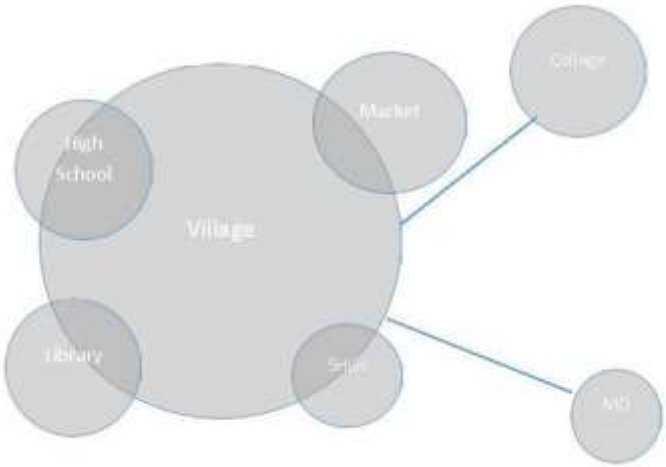
- Understand local people's perceptions about local institutions, individuals, programs, the power structure, and decision-making processes.
- Analyze various institutions, individuals, and groups in and outside the locality and their influence on the local people.

A Venn Diagram shows the relative importance of various institutions in the village, relationships and linkages among them, weaknesses with respect to decision making processes, development of the village by institutions, duplication of efforts and gap identification between institutions, objectives, and felt needs of farmers, and concentration of power within the village.

Process – This is important to do step-by-step to provide maximum clarity for you and participants

1. After explaining the purpose of the exercise to participants (objectives), ask participants to list the various institutions, individuals, and groups they want to analyze – encourage them to then write and/or depict them on small cards. Have them place the cards on one of the aspects being studied (such as perceived importance of the institutions, in descending order).
2. Ask them to write the institutions and individuals on paper circles of different sizes (you should already have these ready), either in words or symbols. The bigger the circle, the higher that institutions or individual ranks on that aspect (note down or depict the institutions or individuals on the circles).
3. Represent the community by drawing a large circle on the ground. Ask participants to place the circle so those high on the second aspect are kept close together, while those low on the aspect are kept away from the circle representing the community: degree of overlap = degree of interaction.
4. Ask them to discuss and explain why they placed the cards in such a manner. Note down the points of discussion and explanation. Encourage them to make any changes to the diagram throughout the process.
5. Copy the output onto a sheet of paper. Record the name of the village, participants, date, legends, what the size of the circle represents and what the distance represents.
6. Triangulate the findings with other key information to ensure that the information generated is correct.

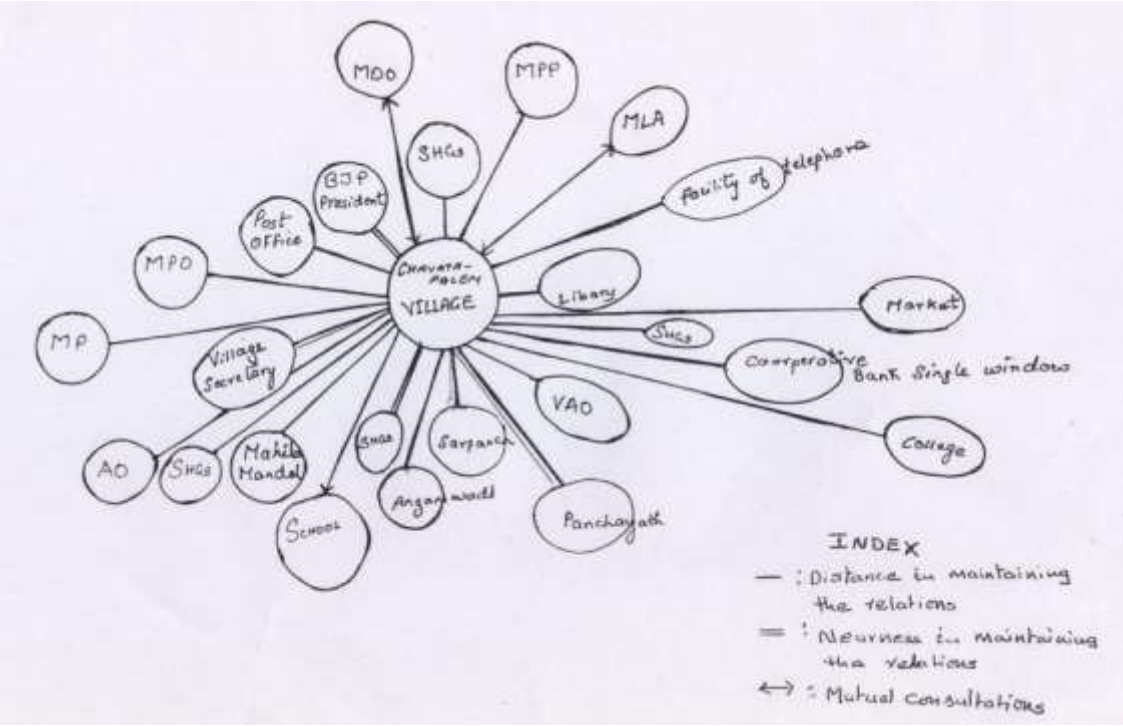
Figure 1. One type of Venn Diagram



Example of Chapati Diagram

Participants identified institutions and individuals that were assigned circles of different sizes based on their perceived importance, as larger circles mean more important the institution/individual. Participants drew double lines to indicate the nearness of their relations and accessibility, with the longer lines indicating lower accessibility. The two-sided arrows show mutual relationships.

Figure 2. Chapati diagram of Chavatapalem village



Major Source: Material comes from a Distance Education program (PGDAEM) offered by MANAGE, India, used by permission by Dr. M.N. Reddy, October 2012. http://bit.ly/1yRvyXx

Prepared by Oliver Ferguson and Kathryn Heinz, July 2014. University of Illinois at Urbana-Champaign. Available at www.meas-extension.org/tip-sheets

Annex 21. Social map

The most popular method in Participatory Rural Appraisal (PRA) social mapping explores where and how people live and the available social infrastructure: roads, drainage systems, schools, drinking-water facilities, etc. A social map is made by local people and is not drawn to scale, illustrating what the local people believe to be relevant and important for them. This method is an authentic way of determining what the social reality looks like for locals through social stratification, demographics, settlement patterns, social infrastructure, etc.

Social mapping helps gather village information on:

- Ethnic distribution
- Social institutions and economy
- Family structure, patterns, and relationships
- Government institutions available
- Education background of villagers
- Social groups
- Assimilation patterns
- Accommodation practices
- Leadership patterns
- Value systems of the village
- Social interactions
- Cooperation and conflict practices
- Media/communication practices
- Social norms, folkways, history
- Social evils like alcoholism, child labor, prostitution
- Religion, leadership pattern and customs

Extension professionals can design and plan interventions in a village to improve extension and advisory services with this information.

Steps: The process for social mapping should include the following steps:

1. Consultation with the local community to identify an appropriate time and place for the exercise. Ensure that the time and location is suitable (good size, convenient, comfortable for all members of society) for as many people as possible.
2. Explain the purpose of the exercise to the participants. Ask them to begin by drawing the main physical features of their locality. Let them use whatever materials they choose (local or other materials) as creatively as possible. This may mean using twigs and rocks or yarn on canvas on the ground, or it may mean markers, depending on the community.

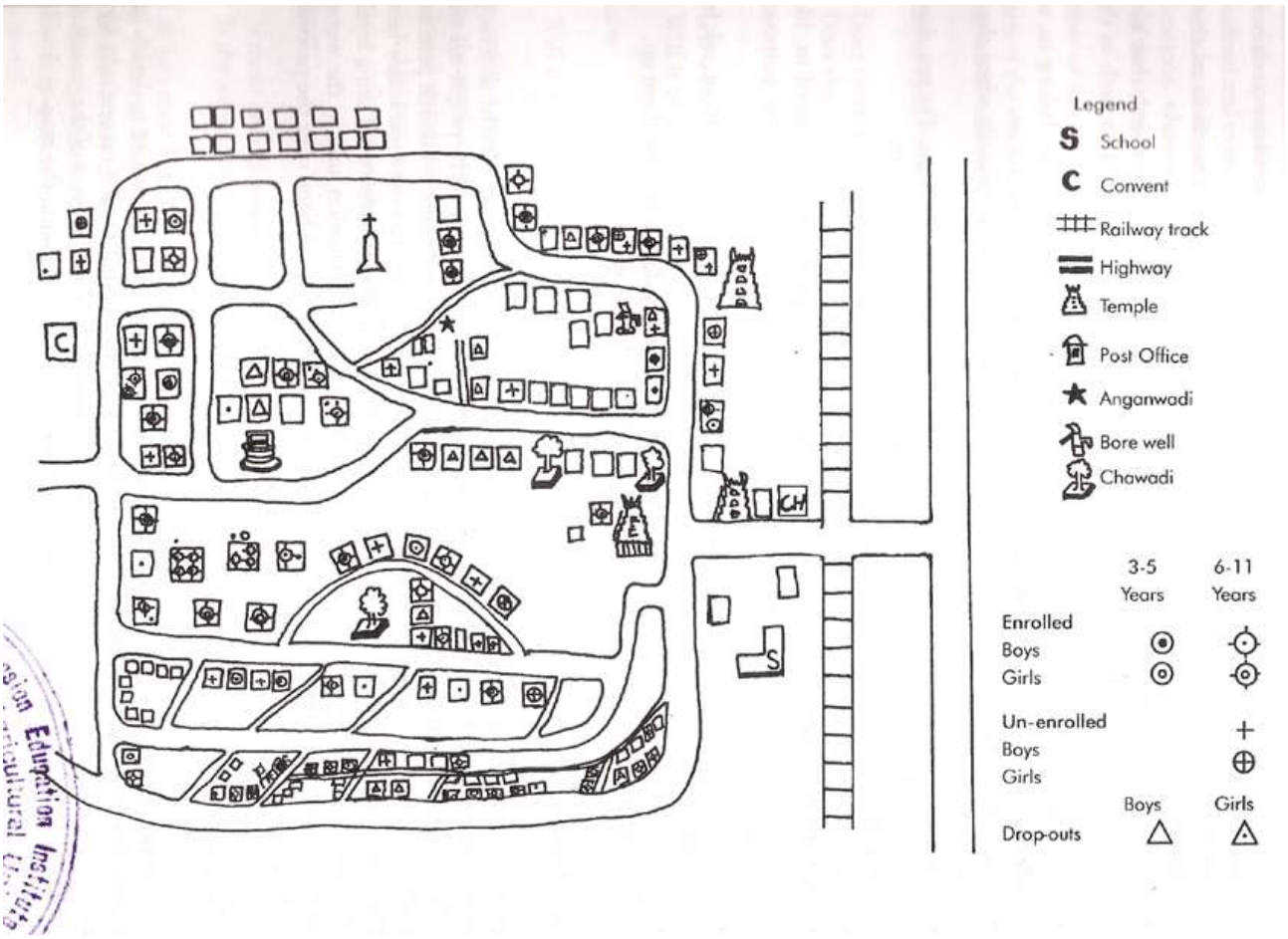
3. Watch the process carefully and take detailed notes. Don't rush things!
4. Keep track of who is actively involved – to which section of society do they belong? Who is being left out? Take steps to involve them.
5. You are just a facilitator — intervene only when necessary, like when participants are going through a rough patch.
6. It is important not to disrupt this process – wait for a good time in the process if you must add or clarify anything. Ask them: "What about …", "What does this symbol represent?" etc.
7. When they have finished mapping, ask some people to identify their houses in the map.
8. Identify and number the household details you need according to the goal of the exercise, like caste composition, school age children, etc.
9. Take a look at the map and clarify: ask specific questions on parts that are unclear to you. Copy the map made by participants onto a large sheet of paper immediately, with all details.
10. Triangulate the information generated with others in the locality.

*"*What amazes new PRA practitioners is the way in which even those who generally remain on the fringes of the community process viz., old people, women and children get involved in mapping. The marginalized and even the illiterate follow the process and most of them are able to locate their houses and their localities in the social map."

Example of a Social Map: Villagers mapped out Chetlamallapuram in Kurnool, Andhra Pradesh, shown in Figure 1.

They depicted the lanes, sub-lanes, school, railway track, temple, post-office, well, community hall, and convent in the village. The map helped determine the educational situation by gender and age, revealing that more boys go to school than girls, more girls and un-enrolled than boys, and more girls drop out than boys in the 6-11 year age group. From this information, extension workers can better determine next steps for the community.

Figure 1: Social Map of Chetlamallapuram



Major Source: Material comes from a Distance Education program (PGDAEM) offered by MANAGE, India, used by permission by Dr. M.N. Reddy, October 2012. http://bit.ly/1yRvyXx

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Available at www.meas-extension.org/tip-sheets.

Annex 22. Crop Analysis Workshop facilitator's guide

FACILITATOR'S GUIDE

Peter Malvicini

8:00	**Setup** Before women arrive: a. Post flipcharts with: - Purpose - Ground rules - Agenda b. Setup flipcharts for session one and other sessions; put blank flipchart pads on easels c. Place all markers, rolls of masking tape, and scissors at the front within reach d. Arrange seating e. Prepare sign-up sheet
8:30	**Gathering** Facilitators and Ag Production Specialists 30mins Wide masking tape, markers, scissors, registration list Process: a. Greet women as they arrive b. As women arrive, help them make a name tag (first name) using 5cm masking tape c. Help them put their names on the sign-up sheet
9:00	**1. Welcome** Jamoat Agriculture Specialist (remains to observe the meeting) 10mins • Explains purpose of meeting [SEE POSTER] • Explains FAST's work with learning group

9:10	**2.** Nominate and **select lead experimenters** from mahalla learning group Facilitators 20mins ***Flipchart*** (blank) Nominate 3 women as volunteer experimenters. Question: ***What should the qualifications be?*** Process: Brainstorm [FLIPCHART] • Experienced, respected, committed • Live in different parts of the mahalla • Like to try new things and can set aside a small learning plot to experiment and demonstrate • Can work a few hours per week on: o Their learning plot o Communicating with jamoat agriculture workers and o Gathering the group for regular meetings Ask the three women to decide during Tea Break which of them will be the Mahalla Extension Volunteer (point person) [or they may do it now]
9:30	**3. Confirm selection of FAST crops** Facilitators 30mins ***Posters*** SINGLE CROP SEASONAL CALENDAR [PEW] CROP PRIORITIZATION [PEW] Process: a. Review ***single crop seasonal calendar*** [HANG PEW POSTER] b. Review **crop prioritization** [HANG POSTER FROM PEW] c. Highlight the crops that match Season 1 FAST crops [STICKY NOTE OR MARKER] d. Review priority crops matching ***potato, tomato, corn, or cabbage*** e. Ask the group if they want to begin with their first choice? If not, which other FAST crop do they choose.

	f. If there is no ***single crop seasonal calendar*** create one using the process from the PEW
10:00	**4. Problem tree analysis** of crops (constraints) Facilitators, Production Specialists 45mins Three colors of cards (50 pieces, 50 pieces, pieces) Posters: Sample poster w/cards; Blank poster 8 sheets; ***Process:*** [Use slide tutorial (ADB) and Russian tutorial to learn] a. Identify a core problem, state it as a negative situation–not the absence of a solution–and pin/tape it on a card in the center of the board. [See draft problem on card] b. Ask *why* the core problem exists. Then, write the direct causes of the core problem on cards. Place them below the core problem. Focus on existing problems, not future ones. c. Repeat step 2 – Ask *why* for each of the direct causes and place them below. Broaden the problem tree as you work downwards until you reach very specific *root causes*. There is no limit to the number of problems at each level. d. The space above the core problem is for the *direct (negative) effects* of the core problem. Write them on cards and place them above the core problem. e. Continue to work upward by placing the next level of perceived effects linking them to the effects below. f. After, draw lines connecting the problems and their causes and the effects to the problem.
10:45	TEA BREAK

11:00	**5. Objective tree analysis** (identifying potential actions) Facilitators, Production Specialists 45mins Three colors of cards (50 pieces, 50 pieces, pieces) [ABOVE] ***Process:*** [Use slide tutorial (ADB) and Russian tutorial to learn] a. Rewrite the core problem into a positive objective. Objectives should be achievable. Do not simply make a negative statement positive. For example: *Bus drivers drive poorly* (problem); *bus drivers obey traffic and safety regulations* (objective) is better than *bus drivers drive well*. b. Write the direct means for achieving the development objective on cards, placing them beneath the development objective. Start by analyzing the problem statements, convert them into objectives, omit them, or add additional objectives, as appropriate. c. Revise the objectives if necessary. Add new ones if there are gaps to achieve the stated objective at the next higher level. d. Repeat step 2: determine the means for achieving each of the objectives above (direct means) and place them under each card. The number of objectives is not limited to the number of problems identified. e. The space above the development objective is for objectives that flow directly from the development objective. Examine each statement and convert it into a positive, desirable statement. f. Repeat step 5: determine the direct objective for the objective statements below. g. Review the objectives, checking that the problems match the objectives and nothing is missing. h. Complete the objectives tree by connecting the cards with lines.
11:45 12:00	**6.1 Synthesis and next steps**—FAST staff member (content, timing, contact) **6.2 Closing**—Mahalla Extension Volunteer (MEV) Thank learning group for coming; encourage future participation
	LUNCH with LEARNING GROUP

Annex 23. Problem tree analysis

Problem Tree Analysis is simple yet effective tool for community groups to use to properly identify problems and determine what the most effective interventions are. This method is used by groups to determine the extent to which an organization's program activities address the root causes of the problems it seeks to alleviate and to verify that these programs can achieve the desired impact.

Elements of a Problem Tree

- **Roots** –the root causes of the problem
- **Trunk** – the problem
- **Branches** – the consequences of the problem

A Problem Tree can synthesize information and give it meaning by use of an analogy. The objective of this approach is to analyze the root causes of an issue facing a community and to ensure the solution addresses the root cause.

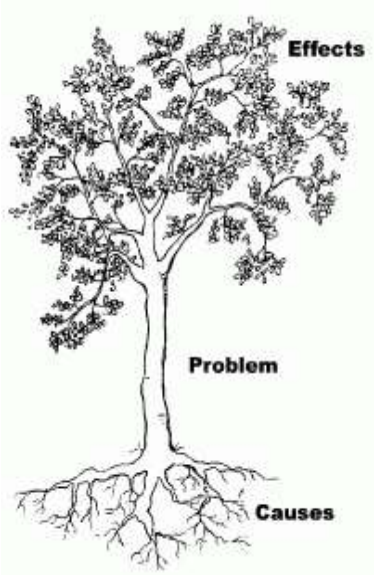

Figure 1 Image: http://www.comminit.com/?q=early child/node/201228

Who should be involved?

- The participants should consist of participants of the target group.
- The facilitator should present and explain to the participants the nature of the analogy. Pointing out what the different parts of the trees are and what each represents.

Steps to take when using Problem Tree Analysis:

1) Draw a tree Ask participants to list the root causes of the problem on a card. Tape the cards to the roots of the problem tree.
2) Ask the participants to name the consequences of the problem write these responses on cards and tape them to the 'branches' of the problem tree.
3) The participants should then briefly discuss to what extent the organization's activities address the root causes. It's very important there is a distinction made between a root cause and a consequence.
4) Repeat the process with other problems once participants demonstrate that they understand the process, they can split up into pairs or small groups to work on different problem trees.
5) Display the Problem Trees and ask the participants to take a "walk through the forest." Group members can briefly present their trees to one another.

   Major Source: World Neighbors (2000). World Neighbors Field Guide: From the Roots Up, World Neighbors Inc. 4127 N.W.122nd St. Oklahoma City, OK 73120-8869. Prepared by Oliver Ferguson and Kathryn Heinz, July 2014, University of Illinois at Urbana-Champaign. Available at www.meas-extension.org/tip-sheets.

Annex 24. FAST End-of-season Evaluation Workshop (ESEW) facilitator's guide

Workshop is designed for 3.5hrs/day with lunch following or in the middle during hot weather

	FAST team arrives at venue Facilitator Agriculture Specialist Jamoat Extension coordinator M&E Specialist Logistics/Admin (desirable)
	Setup Before women arrive: f. Post flipcharts with tables, etc. g. Put up blank flipchart pads on easels / walls h. Place all markers, rolls of masking tape, and scissors at the front within reach i. Arrange seating j. Prepare the sign-in sheet **Women gather** e. Seating arrangements: Try to keep participants close to the front, together, with a good view of flipcharts and visuals.
	Welcome & Purpose Process: a. Ask a woman leader to welcome the group b. Explain the workshop purpose, the FAST project, and USAID's support. Keep it simple.
	Ground Rules Read the Ground Rules, ask for questions ***Flipchart***—Ground Rules: • Every contribution is important. Each person please share. • This is your workshop to discuss your experiences and ideas • Feel free to talk • Enjoy yourself **Agenda** ***Flipchart***—Agenda: (Write a simplified agenda with 5 Sessions for the day) Process: d. Read Agenda e. Ask if there are questions

:00	**Session 1. Type of innovations learned** (20mins, brainstorm w/cards) Concept / session design: Mabhuba • Planting materials (seeds, seedlings etc…) • Other inputs • Crop cultivation techniques • Pre-Harvest, harvest and post-harvest • Processing / marketing
00:20	**Session 2. Compare the current harvest with previous harvests** (1hr) Concept / session design: Yuldoshaley • Quality of harvest? (discussion) • Amount/kg per sotka? (calculation) Cost benefit analysis (inputs vs profit margin) (PRA comparison tool)
1:20	**Session 3. Sharing experiences** (1hr, 3 small groups S/W; plenary) Concept / session design: Lola • Strengths and weaknesses of your experience this season? • Why did you adopt / not adopt the innovation? • How many more plan to adopt this innovation? *Probe for depth and clarity. Emphasize* current *situation of household farm, clarify your data is actual experience rather than a desired future result.*
2:20	**Session 4. Adoption of innovation—data collection** (1hr, table on wall) ***Objectives:*** • *Understanding of innovations adopted by participants and their impact to households' farming* • *Basis of discussion / assessment for effectiveness or limitation of innovations* • *Identifying further amendments to innovations and workshop process* ***Definitions:*** • ***Adoption of innovation*** *- any of farming practices discussed in session 1 (according to the list) the participants tried this season with support from the FAST team (at least one person)* ***Materials:*** • *Flipcharts, markers, masking tapes* ***Process:*** *In this session we will share with each other which innovations did we adopt with the support of FAST team.* **4.1. Instruction** (5 minutes) 4.1.0. Please, look at the list of innovations (arranged in session 1) and think which of these innovations you practiced this season but usually did not practice before. 4.1.1. Think were the adopted innovations useful for achieving better results in your farm, not useful or made no difference. **4.2. Adoption of innovation** (30 minutes) 4.2.0. Who adopted [NAME OF INNOVATION] this season, (how many)? (For how many of participants adopted) was it helpful, not helpful or made no difference?

- ***Facilitator Note:*** *Ask 4.2.0. for each innovation and record the answers in a flipchart in following format:*

Name of innovation	*Total number (of participants adopted this innovation)*	*Results (↑ ↓ ↔)*
Example: Mulching with dark material to protect from sun	*5*	*3↑ 1↓ 1↔*

4.2.1. Please, according to you numbers tell us how many of innovations did you adopt this season and how do you evaluate the result of this season?

- ***Facilitator Note:*** *Ask 4.2.1. for each participant and record the answers in a flipchart in following format (prepared in advance):*

Number of household	Number of innovations adopted	Overall result of the season *(↑ ↓ ↔)*	Number of household	Number of innovations adopted	Overall result of the season *(↑ ↓ ↔)*
1	2	↑			

4.2.2. Please, name any other households, which members are absent at this workshop now, but participated in previous workshops, who adopted any of these innovations.

4.2.3. Please, name any other households in mahalla who adopted any of these innovations.

- ***Facilitator Note:*** *Make separate list of member and non-member households in separate flipcharts (or in one flipchart if there are few households adopted innovations). If participants tell about people who learned these innovations, then just count the number, for example 12 households in mahalla learned these innovations from the group members.*
- *Thank the participants for their job and tell them now is time to make some summary of innovation adopted.*

4.3. Evaluation of innovations (Debrief, 15 minutes)

4.3.0. Now we summarize the flipchart data to find out which innovations are most useful, not useful and not adopted.

4.3.1. Why do you think this innovation is not useful? For what reason(s) you did not adopt this innovation? Which conditions did not allow you to adopt innovations provided by FAST team (climate, soil, water, etc.)?

- ***Facilitator Notes:*** *Make a list of reasons why they did not adopt this innovation / or it was not useful on a flipchart*

4.4. Evaluation of FAST activity *(10 minutes)*

- *Please, evaluate your benefit from all FAST activities (useful, nothing new, expected more). Highlight Strength, Weaknesses and Gaps.*

3:20	**Session 5. Discussions of future steps (10mins, Expand? Abandon? Adjust?)** **Concept / session design: Madina**

	• **Decisions based on lessons? etc…**
	Closure: Words of Thanks **Facilitator**
	LUNCH W/ WOMEN PARTICIPANTS'

Flipchart: Number[45] and Kinds of Innovation by Household[46]

Innovation/Household	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Planting materials																														
1. CIP2014																														
2.																														
3.																														
4.																														
Crop cultivation																														
5. Corn stalk mulch	+						✓																							
6. Cow dung						-				+	+																			
7. Compost matter				-				+		✓																				
8.																														
Pre-Harvest, harvest and post-harvest																														
9.																														
10.																														
11.																														
12.																														
Processing /																														
13.																														

[45] Define an easy to use marking system to prevent confusion

[46] Red households are absent but being completed by proxy

14.																													
15.																													
16.																													

Annex 25 V. Sigman, "Sustainability of agricultural extension and advisory services"

November 8, 2013

Pluralism in EAS

Historically, EAS services were financed and delivered through the public sector, typically through a government Ministry of Agriculture. To a lesser or greater degree, most EAS systems around the world are currently pluralistic. EAS systems now include a mix of actors from the *public* (government, state), *private* (farm households, agribusiness companies, other profit-oriented firms), and *civil society* (non-government organization [NGO], non-profit organizations, farmer organizations, other civil society community-based organizations) sectors. This is the case in Tajikistan where:

- *Public Sector*. National-level government, through the Ministry of Agriculture, and local government through its local administrative structures, provides EAS to large-scale farming operations.
- *Private Sector*. Private sector agribusiness provides some services embedded in the products they sell to farmers (e.g., for seeds they sell, seed suppliers give technical advice on planting dates, seed spacing, storage). The Technical Advisory Group (TAG) system in Tajikistan, promoted by German Academy for International Cooperation (GIZ), focuses on establishing a for-profit private EAS system to reach large-scale farmers.29F[47] Farmers discuss with each other what works and what doesn't work on their farms (farmer to farmer extension).
- *Civil Society Sector*. Various NGO's in Tajikistan provide services, often through community-based organizations.

In addition to the idea that the private and civil society sectors filled a vacuum as public sector capacity to provide EAS services declined, the basic reasoning for promoting pluralism is to tackle extension constraints of coverage and sustainability. In a pluralistic system there are more actors in the system to reach farmers, thus increasing EAS coverage. However, coordination of coverage remains a significant challenge. Where governments are unable or unwilling to finance EAS, sustainability is to be addressed largely through donor funding and/or fee-for-service privatized EAS.

Fee-for-Service Privatized EAS

A decade ago, the expectation across the globe was that various forms of private advisory service providers would fill the gap created by weakened public agencies. This has not proved to be the case, most particularly for smallholder famers. Private providers tend to serve the high-value crops market and work with better-off producers (Davis, 2008). While input suppliers can deliver extension information, they are less than successful in providing impartial advice and particularly as it relates to sustainable natural resource management (Christoplos, 2010).

[47] There are recent initiatives to determine whether the TAG system can be adapted to reach smaller-scale farmers.

A 2002 study of non-fee and fee paying farmers in Crete found that private and public extension are complementary, not necessarily exclusive of each other (Dinar, Karagiannis, & Tzouvelekas, 2002). Farms that had access to both extension outlets demonstrated a higher level of performance compared to all other single extension outlets. However, the most impact was realized in certain types of farms (e.g., capital intensive, specialized). Finally, the Crete study found that the more subsistence farms do not demand extension services of any type. The jury is definitely still out but smallholder farmers are far less likely than larger-scale farmers to pay for EAS. They are likely to be more willing to pay for specific tangible services, such as those provided by para-vets and veterinarians.

Why are private providers reportedly less willing to serve smallholders and more willing to serve larger-scale farming operations? Part of the answer relates to the nature of agricultural information and technologies which EAS providers extend to their clients.

Public and Private Goods and Services

Agricultural information and technologies (and extension systems) can be characterized based on whether they are closer to being a public or private good (Foti, Nyakudya, Moyo, Chikurivre, & Mlambo, 2007; Umali-Deininger, 1997). This characterization is shown in the table below. The economic principles of rivalry and excludability are concepts within this characterization.

- Rivalry is when one person's use or consumption of a good or service reduces the supply available to others (e.g., when a person eats an apple or sprays a fruit tree, those products are not available for anyone else to consume/use).
- Excludability occurs when access can be denied to those who have not paid for the good or service (e.g., the apple and the fruit tree spray is available only to the person who bought the products30F[48]).

Goods both rival and excludable are private goods, those that are neither are public. In theory, public goods are available for anyone to consume/use and to access them without payments. Private firms are unwilling to supply public goods because anyone can use them without paying for them. Thus, profit-making opportunities are limited. Private sector incentives to supply goods and services are based in part from the ability to exclude those who have not paid for the good or service. Farmers are unwilling to pay for public goods. They are unwilling to pay for information that is available to others for free (e.g., information on soil conservation techniques that is also reported on the radio).

In between the concepts of rivalry and excludability are toll goods and common-pool goods.

- Toll goods are not rival but are excludable (e.g., adding another member to a farmer group does not reduce the supply of information being provided by a paid private sector provider to the group, but those who do not pay for the service can be denied access to the information). Some agricultural information, such as information on production practices, may be a toll good in the short-term (as there are costs associated with accessing the information and access can be denied) but how rapidly practices spread to others may result in its eventual

[48] Crops and services can be given away by those who paid for them, adding complexity to the excludability concept.

change to a public good (e.g., information on timing of weedings, which may be seen by others and copied).

- Common-pool goods are rival but not excludable (e.g., ocean fishing reduces the supply of fish available to others, but it is challenging to exclude people from ocean fishing).

Table 1. Classification of Agricultural Information and Technologies Delivered by EAS.

	Rival	**Non-Rival**
Excludable	***Private Goods*** • Modern technologies (e.g., machinery, chemicals, hybrid seeds, veterinary supplies) • Livestock • Land • Labor	***Toll Goods*** • Excludable agricultural information in the short-term (e.g., cultural and production practices, farm management, marketing, processing) • Networks
Non-Excludable	***Common-Pool Goods*** • Environmental protection • Natural resource management • Self-pollinated seeds	***Public Goods*** • Sunlight, rainfall • Non-excludable agricultural information (e.g., unprotected knowledge and know-how) • Mass communication of agricultural information • Public information (e.g., statistics) • Public infrastructure

Source: Based on Umali-Deininger, 1997 and Gray, Fulton, & Furtan, 2007.

The Effects of Privatized EAS and Types of Goods and Services on EAS Sustainability

The more market-oriented and large-scale farmers create demand for specialized client and location specific extension services that can be provided by private-for-profit EAS (Umali-Deininger, 1997). The capacity of these farmers to pay fees for specialized EAS increases as effective EAS responses to their demands increase. They will pay for private goods and services or for information that is characterized, at least in the short-term, as a toll good. Thus, larger-scale market-oriented farmers contribute to a sustainable EAS system. Smallholder farmers, unable or unwilling to pay for private or toll goods, rely more on agricultural information and technologies characterized as public goods. A subsidized EAS system is needed to increase their access to toll and public goods and services.

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Annex 26. Local NGOs in Khatlon viloy

	Name	area in which operates															activity(ies)							Office address	Office phone	Office fax	office email	web site	Contact person	Contact person phone
		khatlon oblas	raion(s)																											
		throughout	not specified	Bokhtar	Hurosion	Husrav	Jilikul	Jomi	Kumsangir	Qubodien	Rumi	Sarband	Shahritus	Vakhsh	Yovon		Agriculture	Public health	Nutrition	Gender	Community development	Other	Not specified							
1	NGO "Fidokor"	x		x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x			735140, Kurgan-Tyube, 4 Mirzokadirov St.	(83222) 2-56-64, 2-24-23	N/A	fidokor@gmail.com dilbar1958@list.ru	N/A	Ms. Khalilova Dilbar Muhammedovna	(+992) 935 004735
2	NGO "Elyor"			x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x			735180 Khatlon Oblast, Shaartuz District, 33 a Nosir Khisrav St.	(83240) 2-18-26	N/A	khamroz_shartuz@mail.ru	N/A	Ms. Yusupova Khatira Musaevna	(+992) 935 009321
3	NGO "Volunteers School"			x	x	x	x	x	x	x	x	x	x	x	x			x	x		x			735140 Kurgan Tyube, 4 Mirzokadirov St.	N/A	N/A	school_volonteers@mail.ru	N/A	Mr. Salim Bobonazarov	(+992) 918 631235, (+992) 988 160444
4	NGO "Muminobod"		x																	x	x			Khatlon Oblast, Muminobod District, Mehrobod city, 54 Temursho Rahimov St.	N/A	N/A	ldc.muminabad@mail.ru	N/A	Mr. Rajabali Bahromov	(+992) 918 888629
5	NGO "Chashma"					x	x		x	x			x							x	x			735180 Khatlon Oblast, Shaartuz District, 24 Rudaki St.	N/A	N/A	chashma62@mail.ru	N/A	Ms. Sanovbar Imomnazarova	(+992) 935 003515
6	NGO "Sudmand"		x														x			x	x			Kulyab city, 7 Kombrig Tomin St.	(+992) 907 929334	N/A	sudmand@rambler.ru tolibsud@rambler.ru	N/A	Mr. Tolibjon Saidaliev	(+992) 951 527621
7	NGO Children Ecological Center "Pairoha"			x				x			x			x			x				x			Khatlon Oblast, Jomi District, Jamoat Kuibishev, 6 Somoni St.	N/A	N/A	srajabov1948@mail.ru	N/A	Mr. Rajabov Saifullo Ibodovich	(+992) 935 040290
8	NGO "Sadoi Kuhsor"		x													x	x				x			Hovaling District, 14 Voce St.	N/A	N/A	sadoikuhsorngo@rambler.ru sadoikuhsor@mail.ru	/centreict.net/sadoiku	Mr. Sirojov Avaz	(+992) 918 755040, (+992) 907 904873
9	NGO "Oksana"			x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x				Jaloliddini Rumi District, Isaev village, 29 Lenin St.	(83247) 4-23-96	N/A	musmanova@mail.ru	N/A	Ms. Muazam Usmonova	(+992) 918 698530
10	NGO "Ma'rifat"	x		x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x				734031 Khatlon Oblast, Jamoat Obikiik, 1 Somoni St.	(83242) 2-20-08	N/A	marifatkhatlon@mail.ru	N/A	Ms. Khidiralieva Ma'rifat	(+992) 935 036042
11	Information Analytical and Education Center "Mathema"	x		x	x	x	x	x	x	x	x	x	x	x		x	x		x	x				735140 Kurgan Tyube city, 24 Bobojon Gafurov St.	(83222) 2-28-02	N/A	zafar@mathema.tj	www.mathema.tj	Mr. Alizoda Zafar	(+992) 935 055492
12	NGO "Zarshedabonu"		x																					Khatlon Oblast, Kulyab city, 117 Khati Roh St.	(83387) 2-64-40	N/A	zarshedabonu@ mail. ru	N/A	Ms. Kalamniso Abdukhayumova	(+992) 935 007147
13	NGO "Dilafruz"			x																x				735140 Khatlon Oblast, Khurgan Tyube city, 29-a	(83222) 2-79-10	N/A	Ngodilafruz@mail.ru	N/A	Ms. Haqberdieva Raihongul	(+992) 918 659293
14	NGO "Bonuvoni Khatlon"	x		x	x	x	x	x	x	x	x	x	x	x		x				x				Kurgan Tyube city, Vahdat Avenue 148 "b"	(+992) 900901009	N/A	gul19@mail.ru	N/A	Ms. Maksudkhojaeva Gulbahor Yuldoshevna	(+992) 918 738267
15	NGO "Akhtari Bakht"						x			x	x					x	x	x	x	x				Khatlon Oblast, 68 Ainy St.	N/A	N/A	ahtari_baht@mail.ru	N/A	Ms. Shonazarova Mohiniso Gaibovna	(+992) 918 130455
16	NGO "Nuri Khatlon"			x					x	x			x	x			x	x	x		x			Kurgan Tyube city, Jamoat Orion, Comintern section	N/A	N/A	natasha.lozinskaya@star-dev.org	N/A	Mr. Kurbonov Khurshe	(+992) 919 212996
17	NGO "Mayram"	x		x	x	x	x	x	x	x	x	x	x	x	x					x	x			Khatlon Oblast, Kulyab city, 7 Hudoyor Nazarova St.	N/A	N/A	mahbubango@mail.ru	N/A	Ms. Sharipova Mahbuba Burievna	(+992) 935 000167
18	NGO "Asri Nav"			x		x	x	x	x	x		x	x	x	x		x				x			Khatlon Oblast, Kubodiyod District, 45 Lenin St.	N/A	N/A	farkhodjon@mail.ru	N/A	Mr. Soliev Farhodjon Muhammadjonovich	(+992) 935 550282
19	NGO "Darmonbakhsh"						x										x		x	x				Khatlon Oblast, Jilikul District, 35 Rudaki St.	(+992) 937267557	N/A	Darmonbahhs@mail.ru	N/A	Ms. Jonshoeva Qutbiya	(+992) 918 321288
20	NGO "Ghamkhori"			x		x		x						x			x		x	x				Kurgan Tyube city, 42-46 Kosmonavtov St.	N/A	N/A	ghamkhori@tojikiston.com	www.ghamkhori.tj	Mr. Toshmatov Bahodur Juraevich	(+992) 918 886188
21	NGO "Bonuvoni Fardo" (Women of Future)			x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x			735180, Khatlon Oblast, Shaartuz District, 28b Somoni St.	(83240) 22888	N/A	anora.69@mail.ru	N/A	Ms. Jabarova Venera Anatolevna	(+992) 935 554622
22	NGO "Farodis"							x						x	x			x			x			Abdurahmoni Jomi District, 26 Somoniyon St, apt. 6	(83243) 2-31-83	N/A	ngofarodis@rambler.ru	N/A	Ms. Shahlo Subhonova	(+992) 935 644030
23	NGO "Mohi Munir"			x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x			Khatlon Oblast, Qumsangir District, Pyanj Jamoat, Pakhtakor village	N/A	N/A	mohimunir61@mail.ru	N/A	Ms. Ashurova Ziyoda Melikovna	(+992) 935 005840
24	NGO "Mehrangez"						x		x					x			x	x	x	x	x			735162 Khatlon Oblast, Bokhtar District, I. Somoni village, Obshoron St;	N/A	N/A	mehrangez2003@mail.ru	N/A	Ms. Umarova Sharofat Usmonovna	(+992) 935 879625
25	NGO "Rushd"	x		x	x	x	x	x	x	x	x	x	x	x	x			x		x	x			735140, Kurgan Tyube city, 62/10 Dusti halkho St.	N/A	N/A	rushdkhatlon@mail.ru, madmusoevrushd@mail.ru	N/A	Mr. Mamuzhon Madmusoev	(+992) 918 730331

Annex 27. FAST Booklet – Alfalfa

яъне дар ҳар 30-38 рӯз ба накша гирифтани дарав зарур мебошад. Ҳамеша дар хотир бояд дошт, ки гузаронидани мӯҳлати дарав боиси камшавии моддаҳои ғизоии таркиби юнучка мегардад ва талафоти моддаҳои ғизой зиёд мешавад. Нарасидани мӯҳлати дарав ба камғизогии кохи юнучқа оварда мерасонад.

Касалиҳо ва ҳашаротҳо

Аз касалиҳои юнучка дар шароити Ҷумҳурии Тоҷикистон бештар вилти бактериявӣ, фитофтора, вилти фузариозӣ ва антракноз вомехӯрад. Аз ҳашаротҳо асосан кирми парвонаи тирамоҳӣ (совка) ва ширинча (тля) бисёртар вомехӯрад.

Чораҳои умумӣ – пеш аз ҳама бояд тухмихои ба касалиҳо тобоварро интихоб намудан зарур аст.

Ҳамчунин, сари вақт гузаронидани дарави якуми юнучка боиси пешгирии касалиҳо ва хашаротҳоро таъмин менамояд.

Дар ҳолати пайдо шудани ҳашаротҳо аз захрдоруҳои табии истифода кардан натичаи хуб медихад.

Барои ин баргу поян картошка(ботва) ва ё барги чормағзро ба миқдори 1,5 кг гирифта дар 5 литр оби тоза дар муддати як ҳафта тар мекунанд. Баъд полида миқдори умумии маҳлулро (бо ҳамроҳ кардани оби тоза) ба 10 литр мерасонанд.

Маҳлули тайёршударо ҳамчун захрдору ба мукобили ҳашаротҳо ва касалиҳо (10 литр барои 1 сотик) истифода мебаранд.

Системаи дурусти киштгардонро ба рох мондан ба максад хеле мувофик аст ва натичаи хуб медихад.

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Сомона: www.fast-program.tj

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Барномаи Хизмати машваратӣ барои хонаводаҳо ва хочагиҳои хурди деҳқонӣ дар Тоҷикистон

ТАВСИЯ ОИД БА ПАРВАРИШИ ЮНУЧҚА ДАР ХОНАВОДАҲО

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо ва хочагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофикат накунад.

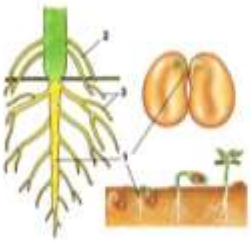
ш. Кӯрғонтеппа - 2014

USAID

Annex 27. FAST Booklet – Alfalfa

Аҳамияти биологии юнучқа

Юнучқа ҳамчун зироати хӯрокаи чорво қариб, ки дар тамоми минтақаҳои Ҷумҳурӣ парвариш карда мешавад. Ин зироатро аз сабаби самаранокӣ ва сифатнокии маликаи хӯрокаҳои чорво низ меноманд, чунки он дар таркиби худ захираи бойи протеин (сафеда) ва моддаҳои зарурии ғизой дорад. Аҳамияти дигари юнучқа он аст, ки ҳамчун растании бисёрсола ва муҳим барои беҳдошти таркиби хоки заминҳои гуногун, тайёр кардани сенаж (тарбеда), орди витаминдор ва бедаи хушк хеле васеъ истифода бурда мешавад.



Хусусияти хоси юнучқа дар он аст, ки ин зироат дар решаи худ лӯндачаҳои бактериядор дорад, ки нитрогени ҳаворо аз худ намуда, таркиби хокро аз ин элемент бой мегардонад. Ин хусусият имконият медиҳад, ки баъди дарави якум решаҳо қобилияти захира намудани нитрогенро пайдо мекунанд ва ба ин ғизо минъбад эҳтиёҷ надоранд.

Тайёр намудани тухмии юнучқа барои кишт

Барои кишти юнучқа неш аз ҳама ба навъи он эътибор додан зарур аст. Барои минтақаи ҷанубӣ Хатлон тухмиҳои поҳиябандишуда, ки ин навъҳои "Вахш-313" ва "Вахш-300" мебошанд ва барои интихоби он тухмиҳои репродуксияи (насли) якум зарур мебошад.

Дар рафти кишт кӯшиш ба харҷ додани зарур аст, ки зичии байни тухмиҳо зиёд набошад ва замин аз тухмиҳои алафҳои бегона пурра тоза карда шуда бошад. Меъёри тухми новобаста аз навъҳои он ба як сотиқ 200 грамм тавсия дода мешавад. Чуқурии кишти тухмӣ дар фасли тирамоҳ (охири август ва аввали сентябр) ба андозаи 3 см ва фасли баҳор (феврал - март) ба андозаи 1 см кифоя мебошад.

Инчунин деҳқонон тавсия медиҳанд, ки коштани тухми юнучқа дар якҷоягӣ бо ҷав, сули (баҳорон) ва чуворимакка (тирамоҳ) ба фоидаи пуркувваттшавии навдаҳо ва ҳимояи онҳо мебошад. Инчунин дар қитъаҳои калон (10 ё 15 сотиқ) кашидани ҷӯяк барои обёрӣ хеле мусоид мебошад.

Парвариш ва ғизодиҳии юнучқа

Вобаста ба шароити хок, иклим, чойи кишт ва намнокии замин барои сабзиш ва пигоҳубини ин зироати хӯрокаи чорво ба эътибор гирифтан зарур мебошад. Намнокии замини кишт то 70% кифоя мебошад. Дар вақти сернамии баҳорӣ обёрӣ зарур нест. Новобаста аз ин баъзе деҳқонон дар аввали баҳорон замини юнучқазорро як маротиба обёрӣ мекунанд. Обёрии минбаъда аз намнокии замини кишт, мавсими сол ва обу ҳавои минтақа вобастагӣ дорад.

Дар вақти зиёд шудани алафҳои бегона зичии пиҳолҳо кам мешавад. Аз ин сабаб алафҳои бегонаро нест кардан зарур мебошад. Дар вақти кам шудани миқдори фосфор ва калий дар таркиби хоки юнучқазор, пояҳои он суст ва борик мешаванд. Пояи юнучқа чӣ қадар мустаҳкам бошад, ҳамон қадар хосилнокии он баланд мешавад. Агар нашъунамои хуб мувофиқи агротехникаи парвариш ба роҳ монда шавад, дар он сурат шумораи дарав меафзояд ва ин асоси серҳосилии юнучқа шуда метавонад.

Мӯҳлати дарав

Дар ноҳияҳои чануб гирифтани шаш дарави киштзори юнучқа имконпазир мебошад,

Annex 28. FAST Booklet - Cauliflower

<u>Навъхои нохиябандишудаи карам</u>

1. **«Апшеронии махаллӣ»** - барои дар фасли зимистон шинонидан пешбинӣ шудааст. Саракаш дарози мулоим, вазни миёнаи он аз 0,5 то 0,8 кг мешавад.

2. **«Дербенти»** ҳам ба **«Апшеронии маҳаллӣ»** монандӣ дошта ҳосили он муқоисан каме кам ва 2-3 рӯз дертар мепазад.

3. **«Июнская»** - навъи бисёр пешпаз, каллааш на он қадар калон, кулӯла ва ранги сабз дорад, вазни миёнааш -1,5 кг мешавад.

4. **«Номери якуми Грибовский-147»** навъи пешпазак, саракаш на он қадар калон вазни миёнааш 1-1,5 кг рангаш сабз мешавад.

5. **«Слава 1305»** - миёнапаз, барои мӯҳлатхои миёна шинонидан пешбинӣ шудааст. Каллаи бастаи он на он қадар сахт, дар баъзе маҳалҳо мекафад.

6. **«Тошкинтон-10»** - миёнапаз, ба гармӣ ва хушкӣ тобовар, каллаи бастаи он кулӯла, ҳаҷмаш миёна мебошад.

Новобаста ба навъҳои дар боло номбаршуда ҳоло дар аксарияти "агромағозаҳо" ва нуқтаҳои фурӯши тухмӣ, гибриди(дурагаҳои) ин зироат хеле зиёданд, ки потенсиали хуби ҳосилнокӣ доранд ва кишт намудан барои деҳқонон самараи хуб медиҳад.

Касалиҳои карам. Касалиҳои асосӣ ин доги сиёҳи карам ва бактериози рагҳои карам мебошад. Мубориза бар зидди ин касалиҳо пеш аз ҳама гузаронидани чорабиниҳои пешгирикунии ин касалиҳо ва кишт намудани навъҳои тобовар ба ин касалиҳо мебошад.

Ҳашаротҳои зараррасони карам. Шапараки сафеди карам, кирми тирамоҳӣ ва дигар кирминаҳо ба карам зарар мерасонанд. Бар зидди ин кирминаҳо бо истифода аз усули биологии мубориза, яъне ба 1га пошидани 30-35 ҳазор болиғи тухмхӯрак (трихограмма) самараи хуб медиҳад. Бар зидди ширинча ва куя бошад, аз энтомофагҳо, тиллочашмак ва кеканаи 7-хола, яъне ба 1 га аз 300 то 500 адад истифода бурдан самараи хуб медиҳад.

Тартибдиҳандагон: Ҷӯраев С.Б., Хасанов Ю.

Адабиёти истифодашуда:

Сиеская Е. Н., Н. А. Буш. "Капуста"
Т. VIII. - С. 459—466.

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The U.S. Government's Global Hunger & Food Security Initiative

Барномаи Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

АГРОТЕХНИКАИ ПАРВАРИШИ КАРАМ

Маводи мазкур бо кӯмаки мардуми Америко таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

ш. Қӯрғонтеппа - 2014

USAID

Annex 29. FAST Booklet – Cucumber

Меъёри кишти тухмӣ ҳангоми кишти баҳорӣ 3 кг / га, ҳангоми кишти тобистонӣ 4 кг/ га мебошад. Чуқурии ҷойгиршавии тухмӣ бояд дар хоки сернам ва вазнин 3-4 см, дар хоки бештар хушк ва сабук 5-6 см-ро ташкил диҳад. Тухмии кишти барвақтиро хушк ва кишти бевақтиро тар карда ё сабзонда шинондан лозим аст.

Нигоҳубин. Нигоҳубини бодиринг кишти иловагӣ дар ҷойҳои насабзидаи тухмӣ, ягонакунӣ, каландкунӣ, хишова, ғизодиҳӣ ва обмониро дар бар мегирад. Дар ҷойҳое, ки тухмӣ набаромадааст, тухмии нешзадаро ҳар чӣ барвақттар кишт кардан лозим аст, то ки намии замин бухор нашавад ва тухмии кошташуда сабзад. Кӯчати бодирингро ду маротиба ягона кардан лозим аст. Ягонакунии якумро ҳангоми 1-2 барг баровардани растанӣ мегузаронанд, дар ин сурат дар ҳар чуқурча 3-4 растанӣ мемонад. Бори дуюм бодирингро баъди 2-3 барг баровардан ягона мекунанд, мувофиқи нақшаи қабулшуда дар ҳар чуқурча 1 растанӣ монда мешавад.

Нуриҳо. Барои сабзиш ва инкишофи хуби бодиринг ва рӯёндани ҳосили баланд ҳамчун ғизои иловагӣ ба палак нуриҳои минералӣ додан лозим аст. Дар давраи нашъунамо ба бодиринг се маротиба ғизои иловагӣ додан лозим аст: ғизои якумро баъди ягонакунии охирин аз рӯи меъёри ба ҳар гектар 100-130 кг карбомид (барои як садяк 10-13 кг) ва 60-70 кг (барои як садяк 6-7 кг) аммофос, бори дуюм ғизои иловагиро ҳангоми гулкунӣ ва ҳосилбандӣ ва бори сеюм баъди 5-6 маротиба ҷамъ овардани ҳосил илова намудан лозим аст. Ҳангоми маротибаи дуюм ва сеюм ғизо додан ба ҳар гектар 90-110 кг (барои як садяки замин 9-11кг) карбомид андохтан лозим аст.

Обдиҳӣ. Ба ҳосилнокии бодиринг обдиҳӣ таъсири калон мерасонад. Ба палак то гулкунӣ ба таври мӯътадил баъди 7-8 рӯз, ҳангоми гулкунӣ тез-тез баъди 4-5 рӯз ва дар вақти ҳосилбандӣ баъди ҳар як ҷамъоварии ҳосил об додан лозим аст.
Дар давраи нашъунамо ба бодиринг аз рӯи шароити парвариши он дар ноҳияҳои тобеи Ҷумҳурӣ 10-12 маротиба ва дар ноҳияҳои ҷанубии Ҷумҳурӣ 15-20 маротиба об медиҳанд.

Мубориза бар зидди касалиҳо иборат аст аз: анҷом додани кишттардон ба таври лозимӣ, безараргардонии тухмӣ пеш аз кишт ва истифодаи навъҳо ва дурагаҳои тобовар ба касалиҳо ва зараррасонҳо.

Ҷамъоварии ҳосил. Палаки бодиринг вобаста ба навъ ва мӯҳлати кишт баъди 42-45 рӯзи сабзиш ба ҳосилбандӣ сар мекунад. Бодирингро дар аввал баъди ҳар 2-3 рӯз, дар давраи саросар ҳосилбандӣ бошад як рӯз пас мечинанд. Ҳосилро бо эҳтиёт чидан зарур аст, барои кандани бодиринг шохаҳои растаниро накашида балки бо сарангушт думчаи ҳосилро пахш карда мекананд то, ки думчаи бодиринг дар палак монад.

Тартибдиҳандагон: Ҷураев С.Б., Хасанов Ю.
Адабиёт: Тараканов Г.И. и др. Овощеводство. М.: КолосС, 2003. 472 с.

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Барномаи Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

ТЕХНОЛОГИЯИ ПАРВАРИШИ БОДИРИНГ

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

Ш. Кӯрғонтеппа - 2014

USAID

Annex 29. FAST Booklet – Cucumber

Бодиринг растании яксолаи алафӣ буда, ба оилаи кадугиҳои пояш печанда мансуб мебошад.

Хусусияти биологӣ. Бодиринг зироатест, ки гармӣ ва намиро дӯст медорад. Тухмии бодиринг дар ҳарорати 12-15°С сабзида, баланд мешавад, барои нумӯъ ва инкишофи он ҳарорати 28-32°С бисёр ҳам мусоид мебошад. Дар ҳарорати аз ин паст сабзиш ва инкишофи он суст ва дар ҳарорати 10 °С қатъ гашта, дар ҳарорати 1-1,5 °С нобуд мешавад.

Барои хуб сабзидани бодиринг 85-90 фоиз намии ҳаво ва 75-85 фоиз намии хок мусоид аст. Дар ҳавои хушку гарм палаки бодиринг суст месабзад, ҳосилбандиии он кам ва баъзан хушк мешавад. Бодиринг дар давраи ҳосилбандӣ ба об бештар эҳтиёҷ дорад.

Интихоби майдон. Барои кишти бодиринг қитъаи замине, ки хокаш ковок,

ҳосилхез, серпору, сернам ва сатҳи оби зери заминиаш чуқур интихоб карда мешавад.

Бодирингро дар қитъаи замин пас аз картошка, карам, сабзӣ, лаблабу, хусусан агар ин зироатҳо дар замини серпору парвариш ёфта бошанд, коштан хуб аст.

Бодирингро дар як қитъаи замин баъди зироатҳои кадугӣ коридан мумкин нест, онро дар ҳамон як майдон баъди 2-3 сол кишт кардан мумкин аст.Барои кишти баҳории бевақтӣ ва тобистонӣ қитъаҳои замини аз сабзавоти барвақтӣ (картошка, карам, сабзӣ ва пиёзи кишти тирамоҳӣ) холишударо истифода мебаранд.

Тайёр кардани майдон ва нуриандозӣ

Қитъаи заминеро, ки дар он бодиринг кишт мешавад, тирамоҳ дар чуқурии 27-30 см шудгор карда, ба ҳар як гектар 30-40 тонна пору (барои як садяк 300-400 кг), 200-300 кг суперфосфат (барои як садяк 2-3 кг) ва 100-150 кг нуриҳон калийдор (барои як садяк 1-1,5 кг) андохтан лозим аст.

Дар қитъаҳои хурди наздиҳавлигӣ, аввал заминро аз боқимондаҳои зироати пешинакишт тоза карда, пору ва 70 фоизи суперфосфат ва нуриҳои калийдор пошида, пас аз он побел кардан лозим аст.

Дар фасли баҳор пеш аз кишт қитъаи замини побелкардаро нарм ва тахту ҳамвор карда, барои кишти бодиринг ҷӯяк кашидан лозим аст.

Навъҳо. Дар Тоҷикистон навъҳои зерини бодиринг гурӯҳбандӣ карда шудаанд: "Беназир", "Маргелонии 822", "Ҳисории 132", "Конкурент" ва ғайра.

Ба Тоҷикистон инчунин соҳибкорони маҳаллӣ навъҳои зиёди дурагаро ворид кардаанд, ки аксарияти он гурӯҳбандӣ нашудааст. Барои кишт деҳқонон метавонанд навъҳои дурагаи "Саафа", "Супирина", "Аякс" ва "Офтобии 35"-ро истифода баранд. Агар ҳангоми интихоби тухмӣ деҳқонон аз мутахассисони маҳаллии соҳаи кишоварзӣ маслиҳату тавсия гиранд, ба фоидаи кор хоҳад буд.

Мӯҳлати кишт, усули шинондан ва меъёри кишт

Дар шароити Тоҷикистон бодирингро дар фасли баҳор ва тобистон мекоранд. Бодиринги кишти баҳориро тару тоза истеъмол мекунанд, кишти тобистонаро бошад, ҳам тару тоза истеъмол мекунанд ва ҳам дар намакоб хобонда, барои зимистон захира менамоянд.

Тухми бодирингро дар вилояти Хатлон в а м и н т а қ а и Қӯрғонтеппа дар даҳаи дуюми моҳи март, мин т ақаи Кӯлоб, ноҳияҳои водии Ҳисор ва вилояти Суғд даҳаи сеюми моҳи март ва даҳаи якуми моҳи апрел мекоранд. Кишти тобистонаи бодирингро дар даҳаи дуюм-сеюми моҳи июн ва даҳаи якуми моҳи июл мекоранд.

Ҳангоми ба таври дастӣ шинондани тухмӣ пуштаро то 140 см васеъ карда, аз ду тарафи он тухмиро мекоранд. Барои як гектар 45 – 50 ҳазор кӯчат сабзондан лозим аст.

Навъҳои дарозпалакро дар пуштаҳои 120+60Х30 см, навъҳои кӯтоҳпалакро 80+60Х30 см кишт кардан лозим аст.

Палаки бодиринги тобистон киштшуда нисбат ба кишти баҳорӣ кӯтоҳтар мешавад. Ғайр аз ин, кӯчат аз таъсири гармои тобистон нобуд шуданаш мумкин аст, инчунин ба бодиринги тобистон киштшуда ширинча бисёр зарар мерасонад. Бинобар ин, тобистон бодирингро аз рӯи нақшаи 80+60х25 кошта, ҳангоми ягонакунӣ дар ҳар чуқурча 1 растанӣ мондан лозим аст.

Annex 30. FAST Booklet – Compost

хок пошем, дар ин ҳолат суръати тайёршавии компост меафзояд. Дар хотир доштан лозим аст, ки намнокии он дар вақти тайёршавӣ бояд ба 80% расад (яъне дар рафти тайёркунии компост ба миқдори лозимӣ об пошидан зарур аст) ва гармии дарунии омехтаи компост баъди 1-2 рӯз бояд ба 60- 65°С расад. Албатта чунин тарзи тайёр намудани компост маҳорат ва заҳмати калонро талаб мекунад. Лекин бояд дар хотир дошт, ки компости дар намӣ тайёр карда шуда дар фасли баҳору тобистон як маводи ғизоғии ниҳоят зарур барои сабзаваткорӣ, обчакорӣ ва полезии назди ҳавлигӣ мебошад. Аз ҳама муҳим он аст, ки аксарияти моддаҳои ғизоғии зарурӣ барои сабзидани растаниҳо дар таркиби компости таёршуда вуҷуддоранд.

КОМПОСТИ ТАЙЁРШУДА

Компости таёршударо муайян намудан хеле осон аст. Пеш аз ҳама рангаш сиёҳтоб буда, таркиби якхела дорад.

Фарқияти ғуногунии таркиби компост аз байн меравад. Аз ҳама муҳим ин бӯи компост аст, яъне бӯи ғализ тамоман аз байн меравад ва бӯи замини нав кофта шуда меояд.

Гизоноки қабати хок пас аз истифодаи компост хеле бой мешавад, яъне аз макро ва микроэлементҳо бой мегардад. Инчунин истифодаи ин мавод сабаби пешгирии шӯршавии замин мегардад. Дар шароити Ҷумҳурии Тоҷикистон (март - сентябр) дар як мавсим 4-6 маротиба бо чунин тарз компостро тайёр намудан мумкин аст. Меъёри истифодаи компост дар як сотиқ 300-500 кг мебошад.

Тартибдиҳандагон: Зокиров И.Т., Ҷӯраев С.Б., Хасанов Ю.

Адабиёт: Л. Филатов. Как приготовить хороший компост или перегной. М. 12 сах.

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ТАВСИЯҲО ОИД БА ТАЙЁР НАМУДАНИ КОМПОСТ ДАР ХОЛАГӢ

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

Ш. Қӯрғонтеппа - 2014

USAID

Annex 30. FAST Booklet – Compost

Аҳамияти компост дар растанипарварӣ

компост дар растанипарварӣ

Компост ин маводи ҳосилхез, пӯсида, нагз хушк карда шуда ва фоиданок буда, аз партовҳои кишоварзӣ, алафҳои бегонаи тухмашон насабзида, баргрезаҳо (хазон), бехҳои сабзавот ва картошка, партовҳои ошхона, пору и чорво, хасу хошоки кӯча ва хоҷагӣ (майда карда шуда) тайёр карда мешавад.

Компосткунӣ пеш аз ҳама ҷараёни биологӣ мебошад. Афзалияти компосткунӣ дар он аст, ки дар ҷараёни тайёршавии он, фаъолияти микроорганизмҳо зарар намеёбанд. Хоҷагидорон метавонанд, ки компостро бо осонӣ тайёр кунанд ва ин нисбат ба истифодаи нуриҳои минералӣ арзон ва безарар мебошад.

Истифода бурдани компост хосияти физикавии хокро беҳтар мегардонад, яъне хоки сахт ба хоки мулоим мубаддал мегардад. Зироатҳое, ки бо истифода аз компостҳо парвариш карда мешаванд, нисбат ба касалиҳо ва зараррасонҳо хеле устувор мегарданд ва дар давраи нигаҳдорӣ муддати дароз сифати худро нигоҳ медоранд.

ТАРЗИ ТАЙЁР НАМУДАНИ КОМПОСТ

Компостро дар қуттии аз чӯб (аз дарахтҳо) ё шифер сохташуда, ки дарозиаш то 2 метр ва баландиаш 1,5 метр аст тайёр мекунанд

ва агар як тарафи девори он кушода шаванда бошад барои тагурӯ кардан, қулай аст. Деворҳои қуттӣ бояд сӯрох дошта бошанд. Ин барои ворид шудани ҳаво ба даруни қуттӣ имкони хуб фароҳам меорад. Чунин қуттӣ дар рӯ ба рӯи қуттии якум низ сохтан зарур аст, чунки тӯдаи компостро баъди 4-6 рӯз қабат ба қабат рӯ гардонда, дар даруни он ҷо ба ҷо гузоштан лозим аст. Агар ин тартибро риоя накунем, дар он сурат ҳарорати мобайни компост ба 70°С мерасад ва афзоиши микроорганизмҳо қатъ мегардад ва чунин компост моҳияти асосии худро гум мекунад. Ҳамин тавр тӯдаи компости тайёр мешударо 4 маротиба тагу рӯ кардан зарур аст. Мӯҳлати тайёршавии компост вобаста аз ҳарорат мебошад. Барои сифатнок шудани компост, дар қуттӣ аввал пору сипас дигар партовҳои гуногунро қабат ба қабат гузоштан лозим аст. Ҳангоми гузоштани компост дар қуттии якум, авввал як қабат (10 см) алафи хушкро паҳн мекунанд ва аз болои он қабати дигари (10 см) поруи кӯҳнаро мегузоранд то, ки маводи компостӣ бо микроорганизмҳо олуда гардад. Дар ҳар як қабат то 20-40 см партовҳои гуногуни органикии дар боло номбаршударо мегузоранд. Агар баъди ҳар як қабати моддаҳои органикӣ ба андозаи 3-4 бел

Annex 31. FAST Booklet – Maize

Меъёри киштн тухмиҳо аз рӯи вазни онҳо барои заминҳои обӣ 25-30 кг, лалмӣ 18-20 кг. (аз рӯи ҳисоби 0,09-0,1 млн, тухмӣ) дар 1 гектар мебошад. Тухмӣ дар чуқурии 5-7 см таги хок карда мешавад.

Нигоҳубини киштзор. Нигоҳубини саривактию хушсифати киштзорҳо яке аз омилҳои асосии гирифтани ҳосили фаровони чуворимакка аст. Дар тамоми давраи нашъунамои чуворимакка барои муҳофизат ва нарм нигоҳ доштани хок 3-4 маротиба коркарди байни қаторҳоро мегузаронанд. Коркардро ба воситаи нармкунакҳои тамғаи КРН 4,2, КРН 5,6, ки ба трактороҳои МТЗ-80 ё МТЗ82 васл гаштаанд, гузаронида мешаванд.

Чуворимакка зироати фонданок барои хоҷагиҳои деҳқонӣ

Дар давраҳои пайдоиши чорӯбак ва ширагирии дон талаботи чуворимакка ба об дучанд меафзояд, норасоии намӣ дар ин давра ҳосилро то 30 фоиз кам мекунад.

Ҷамъоварии ҳосил. Чуворимаккаи дониро дар давраи пурра расидани он ҷамъоварӣ мекунанд. Барои ғундоштани дон комбайнҳои КСКУ-6, КСКУ-5А, комбайнҳои ғалладарави СК-5, «Нива» ва СК 6, «Колос» бо олоти иловагӣ барои ғундоштану майда кардани сӯтаҳо ва инчунин, комбайнҳои «Херсонетс»-200, «Днепр» истифода мешавад.

Маҳсулоти силоси чуворимакка ба воситаи комбайнҳои КС-2,6., КСК 100 дар давраи ширагирии дон дар ҳолате, ки таносуби туршиҳои (кислотаҳои) ширу сирко барои хобондани силос ба мақсад мувофиқанд ғундошта мешаванд. Барои хӯроки сабз онро дар давраи пайдо шудани саракҳо ҷамъ меоваранд.

Чорабиниҳои мубориза бар зидди зараррасонҳои чуворимакка

Касалиҳои чуворимакка: Сиёҳаки пуфакчамонанди чуворимакка. Ин касалӣ дар тамоми давраи афзоиши зироат, махсусан дар давраи ҳосилбандии чуворимакка сироят меёбад.

Дар ин давра лозим меояд, ки дастӣ пуфакҳоро чида, аз майдон бароварда, сӯзонидан лозим аст. Дар давраи сабзиши растанӣ дар майдонҳои бо мақсади тухмӣ истифодашаванда баъди 35-40-рӯзи сабзиш ва маротибаи дуюм дар давраи саршавии ҳосилбандӣ коркард гузаронидан лозим аст.

Ҳашаротҳои зараррасони чуворимакка: ҳашаротҳои ҳамаҳӯр, кирми ғӯза, кирми тирамоҳӣ, карадрина, шабпараки чуворимакка ва ғайраҳо ба чуворимакка зарар мерасонанд. Бар зидди ин зараррасонҳо усули биологиро истифода бурдан мувофиқи мақсад мебошад. Яъне ба ҳар як гектар ба миқдори 30-35 ҳазор тухмхӯраки болиғ сар додан лозим аст ё ин ки 1-грамм ба як гектар тухмӣ тухмхӯрак (трихограмма) пошидан лозим меояд.

Аз истифодаи заҳрхимикатҳо дар киштзори чуворимаккаи дон ба хотири тозагии маҳсулоти рӯёндашаванда даст кашидан лозим аст.

Тартибдиҳандагон: Ҷӯраев С.Б., Хасанов Ю.

Адабиёт: Адиньяев Э.Д., Возделывание кукурузы при орошении. М. Агро-промиздат, 1988.- 174 с.

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ТЕХНОЛОГИЯИ ПАРВАРИШИ ЧУВОРИМАККА

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

ш. Кӯрғонтеппа - 2014

USAID

Annex 31. FAST Booklet – Maize

Ҷуворимакка зироати фонданок

Ҷуворимакка яке аз зироатҳои серҳосилу маъмулии емию хошокист, ки дар соҳаи кишоварзӣ васеъ истифода бурда мешавад. Ҷуворимакка ҳамчун зироати хуроквориӣ-озуқавориӣ ва техникӣ аҳамияти калон дорад. Дони ҷуворимакка дар таркибаш 12% сафеда, 65-70% крахмал, 4-8% равған ва витаминҳои боарзиш дорад. Аз дони ҷуворимакка орд, крахмал, спирт, масолеҳи каннодӣ, пиво (оби ҷав) ва нон тайёр мекунанд.

Сӯтаҳои он дар шакли обпаз ва бугпазкардану консервакунонӣ ва бирён истифода мешавад. Ҷуворимакка зироати маъмулӣ буда барои дигар зироатҳои кишоварзӣ пешинакишти хуб аст.

Ватани асосии ҷуворимакка Амрикои Марказӣ ва Ҷанубӣ мебошад.

Майдони кишти он дар ҷаҳон мувофиқи нишондоди Ташкилоти озуқа ва кишоварзии СММ (ФАО, 1996) 140,1 млн. гектарро (Асосан дар Амрико, Бразилия, Мексика, Аргентина, Ҳиндустон, Хитой) ташкил медиҳад. Ҳосилнокии миёнаи он дар ҷаҳон 4,12 тонна аз 1 гектар мебошад. Дар Тоҷикистон мувофиқи нишондоди омори Ҷумҳурӣ соли 2004 майдони кишти ин зироат 14092 гектар ва ҳосилнокии миёнаи он барои дон 46,8 сентнер аз 1 гектар мебошад.

Хусусиятҳои биологӣ. Ҷуворимакка растании гармию рӯшноидӯсти кӯтоҳрӯз буда, тухмаш дар ҳарорати 7-8°С месабзад, ба ҳисоби миёна инкишофи он 25-30°С мебошад. Майсаҳои ҷуворимакка ба -2-3°С хунукӣ тобовар аст. Ҳарорати фаъол вобаста ба навъҳои тезпаз ва дерпаз 1600-2800°С мебошад.

Давраи муҳими талаботи он ба об 10 рӯз пеш аз баромадани ҷорӯбак сар шуда, 20-рӯз баъд аз он давом мекунад.

Дар ин давра намнокии хок бояд аз 70-75% кам набошад. Даврaҳои нашъунамо вобаста ба навъҳо дурагаҳои он: тезпаз 90-120 рӯз, дерпаз 130-145 рӯзро ташкил медиҳад.

Навъҳо ва дурагаҳо: «Краснодарский - 613», «АТВ», «Жеребковский-90», «МВ», «Имертини» ва навъҳои маҳаллии «Дилшод» ва «Шӯҳрат».

Киштгардон: Барои парвариши ҷуворимакка майдонҳои калонҳачми ҷиҳати истифодаи самаранокии техника мувофиқ ва ҳосилхези аз об таъмин ҷудо кардан даркор аст. Дар киштҳои мобайни ҷуворимакка пас аз зироатҳои ғалладонагӣ, омехтаҳои зироатҳои лӯбиёгию ғаллагӣ, зироатҳои зимистон нашъунамокунанда ва инчунин, пас аз ғунучини ҳосили кишти асосии ҷуворимакка парвариш карда мешавад.

Коркарди хок: Ҷуворимакка нисбат ба коркарди хок бештар талабот дорад. Коркарди асосии хок бо назардошти намуди хок, зироати пешинакишт ва хусусияти паҳншавии алафҳои бегона гузаронида мешавад. Тирамоҳ дар чуқурии 35-40 см бо испорҳои пешпочадори ПЯ -3 -35, ПН -3-35 шудгор мегузаронанд. Вобаста ба ҳолати майдонҳо ва паҳншавии алафҳои бегона коркарди пешазкиштии баҳории хок бо нармкунакҳои васеъ-бари КШ-8,4; чархмолаҳои БДТ-3 ё чизели ЧКУ-4 дар чуқурии 10-12 гузаронида мешавад.

Нуридиҳӣ. Ҷуворимакка, ки ҳосили баланд медиҳад, ба нурӣ талаботи зиёд дорад. Барои ҳосил шудани 1 сентнер дон ва ҳамин миқдор баргу поя ҷуворимакка аз хок 2,5-3 кг нитроген, 1,2 кг фосфор ва 2,0 кг калийро ҷабида мегирад. Ғизодиҳии якум дар давраи 3-4 барг пайдо кардани ҷуворимакка дода мешавад. Вобаста ба ҳосили пешбинишуда дар ғизодиҳии якум 120-150 кг/га нитроген ва 60 кг/га фосфор пошида мешавад. Нуриҳо дар чуқуриҳои 10-12 см ва дар ҳамин масофа аз қатори растаниҳо дуртар зерихокка рда мешавад. Ғизодиҳии дуюм ба коркарди охирини байни қаторӣ вобаста карда мешавад ва дар давраи 6-7 баргӣ аз 60-70 см зиёд набудани қади ҷуворимакка гузаронида мешавад. Дар ғизодиҳии дуюм меъёри боқимондаи солонаи нитроген ва 40-60 кг /га фосфор аз таги чӯяк дар чуқурии 4-5 см андохта мешавад.

Тайёр кардани тухмӣ ба кишт. Яке аз воситаҳои асосии рӯёндани ҳосили фаровон ин гузаронидани кишт бо тухмиҳои хушсифати дурагаҳои репродуксияи якуми ноҳиябандишуда мебошад, ки қобилияти нешзаниаш -90 % ва тозагиаш аз 90 % кам набошад. Тухмиҳоро пеш аз кишт дар корхонаҳои махсус тоза карда, аз рӯи навъу андозаашон ҷудо мекунанд. Ин корҳо ба воситаи мошинаи КСК 1 ва сепаратори СВУ 5 К гузаронида мешавад.

Кишт бо тухмипошакҳои СПК 6, СУПН -8 гузаронида мешавад. Зичии беҳтарин барои дон бояд 50-60 ҳаз. ниҳол дар 1 гектар бошад. Ба дарозии 1 метр вақте, ки бари қаторҳо 60 см аст, бояд 3,5-4 растанӣ ва дар вақти 70 см будани бари қаторҳо 4-5 растанӣ бирӯяд. Барои силос меъёри кишти тухмиҳо 10-15 % зиёд карда мешавад (60-70 ҳазор растанӣ дар 1 гектар).

Annex 32. Booklet - Peanut

тавсия дода мешавад. Меъёри кишт 50-80 кг ба 1 гектар мебошад. Чуқурии кишти тухмӣ 6-8 см ва миқдори растаниҳо 100-120 ҳазор дона барои 1 гектар тавсия дода мешавад. Ҳангоми нашъунамои растанӣ мобайни қаторҳо 3-4 маротиба то чуқурии 6-8 см бояд нарм карда шаванд. Ҳангоми пайдо шудани ғилофакҳо як-ду маротиба дар бехи растаниҳо бояд хок кашида шавад. Дар давраи нашъунамо ба кишти чормағзи заминӣ 5-6 маротиба баъди ҳар 15 рӯз об додан лозим аст. Обдиҳӣ пеш аз пухтани ғилофакҳо бояд қатъ карда шавад.

Мубориза бар зидди ҳашаротҳо, касалиҳо ва алафҳои бегона

Ба чормағзи заминӣ ширинчаи сафед, тортанак ва кана зарар мерасонанд. Ҳашаротҳое, ки ба чормағзи заминӣ зарароваранд, ин баргхӯракҳо ва ҳашаротҳои хокӣ мебошанд. Бар зидди ин ҳашаротҳо аз заҳрдоруҳои табиӣ (сирпиёз, пиёз ва қаламфури ғилофакӣ) истифода мебаранд. Инчунин мубориза бар зидди ҳашаротҳои зараррасон бояд пеш аз кишти зироат анҷом дода шавад. Ҳашаротҳои хокӣ пояҳои рушдёфтаро дар таги замин истеъмол менамоянд, ошкор ва назорат намудани онҳо мушкилтар мебошад. Алафҳои бегонаро бо роҳи хишова намудан метавон назорат кард. Инчунин кишт кардани ин зироат бо усули чӯякҳои танг тавсия дода намешавад, чунки ниҳолҳои растаниҳои дигар метавонанд ба болои ниҳоли чормағзи заминӣ соя афкананд.

Нуридиҳӣ

Намунаи хокро бояд пеш аз омодагии кишти саҳро гирифта, таркиби кимёвии он ташхис карда шавад. Дар сурати зарурӣ бояд пеш аз шудгор ба замин пору андохт. Кишт бояд дар чуқурии 6-8 см гузаронида шавад, то ки тухмиро хок ба пуррагӣ рӯйпӯш намояд. Ҳангоми ичро накардани ин амал боиси зарар ёфтани реша ва поя аз ҳисоби касалиҳо ва алафҳои бегона мегардад. Калсий одатан барои таъмин намудани рушди пурраи ғилофакҳо пеш аз кишт намудани зироат зарур аст. Фосфор ва калий бошад пеш аз кишт барои гирифтани натиҷаи дилхоҳ, ба замин андохта мешаванд.

Обёрии мӯътадил боиси баланд гаштани ҳосилнокӣ, сифат ва даромаднокии чормағзи заминӣ мегардад. Афзоиши чормағзи заминӣ дар шароити хушки боду ҳаво, дар аввали гулкунӣ дар мавриди ба замин дохил шудан (ҳангоме, ки гул ба замин дохил мешавад), аз обёрӣ вобастагӣ дорад.

Ҷамъоварии ҳосил. Шароити обу ҳавои давраи кишт ва солимии растанӣ ба давраи пухтани ғилофаки чормағзи заминӣ таъсир мерасонад. Санҷиши давраи пухтани зироат бояд аз 15 то 20 рӯз пеш аз санаи ҷамъоварии ҳосил гузаронида шавад. Тухмиҳои норасида ранги сафед ва гулобии пастро мегиранд.

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Адабиёт: Галина Гудвин
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Барномаи Хизмати машваратӣ барои хонаводаҳо ва ҳоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

ПАРВАРИШИ ЧОРМАҒЗИ ЗАМИНӢ

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо ва ҳоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

ш. Қӯрғонтеппа - 2014

USAID

Annex 32. Booklet - Peanut

Аҳамияти биологии чормағзи заминӣ

Чормағзи заминӣ - яке аз зироатҳои қиммати равғандор мебошад.

Дар таркиби мағзи он тақрибан 60% равған ва 35% сафеда вуҷуд дорад. Равғани он бошад, дар истеҳсолот барои тайёр кардани консерваҳо, маргарин, собунпазӣ инчунин дар соҳаи тиб низ васеъ истифода бурда мешавад. Баъди гирифтани равған, дар таркиби кунҷораи он то 45% сафеда ва 8% равған боқӣ мемонад. Чормағзи заминӣ дар тайёр кардани консерваҳо, ҳалвоҳо ва дигар маҳсулоти қаннодӣ низ истифода бурда мешавад. Дони онро бе коркард истеъмол кардан мумкин аст. Баргу пояшро бошад ба сифати хӯроки чорво истифода мебаранд. Аз чормағзи заминӣ аз 1,5 - 1,8 то 3,5 - 4 т/гектар ҳосили дон гирифтан мумкин аст.

Хусусияти биологӣ

Чормағзизаминӣ растании яксола буда, ба оилаи лӯбиёгиҳо тааллуқ дорад. Ду намуди растанӣ вуҷуд дорад: поядори дарозпалак ва буттагӣ. Решаҳояш дар хок васеъ паҳн шуда, то чуқурии 1,5 м дар хок реша медавонад. Баъди гардолудшавӣ гулаш дароз шуда, ғилофак ба вуҷуд меорад, ки он давоми 5-6 рӯз ба боло қад кашида, баъд ба поён хам мешавад. Баъди ин ғилофакҳо пайдо мешаванд, ки ҳар яки он 3-5 дона дорад.

Донаҳои чормағзи заминӣ шаклҳои дарозак ва гирдакро мегиранд.

Вазни 1000 дона тухмии он ба 300 – 500 г баробар аст. Чормағзи заминӣ растании гармидӯст буда, тухми он дар ҳарорати 12°С ба сабзидан шурӯъ мекунад. Сабзаҳои нав баромадаи чормағзи

заминӣ ба хунукӣ бисёр ҳассос буда, дар ҳарорати -1°С аз афзоиш мемонанд. Ҳарорати мӯътадили сабзиши растаниҳо 25-28°С мебошад. Дар ҳарорати аз 12°С паст, ҳосилбандӣ қатъ мегардад. Дар хунукиҳои тирамоҳ, ки ҳарорат -2°С поён мешавад, баргу пояшро сармо мезанад ва дар хунукии -3°С бошад, тухми он қобилияти сабзишро гум мекунад. Чормағзи заминӣ дар давраи гулкунӣ ва то охири ҳосилбандӣ ба об эҳтиёҷи бисёр дорад. Норасоии намӣ дар ин мӯҳлат ба қатъ шудани гулкунӣ ва ҳосилбандӣ оварда мерасонад, ки ин сабаби паст шудани ҳосил мегардад. Ҳангоми пухта расидани ҳосил талаботи растанӣ ба об кам гардида, дар моҳи август намии зиёд ба давомёбии пухта расидани ҳосил оварда мерасонад. Чормағзи заминӣ рӯшноиро дӯст медорад. Аз ин лиҳоз, ҳангоми кишт бояд майдонҳои офтобрӯя интихоб карда шаванд. Шиондани он дар зери сояи дарахтони заминҳои назди ҳавлигӣ тавсия дода намешавад.

Агротехникаи парвариш

Барои чормағзи заминӣ гандуми тирамоҳӣ ва ҷуворимакка пешиназироатҳои беҳтарин мебошанд. Инчунин худи чормағзи заминӣ барои бисёр зироатҳо пешиназироати хуб аст. Чормағзи заминӣ ба элементҳои ғизоӣ серталаб буда, барои ҳосил

кардани 1 сентнер ҳосили дон ва баргу пояш аз хок 6,2 кг нитроген, 1,1 кг фосфор ва 4 кг калийро мегирад. Чормағзи заминӣ ба нуриҳои минералӣ серталаб мебошад. Аз ҳамаи намуди нуриҳо дида, ба фосфор талаботи зиёд дорад. Барои гирифтани ҳосили 1,5-1,8 т аз 1 га замин миқдори зерини нуриҳо лозим аст: пору 10-15 т/га, фосфор 40-50 кг/га ва калий 20-30 кг/га. Истифодабарии нуриҳои нитрогению калийдор ба миқдори 10 кг/га дар мавриди кишт, саршавии гулкунӣ ва ҳосилбандӣ натиҷаҳои хуб медиҳанд. Майдоне, ки барои кишти ин зироат ба нақша гирифта шудааст, бояд дар чуқурии 25см нарм (ва ё шудгор) карда шавад. Пеш аз кишт заминро бояд тахту ҳамвор карда, барои нигоҳ доштани намӣ чапар задан лозим аст. Тозагии тухмие, ки барои кишт пешбинӣ карда шудааст, қувваи сабзишаш набояд аз 85% кам бошад. Барои кишт бояд тухмиҳои андозаашон калон интихоб карда шаванд. Тухмиҳои андозаашон хурд барои кишт тавсия дода намешаванд. Ҳангоми расидани ҳарорати ҳаво ба 14-15°С, кишти чормағзи заминиро бояд дар чуқурии 10 сантиметри хок оғоз намоед. Дар рафти кишт усули шиондани паҳнбар, яъне масофаи байни растаниҳо то 60-70 см

Annex 33. Booklet - Potato

яхобмонӣ ва китшгардони ғалладонагиҳо тавсия карда мешавад.

Касалии васеъ паҳн гардидаи картошка фитофтороз мебошад. Фитофтороз яке аз касалиҳои хавфноки картошка ба шумор меравад.

Чорабиниҳои агротехникии паст кардани касалиҳои вирусию замбурӯғии картошка

Аз касалиҳои вирусӣ тоза намудани киштзор дар се давра гузаронида мешавад: дар давраи баромади ниҳолҳо, давраи муғчабандӣ ва пеш аз чидани ҳосил. Нишонаҳои ниҳолҳои касал ин пажмурдашавӣ ва ранги хазон доштани онҳо мебошад, ки бояд аз киштзор канда дур карда шаванд.

Тайёр намудани анборхона ва нигоҳдории ҳосил

Лӯндаҳоро дар таҳхона ё анборхонаи махсус дар ҳарорати мусбати 6-10°С нигоҳ медоранд. Зери хок бо тарзи ғарам нигоҳ доштани лӯндаҳо низ дар шароити кӯҳистон истифода бурда мешавад. Дар ҳама гуна шаклҳои нигаҳдории картошка, тозашавии ҳаво ба воситаи ҳавокаш аз анбор бояд таъмин карда шавад ва лӯндаҳо бояд зери назорат бошанд.

Киштгардон

Картошка ба киштгардони зироатҳои пешинакишт, ба монанди юнучқа, лӯбиёгиҳо, ғалладонагиҳо ва зироатхои хӯроки чорво зарурат дорад. Дар шудгори юнучқаи солҳои пешин ҳар гуна кирмҳои дар хок афзоишёбанда, монанди кирминаи парвонаи тирамоҳӣ, симкирмҳо, инчунин замбурӯғи қутӯрак ва алафҳои бегонаи бисёрсола афзоиш меёбанд. Кишти картошка дар шудгори соли аввали юнучқа ба касалиҳо рӯбарӯ мегардад. Картошкаро дар чунин заминҳо дар соли дуввум кишт намудан беҳтар аст. Ҳамчунин дар як қитъа паи ҳам кишт кардани картошка тавсия дода намешавад.

Ҷамъоварии ҳосили ниҳолҳои солим барои тухмӣ

Яке аз омилҳои баланд бардоштани ҳосилнокӣ аз байни ниҳолҳо ҷудо карда гирифтани буттаҳои солим мебошад. Ниҳолҳои солим аз рӯи тарҳи баргу поя фарқ мекунанд, онҳо сабзи баланд ва равшан менамоянд. Ҳосили ин буттаҳо бояд аввал чида шуда, алоҳида ба халтаҳо ҷойгир карда шаванд ва баъд ҳосили умумӣ ҷамъоварӣ шавад. Ҳосили барои тухмӣ ҷудошударо қабл аз ба анбор гузоштан дар офтоби тира (каме соя) то сабзранг гардидани пӯсти лӯндаҳо нигоҳ медоранд, то устувории лӯндаҳоро ба касалиҳои гуногун баланд намоянд.

Ҷамъоварии ҳосил

Нишонаи расидани ҳосили картошка асосан сахт гаштани пӯсти лӯндаҳо мебошад. Ин вақт ранги баргу пояи ниҳол хира мегардад (барои навъҳои дерпаз) ё ин ки танаи ниҳолҳо мегалтад (барои навъҳои тезпаз). Ҷамъоварии картошкаро дар манотиқи кӯҳистон моҳҳои сентябр-октябр мегузаронанд. Пеш аз ҷамъоварӣ ниҳолҳоро даравида, киштзорро 10-12 рӯз нигоҳ медоранд. Ин амал боиси ғафс ва сахтшавии пӯсти картошка мегардад. Аз як тараф устувории лӯндаҳо ва аз тарафи дигар вазни лӯндаҳо то 10% меафзояд.

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Барномаи Хизмати машваратӣ барои хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

ТЕХНОЛОГИЯИ ПАРВАРИШИ КАРТОШКА

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

ш. Кӯрғонтеппа - 2014

USAID

Annex 33. Booklet - Potato

Тайёр намудани лӯндаҳои тухмӣ барои кишт

Тайёр кардани тухмии картошка барои кишт марҳилаҳои зеринро дар бар мегирад: интихоби лӯндаҳо,неш занонидани лӯндаҳо ва коркарди тухмӣ барои пешгирии таъсири касалию зараррасонҳо ва баланд бардоштани қобилияти сабзиш.Барои шинонидан лӯндаҳои солим, беосеб ва ҳамвори ба навъи додашуда мувофиқро интихоб кардан лозим аст. Андозаи (диаметри) лӯндаҳои тухмӣ бояд 30-60 мм ва вазнашон 50-80 г бошад. Ҳангоми зарурат тухмиҳои майдаи вазнашон 30-50 г, инчунин лӯндаҳои калони то 80-100 грамро низ ҳамчун тухмӣ истифода бурдан мумкин аст. Беҳтар аст, ки ҳар як гурӯҳи тухмӣ вобаста аз андоза алоҳида шинонида шавад. Таъмини якхелаи сабзишу инкишофи растаниҳо дар ин ҳолат имконпазир гардида, дар мавриди назорати ҳолати растаниҳо фарқияти дохилинавъӣ пайдо намешавад.

Гузаронидани кишт

Картошкаро ҳангоми 8-10°С гарм шудани хок дар чуқурии 6-8 см кишт мекунанд. Масофаи байни ҷӯякҳо 70-75 см ва масофаи байни лӯндаҳо бояд 25-30 см бошанд.

Истифодаи нуриҳои минералӣ ва коркарди байни қаторҳо

Нуриҳои фосфорӣ, калийдор ва поруро ҳангоми шудгори тирамоҳӣ ё шудгори пеш аз кишт истифода бурдан зарур аст. Меъёри лозимаи пору, нуриҳои фосфорӣ ва калийгӣ, дар 0,01 га таносубан 300 кг, 3 кг ва 1 кг мебошад. Меъёри карбомид барои як га картошказоре, ки дар он пору дохил гардидааст, 250-300 кг-ро (вазни физикӣ) ташкил медиҳад.

Карбомидро ба киштзори картошка дар ду давра; меъёри 30%-и онро дар давраи кишт ва 70% -и бокимондаро дар давраҳои коркарди байни қаторҳо ба хок дохил кардан зарур аст. Ҳангоми дар болои хок мондани нурии карбомид он ба аммиак табдил ёфта, ба ҳаво бухор мешавад ва манфиатнокии он паст мешавад. Коркарди якуми картошкаро ҳангоми 3-4 барга шудани ниҳолҳо гузаронидан зарур аст. Ду ҳафта баъд коркарди дуюмро амалӣ гардонидан мумкин аст.

Хоккаш намудани қаторҳо

Хоккаш намудани қаторҳо баъди гузаронидани ғизодиҳии якум ва коркарди дуюми картошка (5-6 барга) гузаронида мешавад. Хоккаш намудани ниҳолҳо чорабинии асосии баланд бардоштани ҳосилнокӣ ба шумор меравад. Ҳар қадар он босифат ва барвақт иҷро гардад, имконияти ҳосилбандии баланди ниҳолҳо таъмин мегардад.

Обмонии картошказор

Қисми асосии решаи картошка дар сатҳи 15-25 см хок ҷойгир мешавад, яъне ин зироат решаи рӯякӣ дорад. Обмониро тарзе ба роҳ мондан лозим, ки намии сатҳи 15-20 см-раи хок на кам аз 60-70% бошад. Дар сурати хушк омадани обу ҳаво, обмонии киштзорро новобаста аз давраи афзоиши растанӣ амалӣ гардонидан зарур аст. Ҳатто дар давраи нешзании лӯндаҳо, дар сурати хушк ва гарм будани хок, истифодаи усули «як-бар-ду»-и обмонӣ (яъне ба як тарафи ҷӯяк об монда, ба тарафи дигари он об наемонанд) тавсия дода мешавад.

Дар ҳолати муқаррарӣ будани обу ҳаво обмонии якумро пеш аз мутчабандии ниҳолҳо гузаронидан лозим аст. Обмонии навбатии киштзорро баъди ҳар 5-7 рӯз бояд гузаронид. Дар маҷмӯъ то чидани ҳосил ба картошказор 8-12 маротиба об додан зарур аст. Обмонии якум бояд бо сифати хело баланд гузаронида шавад.

Мубориза бар зидди ҳашаротҳо ва касалиҳои картошка

Аз ҳашаротҳои картошка бештар гамбуски колорадой, кирми тирамоҳӣ ва симкирмҳо (проволочники) дар ҷумҳурӣ паҳн гаштаанд. Дар мубориза ба муқобили гамбуски колорадой чораҳои гуногун амалӣ карда мешаванд, аз ҷумла сари вақт дастӣ чида нест кардани зоча, кирмина ва тухмҳои ҳашарот.

Истифодаи маҳлули аз сӯзанбарг ва шохчаҳои дарахти санавбар бо омехтаи собуноб (силанол) тайёршуда, киштзори ҳама гуна сабзавот ва картошкаро аз ҳашаротҳои зараррасон то 80% эмин нигоҳ медорад. Бояд қайд кард, ки маҳлули силанол асосан ба ҳашаротҳои ҷавон (зоча) таъсир мерасонад, ҳашароти болиғи гамбуск колорадой бошад ба ин маҳлул устувор мебошад.

Кирми парвонаи тирамоҳӣ низ ба картошказор зарари калон мерасонад. Муборизаи он ба тарзи муборизаи гамбуски колорадой монанд аст.

Симкирмҳо ба сифати молии лӯндаҳо зарар мерасонанд. Ба муқобили онҳо киштгардон,

Annex 34. Booklet - Tomato

Вобаста ба шароити ноҳияҳои парваришёбии помидор мӯҳлати ба майдони кушод шинонидани кӯчати помидори пешпазак ба тариқи зайл сурат мегирад: дар вилояти Хатлон аз 5 то 15 апрел, дар водии Ҳисор ва вилояти Суғд аз 15 то 25 апрел. Кӯчати помидори миёна ва дерпазакро баъди 5-10 рӯзи шинондани кӯчати навъи пешпазак мешинонанд.

Кӯчатро саҳарӣ ё бегоҳӣ шинондан лозим, то ки аз шӯъои офтоб ва гармии рӯз осеб набинад.

Тарзи шинондан. Навъҳои пешпазаки кадпастро аз рӯи қатори 70 х 25 см ё 70 х 30 см мешинонанд. Бо ингуна тарзи кор дар як гектар 50-55 ҳазор бех кӯчатро ҷой намудан мумкин аст.

Помидори навъҳои миёна ва дерпази қадбаландро аз ду тарафи пушта бо 110 х 70 см, 120 х 70 см ё 140 х 70 см мешинонанд, байни қаторҳо бояд 60 см масофа бошад. Бо чунин нақшаи нишон дода шуда барои ҳар гектар 24-37 ҳазор бех кӯчат лозим аст.

Нигоҳубин. Баъди 10-12 рӯзи кӯчаткунӣ ва нағз гирифтани кӯчат, байни каторҳо дар чуқурии 8-10 см нармкунии заминро (дар қитъаҳои замини наздиҳавлигӣ бехи зироат бо қаланд мулоим карда мешавад) анҷом додан лозим аст.

Нармкунии дуюм бошад, баъди ду-се ҳафтаи нармкунии якум гузаронида мешавад ва нармкуниҳои минбаъда вобаста ба шароити замин ва баланд шудани қади ниҳолҳо то пӯшонидани ҷӯякҳо ва пуштҳо гузаронида мешавад.

Барои нигоҳ доштани меваи помидор аз пӯсидан, буттаҳои дар байни ҷӯякҳо хамшударо рост намудан лозим аст.

Бори аввал ғизоро дар ибтидои гулкунӣ медиҳанд, ки меъёри он 120 кг карбомид барои ҳар гектар (ба 0,01 га замин 1,2 кг) мебошад. Бори дуввум дар давраи ҳосилбандӣ, бори сеюм дар давраи пухтани ҳосил бо меъёри номбаршуда ғизо додан лозим аст. Ҳар дафъа дар мавриди додани ғизои иловагӣ ба нуриҳои минералӣ 150-200 кг/га поруи пӯсида илова кардан зарур аст.

Обдиҳӣ. Мӯҳлати обдиҳӣ ба намнокии хок, ҳолати растанӣ ва намуди зоҳирии он вобаста аст. Пажмурда шудани барги помидор ҳангоми нисфирӯзӣ дар рӯзҳои офтобӣ аломати ба об эҳтиёҷ доштани ниҳоли помидор мебошад.

Ба кишти помидор то ҳосилбандӣ ҳангоми то 75 фоиз паст шудани намнокии хок пеш аз обдиҳӣ дар давраи ҳосилбандӣ то 80 фоиз ва дар давраи саросар ҳосил бастани он то 75 фоиз паст шудани намнокӣ об медиҳанд. Барои нигоҳ доштани реҷаи обдиҳӣ моҳҳои апрел ва май баъди ҳар 5-6 рӯз об додан зарур аст.

Ҷамъоварии ҳосил. Ҷамъоварии ҳосили помидор кори меҳнатталаб аст, зеро он баробар пухта намерасад. Вобаста ба навъ ва обу ҳаво ҷамъоварии ҳосил аз нимаи моҳи июн оғоз шуда то моҳи октябр давом меёбад. Меваи помидорро дар се давраи пухтан ҷамъоварӣ мекунанд: пурра пухтан (сурх), нимсурх ва сабзи сафедтоб шудан. Аз ин лиҳоз, ҷамъоварии ҳосили помидорро вобаста ба мақсади истифода намудани он оғоз менамоянд. Меваи помидорро барои хӯрок ва коркард дар мавриди пурра пухта расидан меғундоранд.

Тартибдиҳандагон: Ҷӯраев С.Б., Хасанов Ю.

Адабиёти истифодашуда:
Балашов, Н.Н. Овощеводство. Ташкент: Укитувчи, 1981. -386 с.

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Сомона: www.fast-program.tj

FEED the FUTURE

Барномаи Хизмати машваратӣ барои хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон

ТЕХНОЛОГИЯИ ПАРВАРИШИ ПОМИДОР

Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

ш. Кӯрғонтеппа - 2014

USAID

Annex 34. Booklet - Tomato

Помидор зироати маъмулӣ мебошад. Меваи он хушлаззату сергизо буда, таркиби он аз витамин, намакҳои маъданӣ, кислотаҳои органикӣ ва карбогидратҳои зиёд бой мебошад.

Хусусияти биологӣ. Помидор сабзавоти яксолаи растании оилаи ангури сагак буда, гармиро дӯст медорад.

Тухми он дар ҳарорати 10-12° С - баъди 12-15 рӯз, дар ҳарорати 20-25°С - баъди 5-6 рӯз, дар ҳарорати 25-30°С - баъди 3-4 рӯз неш мезанад. Мусоидтарин шароит барои сабзиш ва пухтани помидор рӯзона ҳарорати 18-25°С ва шабона 12-15°С мебошад.

Дар ҳарорати аз 15°С паст, кадкашии палак суст мешавад ва сабзиши он ҳарорати аз 10°С паст тамоман қатъ мегардад. Дар ҳарорати -1°-2°С кӯчат нобуд мешавад.

Дар ҳарорати аз 33-35°С баланд буттаи помидор хурд, шохчаҳояш борик мешаванд, шонаю ғӯраҳояш рехта ба касалии замбурӯғӣ гирифтор мегардад.

Помидор зироатест, ки хеле равшаниро дӯст медорад. Хусусан кӯчати помидор равшаниро зиёд талаб мекунад. Дар сурати нарасидани равшанӣ кӯчат зуд қад кашида, берангу нозук мешавад.

Помидор ба намнокии мӯътадил ва об эҳтиёҷмандии зиёд дорад. Аз ин рӯ, дар Тоҷикистон танҳо бо усули обёрӣ ҳосили зиёди помидор гирифтан мумкин аст. Дараҷаи мувофиқи намнокии хок зимни помидорпарварӣ 80 фоизро ташкилмекунад.

Талаботи помидор ба намнокии хок дар давраи сабзишу инкишофи он гуногун аст. Аз давраи решадавонӣ то ҳосилбандӣ ва то пухта расидани меваи помидор талаботи он ба обдиҳии миёна зиёд мешавад.

Барои нигоҳ доштани меваи помидор аз кафидан ва кам шудани моддаи хушкӣ ҳангоми саросар пухтани он намнокии хокро мӯътадил нигоҳ доштан лозим аст. Дар натиҷаи намнокии зиёд, ҳатто дар муддати кӯтоҳ буттаи помидор пажмурда шуда, рангаш зард мегардад, сабзишаш суст гардида гулу баргҳояш мерезад ва он ҳосили хеле кам медиҳад.

Интихоби майдон ва кишттгардон. Помидор дар заминҳое, ки хокаш хокистарранг, марғзорӣ, яъне дар майдонҳои аз алафҳои бегона тоза, ҳосилхез гардида, дар мавриди ба қадри кофӣ доштани моддаҳои органикӣ ҳосили фаровон медиҳад.

Пеш аз помидор кишт кардани карам, бодиринг, лӯбиёдона, зироатҳои полезӣ ва бехмеваҳо барои ҳосили хуб додани он мусоидат менамояд.

Бо мақсади пешгирӣ намудани паҳншавии касалиҳо ва зараррасонҳо помидорро баъди картошка, занҷабил, боимҷон шинондан лозим нест, зеро онҳо аз касаливу зараррасонҳои якхела сироят меёбанд. Помидорро барои пешгирӣ намудан аз касалии саратони бактериявӣ ва вирус дар ҳамон як майдон баъди се - чор сол паи ҳам шинондан мумкин нест.

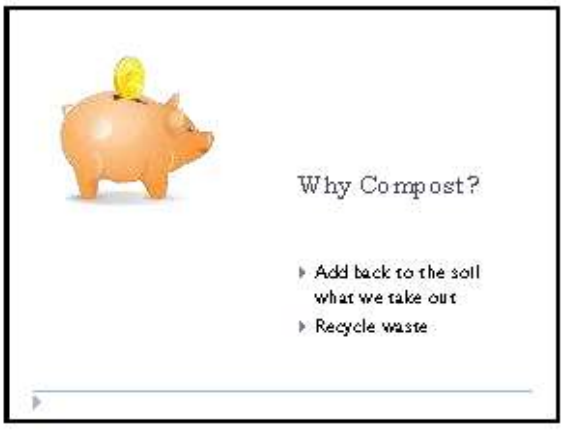
Тайёр кардани майдон. Коркарди асосии хок шудгори тирамоҳӣ мебошад, ки моҳи октябр ё ноябр дарҳол баъди ҷамъоварии ҳосили зироатҳои кишти пешина дар чуқурии 28-30 см гузаронида мешавад.

Дар вақти шудгори тирамоҳӣ ба ҳар гектар 35-40 тонна пораи пӯсида, 45-60 кг фосфор, 30-40 кг калий андохтан лозим аст. Коркарди пеш аз кишти аввали баҳор (моҳи март) баробари тайёршавии хок гузаронда мешавад, ки аз нармкунӣ, тахту ҳамворкунӣ ва кашидани ҷӯякҳо иборат аст.

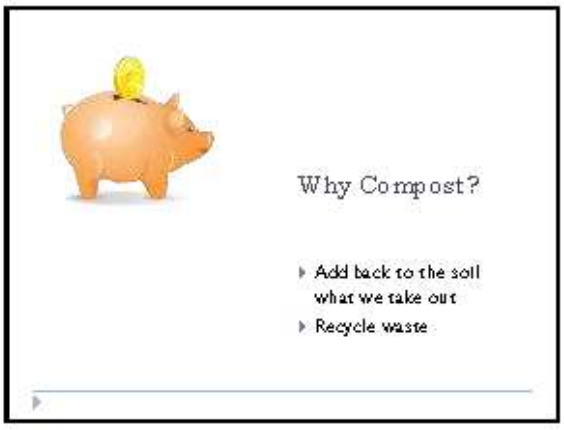
Навъҳо. Дар Тоҷикистон навъҳои зерин гурӯҳбандӣ карда шудаанд: «Тӯҳфа», «Саҳарӣ», «Волгоградии 5 / 95», «Файзободии сурх», «Машъал» ва ғайра. Инчунин деҳқонон метавонанд навъ ва дурагаҳои «Скиф», «Шеди-Леди», «Волмарин», «Содиқ» ва «Бабкат»-ро кишт кунанд.

Мӯҳлати кишт. Дар шароити Тоҷикистон помидори навъи пешпазакро танҳо ба воситаи шинондани кӯчат, навъҳои миёна ва дерпазакро бо роҳи шинондани кӯчат ва кишти тухмӣ дар майдони кушод мепарваранд.

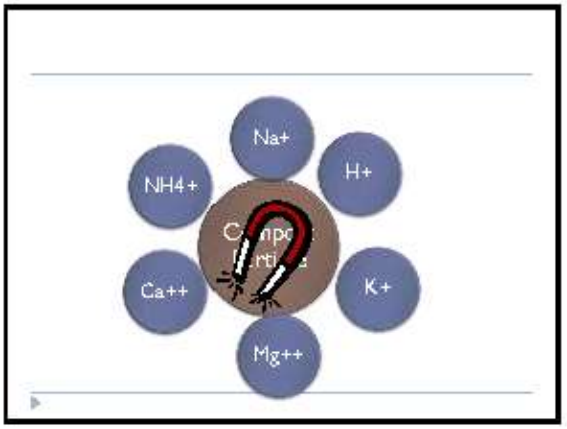
Annex 35. Composting Presentation

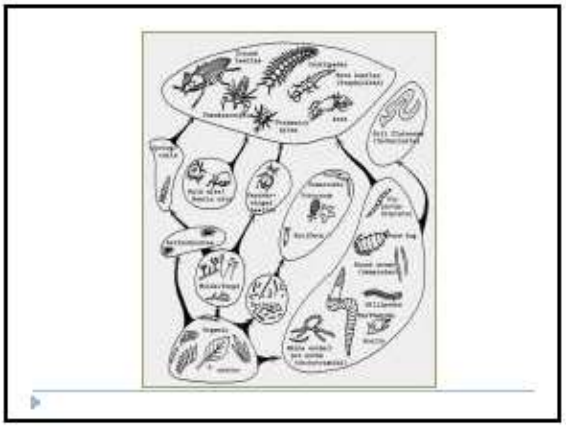


Annex 35. Composting Presentation




Rye Grass
Normal Soil
Conditioned Soil


Na+
NH4+
H+
Ca++
K+
Mg++



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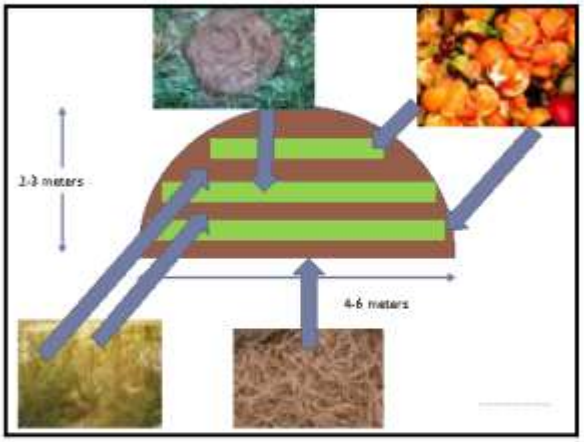
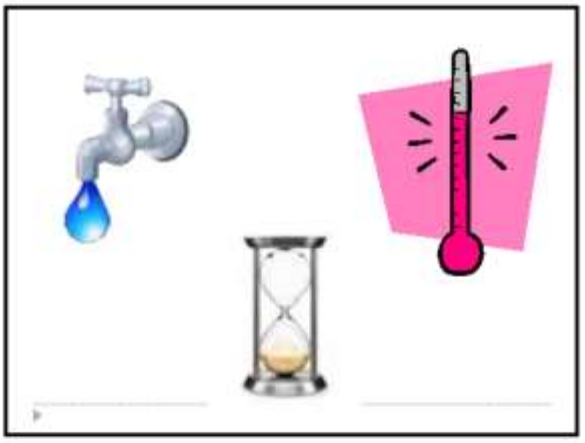
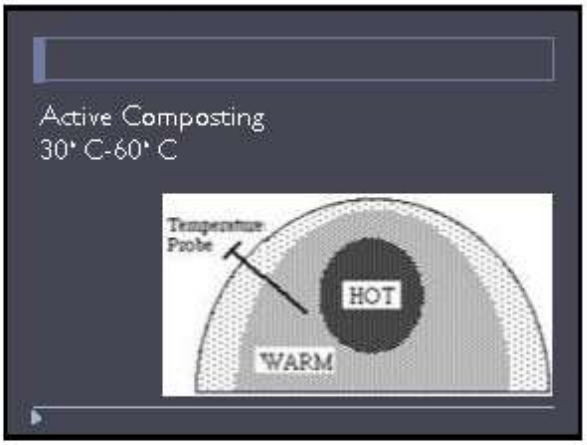





Active Composting
30° C-60° C
Temperature Probe
HOT
WARM

DHAIM Program - Good Agricultural Practices

9/21/2015

Annex 36. Tip Sheet – Apricots (in Russian)

Абрикосы زردآلو

Сезонные мероприятия: Осень

(От середины сентября до середины Декабря)

- Обрезка. Подрезают деревья перед зимними дождями, чтобы предотвратить грибковую инфекцию Эутипоз вокруг раны обрезки.
- Удалите примерно 20% прошлогоднего роста, чтобы свет мог проникать внутри дерево.
- Удалите старые, сломанные и болезненные ветви.
- Борьба с вредителями.
- Опрыскивайте деревья вовремя или после листопада, но перед наступлением зимних дождей, чтобы контролировать грибовидную листовую пятнистость.
- Не используйте серу для опрыскивание абрикосов, используйте фиксированный мед.

Содержание:

Проблемы и возможности

- **Первостепенные проблемы** включают: **опыление**, **посадка** (подготовка грядки), **пересадка**, **тренинг и обучение**, **разнообразие выбора**, поздняя заморозка абрикоса,
- **Первостепенные возможности** включают: сбыт на рынке свежих и сушенных абрикосов в Пакистан, управление тли и корнеедом с помощью масла во время спячки, **Комплексные меры по борьбе с вредителями** и **Бордосский раствор для опрыскивания**.

Эти предварительные приоритетные проблемы основаны на обратной связи сельскохозяйственных консультантов, афганских специалистов и Тома Брауна.

Краткий обзор

- Об абрикосах **Таблица данных** (Университет Калифорнии (УК) Дейвис)

Календарь сельскохозяйственных культур

- **Таблица данных** (Университет Калифорнии (УК) Дейвис)

Производство:

- **Руководство** по Производству Фруктового Сада **на английском языке** (1.2 MB) и на **языке Пушту** (1.6 MB) (Университет Калифорнии (УК) Дейвис);
- **Руководство** по Цепочке Добавленной стоимости Абрикоса;
- **Таблица данных** по Разнообразию видов (Университет Калифорнии (УК) Дейвис);
- Для приобретения сертифицированных саженцев свяжитесь с **PHDP** (Проект Многолетнее Развитие Плодоовощеводство - ПМРП);
- ПМРП Разнообразие и Производство сортов **на английском языке** (отрывок), **на персидском (дари)** (9.9 MB) и на языке **Пушту** (9.8 MB) (Каталог ANNGO 2013, PHDP/EU);
- Местонахождения и Контакты Национальной Ассоциации Садоводов по выращиванию рассад (Каталог ANNGO 2013, PHDP/EU);
- Раздел Корневой Системы **Таблицы данных** (УК Дейвис);
- Пересадка **Таблицы данных** (1.2 MB) (УК Дейвис);
- Посадка **Таблицы данных** (УК Дейвис);
- Обрезка и Тренинг **Таблицы данных** (УК Дейвис);
- Управление Водными ресурсами;
- **Руководство** по Орошение многолетних культур (1.7 MB) (Корни Мира);
- Принципы Орошения деревьев и виноградных лоз PPT в формате PDF **на английском языке** (2.8MB) и на **персидском языке** (4.6 MB) (УК Дейвис);

- **Руководство** по Капельному Орошению (11.7MB) (IDE);
  - Опыление (например с помощью миндального раствора) Таблица данных на **английском** и на **персидском языке** (УК Дейвис).

Борьба с вредителями при выращивании абрикоса

Распространенные вредители абрикоса включают в себя: болезнь листовой пятнистости, бактериальные язвы, вертициллёз, бурая гниль, отмирание ветвей, урюковая плодожорка и сливовая опыленная тля.

- Смотрите **Идентификационную Карту Вредителей** и общие страницы **Борьбы с вредителями**
- Таблица данных по Борьбе с Сорняками в питомнике на **английском** и на **персидском языке** (УК Дейвис для Корневой Системы в мире).

Послеуборочная обработка

- Сушка абрикосов **Видео;**
- 10 Принципов Управления послеуборочной обработки **Таблица данных** (УК Дейвис);
- Основы ПСП (Передовой Сельскохозяйственной практики **Таблица данных** (УК Дейвис);
- Примеры Стандартных **Таблиц данных** (Особенно последние);
- **Руководство** по Цепочке Добавленной стоимости Абрикоса (NUHDA);
- **Страница** Общего Послеуборочного процесса.

Annex 37. Tip Sheet – Grapes (in Russian)

Виноград и изюм کشمش و انگور

Сезонные мероприятия: Осеню

(от середины Сентября до середины Декабря)

- Соберите все гроздья винограда и наслаждайтесь фруктами. Не оставляйте изюмы старых фруктов висеть на винограднике.
- В следующем сезоне, боритесь с сорняками вокруг основания лозы, используя (с толщиною 3-4 см) органическую мульчу.

Содержание

Проблемы и возможности

- **Первостепенные проблемы** для Афганского винограда включает в себя: отсутствие надлежащей сушильни для изюмов (многие люди сушат фрукты на крышах своих

- домов или прямо на земле), они не постилают ничего на землю для винограда (или метод для предотвращение попадание пыли/грязи или загрязнения), отсутствие мойки и сортировки (стебли, клопы и грязь являются общепринятыми), сокращение количество химических обработок для удовлетворения экспортных стандартов (серы и др.), недостаток улучшенных систем **шпалеровки, обрезка**, разнообразие выбора (смотрите **PHDP**), применение **Гиббереллина**, рынки и стандарты проведения совещаний и сокращение непроизводительных потерь воды в **орошении.**
- **Первостепенные возможности** включают в себя **Интегрированную Борьбу с Пестицидами**, рынки в Пакистане для столовых сортов винограда без косточек, разработка базовой корневой системы из материалов, которые устойчивы к филлоксере, в случае распространения микроскопических насекомых от соседних стран, повышение осознание преимущество мойки и сортировки (например, доступ к рынку), методы мойки и сортировки, строительство сушильных домов, улучшение продвижения шпалеровки, эксплуатация международных рыночных возможностей (более 90 уникальных сортов в Афганистане).

Данный план приоритетных проблем основана на обратной связи от сельскохозяйственных консультантов, Афганских специалистов, Тома Брауна, Шериф Шах Рестин, меган Майзиле и Дилан Кейт.

Обзор:

- **Таблицу данных** о Винограде на **английском, персидском** и на языке **Пушту** (Университет Калифорния (УК Дейвис);
- Производство винограда по **Интерактивной карте** провинции (УК Дейвис);
- Посевные площади по **Интерактивной карте** провинции (УК Дейвис).

Календарь сельскохозяйственных культур

- **Таблица данных** календарь урожая Винограда (для таких условий, как в Калифорнии) (УК Дейвис).

Управление теплицами

- **Руководство** по Управлению Рассадниками Культурного Винограда (3 MB) (УК Дейвис и Корни Мира);
- **Таблица данных** Управление обрезкой (Корни Мира);
- **Таблица данных** Прививки (УК Дейвис).
- Видео прививки : **Стружки, Т- образные почки** и **Посадочное место** (От источников коммерческих фирм).

Производство:

- **Руководство** по общему производству (2.5 MB) (УК Дейвис);
- Разнообразие выбора—Для приобретения сертифицированных саженцев связаться **ПРМП** (Проект Развития Многолетней Плодоовощеводство);
- Разнообразие Выбора и Производство на **английском языке** (9.9 MB) и на языке **Пушту** (9.8 MB);
- Местонахождения и Контакты Ассоциации Производителей Национального Питомника в формате **PDF** (ANNGO Каталог 2013);
- Водные ресурсы;
- **Таблица Данных** Управление Водными ресурсами (Корни Мира);
- **Таблица Данных** Капельного Орошения (Корни Мира);
- Требования к воде для винограда в формате **PDF** (1.9 MB) (Эндрю Тебюс);
- **Руководство** по Орошению Многолетних культур (3.4 MB) (Корни Мира);
- Принципы Орошения Деревьевs и Виноградников в формате PDF на **английском языке** (2.8MB) и на языке **Дари** (4.6 MB) (УК Дейвис);
- **Руководство** по Капельному Орошению (11.7MB);
- Потребность в питательных веществах в формате **PDF** (1.2 MB) (Эндрю Тебюс);
- **Таблица Данных** Применения Удобрений (IFA);
- Формирование по шпалере;
- Почему формирование по шпалере **Таблица Данных** (УК Дейвис);
- Руководство по формированию по шпалере (1 MB) (Корни Мира);
- Т-образное формирование по шпалере в формате **PDF** (1.1 MB) (Эндрю Тебюс);
- Т-образное формирование по шпалере в формате **PDF** (1.1 MB) (Эндрю Тебюс);
- Преобразование традиционных кустов виноградника в I-образное формирование по шпалере в формате **PDF** (Эндрю Тебюс);
- **Отчет** о Применение Гиббереллина (PHDP);
- Управление обрезкой и Листовым пологом;
- Важное значение Обрезки и Листового полога в формате **PPT as PDF** (1.1 MB) (Эндрю Тебюс);
- Система Обрезки Виноградников в формате **PDF** (1.3 MB) (Эндрю Тебюс);
- Видео Обрезки: **Обрезка на сучок замещения** и **Обрезка на плодовое звено** (OSU)
- Управление Весенними и Осенними Практиками в формате **PDF** (2.2 MB) (Эндрю Тебюс);
- Производство винограда по **Интерактивной карте** провинции (УК Дейвис);
- Посевные площади по **Интерактивной карте** провинции (УК Дейвис).

Борьба с вредителями Винограда

В общие вредители винограда входят ложная мучнистая роса, мучнистая роса, цикада, паутинные клещи.

- **Смотрите также** **Идентификационную карту по Борьбе с вредителями** и общая **Страница по Борьбе с вредителями.**

Послеуборочный процесс:

- **Руководство** по Общему Послеуборочному (УК Дейвис и корни Мира);
- Сушка изюма ("Кишмиш Хана" являются здания, предназначенные для сушки изюма);
- **Таблица Данных** по Сушке изюма (Корни Мира и УК Дейвис);
- Временной интервал преобразования Винограда в изюм **Видео** (Джеймс Кнот);
- **Таблица Данных** по Предварительной обработке (Корни Мира и УК Дейвис);
- Руководство на **английском языке** (2.2 MB) и на языке дари (1.8 MB) (Корни Мира);
- 10 принципов Управления Послеуборочного процесса **Таблица данных** (УК Дейвис);
- Принципы Передовой Сельскохозяйственной Практики (ПСП) **Таблица данных** (УК Дейвис);
- Классификация по качеству Таблица данных (Корни Мира);
- **Страница** Общего Послеуборочного Процесса.

Annex 38. Tip Sheet – Pomegranate

Pomegranate انار

Seasonal activities: Autumn

(mid September through mid December)

- Sucker removal. Remove suckers arising from the base of the tree.
- Nutrient management. Apply (either in fall or winter) 0.2-0.4 kg N per tree per year. On light soils, apply half in winter and half in spring.

Content

Pomegranate originated in Afghanistan and Iran, and remains one of the most popular home orchard crops. It is commercially valued both domestically and as the main fruit exported to Pakistan, Russia and other Arabic countries. Pomegranate is a low input/high output crop and is very adaptable, tolerating poor soil, limited irrigation, pests, and minimal pruning.

Problems and Opportunities

- **Priority Problems** for Afghanistan Pomegranates include: fruit splitting, pollination**,** training & pruning**,** and IPM for pomegranates**.**
- **Priority Opportunities** include improved harvesting techniques to prevent fruit splitting, and improved grading and sorting practices.

These draft priority problems are based on feedback from Afghanistan based on discussions with agricultural consultants, Afghan specialists, Muhammad Aziz Saeedi (PHDC-Jalalabad/ANHDO), agricultural experts at Kandahar University, Kandahar DAIL, and Tom Brown.

Overview

- Crop Overview **Fact Sheet** (UC Davis)
- Pomegranates Checklist **Fact Sheet** (Paul Sommers)
- Status of Pomegranate Production in Afghanistan **PPT as a PDF** (Dr Samadi, Kabul University)
- Pomegranate Production by Province **Interactive Map** (UC Davis)
- Cultivated Area by Province **Interactive Map** (UC Davis)

Crop calendar

- **Fact Sheet** (UC Davis)

Production

- Full Production Manual **English** (1 MB), **)Dari دری (**(1 MB) and **پشتو (Pashto)** (1 MB) (UC Davis)
- Quality and Productivity Improvement Manual **English** (4.2 MB) and **پشتو (Pashto)** (3.9 MB) (RONNA)
- Variety Options **Fact Sheet** (UC Davis)
    - For certified sapling contact **PHDP** (Perennial Horticulture Development Project)
    - PHDP Varietal Selection and Production **English** (excerpt), **دری (Dari)**(9.9 MB) and **پشتو (Pashto)** (9.8 MB) (ANNGO Catalog 2013, PHDP/EU)
    - National Nursery Growers' Association Locations and Contacts **PDF** (ANNGO Catalog 2013, PHDP/EU)
- Planting
- Planning Fact Sheet **English** and **)Dariدری (** (UC Davis)
- Establishing **Fact Sheet** (UC Davis)
- Training and Pruning Fact Sheet **English** and **)Dariدری (** (UC Davis)
- Irrigation
    - Irrigation of Perennial Crops **Manual** (3.4 MB) (Roots of Peace)

  - Principals of Irrigation of Trees and Vines PPT as PDF **English** (2.8MB) and **)Dariدری (** (4.6 MB) (UC Davis)
  - Drip Irrigation **Manual** (11.7MB) (IDE)
- Production by Province **Interactive Map** (UC Davis)
- Cultivated Area by Province **Interactive Map** (UC Davis)

Pest Management for Pomegranate

- See **Pest Identification Cards** and general **Pest Management Page**
- Nursery Weed Management Fact Sheet **English** and **)Dariدری (** (UC Davis for Roots of Peace)

Postharvest

Improved cultural practices can help prevent fruit splitting. Pick fruits at optimal timing: when fully ripe they should make a metallic sound when tapped. The ripe fruit should be carefully selected and picked by hand and not pulled from the tree. Grade according to quality and keep different qualities separate.

- 10 Principles of Postharvest Management **Fact Sheet** (UC Davis)
- Principles of GAP (Good Agricultural Practices) **Fact Sheet** (UC Davis)
- Postharvest Options **PPT as PDF** (1.3 MB) (Ludhiana University, India)
- Maintaining Quality of Pomegranates **PPT as PDF** (4.2 MB) (UC Davis)
- Example of Standards **Fact Sheet** (Fresh Spec)
- General Postharvest **Page**

Annex 39. Tip Sheet - Poultry

Poultry مرغداری

Content

Poultry are a common household animal and an often undervalued source of nutrition and income. Poultry are often raised by women and children.

Problems and Opportunities

- **Priority problems** of poultry production in Afghanistan are disease (especially **Newcastle Disease**), lack of housing (which means birds are lost to predators and bird health is difficult to monitor) and adequate nutrition.
- **Priority opportunities** are **vaccinate chickens** against disease (especially **Newcastle Disease**), provide housing, improve practices for introducing new birds (isolate for two weeks) and improve nutrition. **Note**: Once Newcastle Disease is better managed, other diseases such as **coccidiosis**, **infectious bursal disease**, and ectoparasites (such as mites) will become the next major limitations.

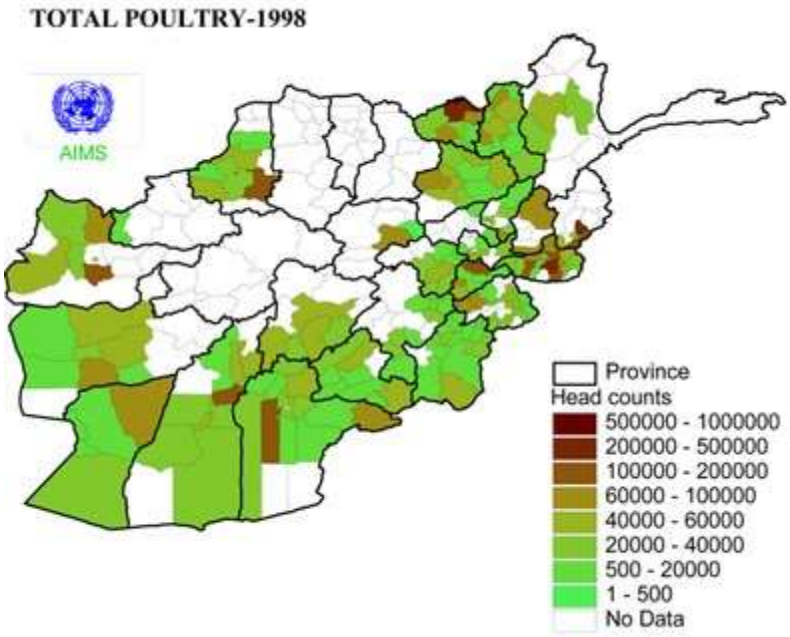
Overview

- Genetic Resource Status in Country **Report** (1.4 MB) (FAO)

Production

- **Village level**

- Small Scale Production - Key Considerations **Fact Sheet** (UC Davis



)

  - Assessment and Planning **Fact Sheet** (UC Davis)
  - Raising Chicks **Fact Sheet** (UC Davis)
  - Managing Laying Hens and Eggs for Hatching **Fact Sheet** (UC Davis)
  - Village Poultry Management **Manual** (4.6 MB) (ACIAR) **Manual** (FAO)
- **Commercial**
  - Broiler (chickens raised specifically for meat) Care Practices **Manual** (UC Davis)
  - Laying Hens Care Practices **Manual** (UC Davis)

Diseases and Disease prevention

- **Always be cautious around sick animals as some diseases can be spread to humans by touching.**
- **Disease prevention**
  - Disease Prevention **Video**
  - Assessment and Planning **Fact Sheet** (UC Davis)
  - From the Illustrated Manual of Infectious Diseases of Livestock In Afghanistan (Fort Valley State University):
    - Cleaning and Disinfecting Fact Sheet **English**,**)Dari**د ر ی **(**, and **پشتو (Pashto)**
    - Carcass Disposal Fact Sheet **English**, **)Dari**,د ر ی **(** and **پشتو (Pashto)**
- **Specific diseases**
- Diseases **Manual** (1.4 MB) (GLCRSP Manual for Africa, applicable to Afghanistan)

The following are from the Illustrated Manual of Infectious Diseases of Livestock In Afghanistan (Fort Valley State University):

- Avian Influenza Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Brooder Pneumonia Fact Sheet **English**, **)Dari**,دری **(** and **پشتو (Pashto)**
- Chronic Respiratory Disease Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Coccidiosis Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Colibacillosis Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Fowl Cholera Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Hydropericardium Syndrome Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Infectious Bronchitis Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Infectious Bursal Disease Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Newcastle disease
  - Fact Sheet **English**,**)Dari**دری **(**, and **پشتو (Pashto)** (FVSU)
  - **Manual** (FAO)
  - Newcastle Disease Vaccination: Eye Drop Method **Video**
- Pullorum Disease Fact Sheet **English**, **)Dari**دری **(**, and **پشتو (Pashto)**
- Tuberculosis Fact Sheet **English**,**)Dari**دری **(**, and **پشتو (Pashto)**
- **Market Information** (All Crops and Livestock)

Annex 40. Tip Sheet - Test Strips (in Russian)

Опытные делянки внутри хозяйства

Советы и таблица данных

Что такое опытная делянкар?

Опытными делянками являются виды полевых демонстраций с использованием узкой полосы земли, которая проходит через фермерские поля, где:

1. (Как правило) применяется один контрольный – такой как добавленный фактор (например, гербицид), допустимый (например, никакие ранние побеги) или измененный (например, разные сорта), и
2. Фермеры управляют полосой вдоль оставшиеся части поля.

Include a sign so the treatment difference is obvious.

Почему создавать опытные делянки?

Осуществление опытных делянок очень просты и предлагают простой метод оценить и продемонстрировать применение под текущей практики фермеров.

Создание опытных делянок

Примечание: Легче всего разъяснять опытных делянок, когда в каждой полосе изменяется только один фактор. Они накладываются на то, что уже фермер выполняет.

1. **Образец.** Убедитесь, что опытный участок является образцом остального поля (и других полей в районе).
2. **Правдоподобный.** Выделите достаточно широкую опытную делянку, чтобы выглядело правдоподобным (от 4 до 5 м в ширину, как правило вполне подходит).
3. **Видимый.** Размещайте тестовые опытные участки на высокой видимости место (например, возле дороги), и таким образом, чтобы легче было проводит непосредственное сравнение с текущими практиками фермеров.
4. **Совместно.** Опытная делянка выполняется фермером. Если это новый сорт, делянка может быть создана во время посадки. Другие применения (например, гербицид) может применятся позже.
5. **Управление.** За исключением продемонстрированного фактора, фермер управляет всем полем, включая опытную делянку с их обычной практики.
6. **Рекламирование.** Разместите знак, указывающий на применение и кому можно обратиться за дополнительной информацией.

Ограничения Опытных делянок

1. Тестовые делянки являются лучшими для выделения эффекта одного эксперимента за один раз.
2. Если часть используемого поля является не типичной для остальной части поля или региона, то любые выводы относительно последствий эксперимента может быть неправильным.

Annex 41. Tip Sheet – Farmer Seasonal Calendar (in Russian)

Фокус группы фермеров – Сезонный календарь

Советы и таблица данных

Фокус-группы фермеров используются для определение потребностей в рамках общины. Нижеприведенный подход использует сезонный календарь сельскохозяйственных культур как основной метод обсуждения.

Пример сезонного календаря сельхозкультур.

Как провести фокус-группу фермеров

1. **Ознакомление. Приветствие и целевая направленность.**
   Руководитель семинара приветствует фермеров и
   1.1 Ознакомляет присутствующих с другими участниками группы;
   1.2 Объясняет целей встречи – например, вместе с фермерами определить основные проблемы, с которыми они сталкиваются;
   1.3 Отмечает, что дискуссии будут записаны в прикрепленных листах для удобства обсуждения;
   1.4 Отмечает, что комментарии участников остаются анонимными.
   1.5 Просит уважение – то есть, не перебивать других, когда они говорят и обратить внимание на правильность или неправильность ответов;
   Указывает, что встреча продолжиться или занимает менее чем час.

2. **Материалы и формат**
   Фасилитаторы используют две большие листы бумаги. Один используется как для записи культур для каждого сезона, так и для особых методов управления сельскохозяйственными культурами (См рисунок, находящееся наверху справа) На другом листе записывают проблемы, о котором заявили фермеры. Эти листы взвешиваются (по возможности), таким образом, чтобы фермеры могли увидеть записи. Руководитель семинара ознакомляет группу с сезонным календарем для сельхозкультуры, которая используется как наглядное пособие с вопросами (приведено ниже).

Записи делаются в прикрепленных листах

Группа начинает задавать вопросы относительно сезона, потом перешли на уровень сельхозкультур, а затем на специальные управленческие и бизнес деятельности и проблемы для важных сельскохозяйственных культур. В основном, данный подход обращает внимание на все основные аспекты системы земледелия в данной общине.

Вопросы:

1. Каковы основные ограничения, которые соответствуют каждому сезону?
2. Какие сельскохозяйственные культуры вы выращиваете каждый год?
3. Какие основные препятствия или проблемы существуют для каждой культуры?
4. Существуют ли какие-либо культуры, которых вы выращивали, но потом отказались? Если да, то почему?
   Пожалуйста, объясните те агротехнические мероприятия, которые проводятся для основных сельскохозяйственных культур (включая приобретение ресурсов, производство, послеуборочные доработки, маркетинг)? Какие ограничения существуют для каждого вида деятельности? Какие проблемы еще существуют?

Воспользуйтесь полевыми посещениями, чтобы подтвердить возникшие проблемы, выявленные в результате обсуждения

3. Группирование, упорядочение и ранжирование проблемы

Руководители семинара показывает группе флипчарт со всеми записанными проблемами. Все проблемы пронумерованы и фермерам дают ручки и небольшие кусочки бумаги. Они просят фермеров написать номера трех соответствующих наиболее важных проблем. Результаты подчитываются и предоставляются фермерам. (По нашему опыту, неграмотные фермеры смогут выполнить это, потому, что все эти проблемы были прочитаны вслух и другие могут помочь им написать. Даже если фермеры не могут написать.) При некоторых обсуждений могут соблюдают ранжирование проблем и фасилитатор продолжает записывать комментарии.

4. Закрытие

Фасилитаторы выражают благодарность фермерам за их присутствие в обсуждении фокус-группы. Небольшое, в культурном отношении, подарок-благодарность может быть передана фермерам. (В Камбоджи кусок мыла вполне подходила.)

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Annex 42. Tip Sheet – What is Facilitation? (in Russian)

Фасилитация

Tips & Facts Sheet

Что такое Фасилитация?

Фасилитация повышает эффективность проведение встреч и гарантирует представление идей группе. Фасилитация:

- Буквально означает «делать вещи проще»,
- Помогает людям принимать решения и достигать результатов в работе совещаний и групп, и другие.
- Опирается н идеи других,
- Не позволяет доминировать в некоторой степени,
- Гарантирует, что данные будут представлены в простом и понятном виде.

Шесть шагов хорошей фасилитации

1. **Ясность.** Ясность заявляет о задачах совещания, ожидаемых результатах и имеющегося времени.

2. **Поведение.** Установить основные правила поведения - например. 1) Участвовать! 2) Несогласие является нормальным, но обсудите этот вопрос (не будьте индивидуалистом). 3) Разрешите другим разговаривать. 4) Сохраните время 5) продолжайте тему

3. **Сосредоточие.** Разработайте вопросы для **обсуждения**, чтобы помочь и произвести необходимый вид производства (например, "Какие проблемы с....?"). Различите существенные и несущественные взносы – Используйте цели совещания, чтобы продолжать сосредоточивать людей.

4. **Управлять процессом**

Использование интерактивных методов:

- Привлечь людей, чтобы поддерживать интерес;
- Поступить так, чтобы участники почувствовали, что их ценят – будьте позитивными. Не спорьте и не мешайте людям;
- Соберите идеи групп не вставляйте свои собственные повестки дня, проясните идеи, но не интерпретируйте свои идеи. Не позволяйте отдельным людям доминировать.
- Вопрос (т.е., задайте открытие вопросы и избегайте вопросов Да/Нет)
- Послушайте (и ключевые моменты процесса или проблемы говорящего)
- Дать конструктивную обратную связь
- Достигайте консенсуса и держите группу занятым.
- Управление конфликтом. Разрешать разногласия, но сделать его положительным; определите проблемы людей для ожиданий *обоюдной пользы*.
- Учите соответствующим образом

- **4.Управлять процессом** (Продолжение)

Сбор информаций

- Использовать флипчарты и доски для определения производственных ресурсов.
- Запустите сессии «мозгового штурма»
- Используйте карты для сбора, сортировки и классификации информаций
- Проведение дебатов (люди по очереди обсуждают различные стороны проблемы)
- Разработать будущие сценарии (т.е., опишите будущую дату (напр., 2020) и ожидаемый успех – теперь работайте с группой в обратном направлении, чтобы увидеть, как успех был достигнут.
- Будьте гибкими и открытыми для изменений либо в теме, которые обсуждаются или схемы совещаний
- Ориентируйте группу к действию. Спросите, что будут делать люди.

Хорошие фасилитаторы определяют богатство знаний

5. **Обобщение.** Оцените понимание группы на протяжении встречи; использовать производственные ресурсы группы, чтобы поддержать моменты.
   - Отыщите общие черты, темы и тенденции.
   - Определите «критические массы, необходимые для продвижение дальше (т.е., не каждый должен быть убежден в курсе действий; только основные люди, формирование "критической массы")

5. **Дальнейшие действия.** Определение важных выводов и моменты действия

6. **Фасилитация может варьироваться**

Фасилитация имеет различные формы привлечения и взаимодействия:

	Процесс мониторинга	Обсуждение фасилитации	Презентация
Взаимодействие	Низкий	Среднев ысокий	Низкий
Вклад	Низкий	Средневысок ий	Высокий

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Annex 43. Farmer Work Shop Agenda

Creating an Agenda for a Farmers Workshop

Tips & Facts Sheet

Use the following to design your farmers' demonstration workshop.

Background: Briefly state why there is a problem / need for this event, and who will participate and benefit.

Example: Farmers of Monloc are losing money as many melons (Cantaloupe) are harvested too early. As a result, farmers get lower prices at market. **Objectives:** Briefly state what the workshop will achieve

Example: Increase farmer profits by demonstrating the correct time to harvest and sell melons. Discuss and address concerns that younger immature melons are actually better as they suffer less damage during transport to market.

The event will help farmers pick cantaloupes at the right stage – and increase profits

Outputs: Identify what people will know or be able to do at the end of the event.

Example: Farmers will be able to identify the best stage to harvest melons for better returns.

Date: Indicate time and date for the event. Consider when will best suit people? Build on existing events whenever possible.

Example: Saturday July 19 at 9 a.m. (after market drop off).

Location: Identify a convenient and suitable location.
Example: The town hall (Considerations: The town hall is near the market, has a good sound system and multi-media facilities, and plenty of room for setting up demonstrations. Participants will have good visibility and temperature is comfortable.)

Promotion: Advertise (Example: Promote through local farmer groups.)

Program: Develop schedule. Who will do what, when to meet your objectives?

Example (1.5 hours allocated)

1. Registration. visit demonstrations
2. Welcome and Introductions. *Paul*
3. Opening. *Local dignitary or farmer leader*
4. Objectives of meeting and workshop structure. *Mark*
5. Demonstration. *Steve*
   a. Highlight problem and options.
   b. Personal experiences. Invited farmer(s) talk of personal experience - benefits and practices
6. Discussion. Q&A – group – pros and cons of proposed technology
7. Farmers visit displays and test their knowledge
8. Closing
9. Snacks/drinks

Program notes:

1. Informally collect farmer feedback
2. Be prepared to field questions on other topics

Support materials: Identify primary materials required. *Example:* Demonstration melons, Fact sheets, posters, Flash cards, Snacks

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Annex 44. Plant Health (in Russian)

Урок 7. Здоровье растений

В этом уроке вы узнаете:

- Что необходимо растениям для роста и процветания (питательные вещества, воздух, вода, свет и почва);
- Больше информации о питательных веществах и проблемах обеспечения достаточного количества питательных веществ;
- Угрозы распространения заболеваний и вредителей.

Потребности растений в питательных веществах

В дополнении к трем основным питательным веществам – азот, фосфор и калий– растениям также необходимо большое количество следующих питательных веществ: карбон, водород, оксиген, сера, кальций и магний. Также они нуждаются в малых количествах других питательных веществ: бор, хлор, медь, йод, железа и цинк. Некоторые другие теории важны для питания растений:

- **Самое лимитирующее питательное вещество.** Если растение получить доступ к некоторым основным питательным веществам, но отсутствует один из них (например, в ней содержится азот, калий, но недостаточна фосфора) оно не дает хорошего урожая. Когда внесут достаточно фосфора, рост растений может быть ограничена очередным питательным веществом в малом количестве. Замедляющий рост будет продолжаться до тех пор, пока растение не получить все питательные вещества.
- **Передвижение питательных элементов.** Питательные элементы двигаются в круговороте. Они переходят из почвы в растения, а потом в животных, которые питаются этими растениями. Они переходят из удобрений, которые применяют их в почву, а затем в растения. Питательные вещества уничтожаются в хозяйстве, когда фермер продает урожай на рынке. А также эрозия разрушает питательные вещества в хозяйстве.
- **Нехватка питательных веществ**. Когда в почве не хватает питательных веществ, рост культур замедляется и растение слабеет до тех пор пока баланс питательных веществ будет восстанавливаться. Признаки дефицит питательных веществ часто очевидны: короткие слабые стебли, листья покрываются пятнами или разными цветами и множества другие признаки.
- **Источники питательных веществ**. Они включают в себя химические и органические удобрения (такие как удобрения животных, зеленое удобрение, бобовые и покровные культуры, мульчирующий компост), а также другие меры вмешательства (как севооборот).

- **Водородный показатель почвы (почвенный pH-метр).** Эта шкала измерения кислотных или щелочных свойств почвы. Многие растения создают лучшие условия, рядом с нейтральным pH (7.0), с допустимым диапазоном между 6.0 и 7.5. Высокая кислотность (низкий pH) или щелочные почвы (высокий pH) предотвращает определенные питательные вещества в почве от доступа растений. Например, потому что кислые почвы блокирует фосфор и растения не могут получить доступ к ним. Нужно добавить известь в эти почвы (чтобы увеличить pH) или необходимо интенсивное применение фосфора рядом с конями растений. Когда уровень pH в почве очень высокое, его можно снизить путем применение серы или некоторые специальные виды химических удобрений.
- **Наличие питательных веществ (усваиваемость питательных веществ).** Растения используют питательные вещества в определенном виде, а не в других видах. Например, многие растения используют форму азота, которая существует в воздухе.

У каждого растения есть специальные потребности в воде, но обычно доступ к умеренному количеству воды необходимо.

Потребности растений в воде

Огромное или малое количество дождя в течении долгого времени легко уничтожает растение. Особенно когда они молодые ростки, растениям необходимо умеренное количество воды. Молодым растениям с недостаточной корневой системой необходимо получить воду глубоко в земле. Постоянный доступ к воде очень важно для молодых саженцев и для крайне важной стадии роста. Кроме того, растениям необходимо влажная почва, чтобы получить доступ к некоторым питательным веществам, например азот и калий. Постоянный доступ к **умеренном количестве воды** необходимо для здорового роста растений. С большим количеством дождей, почва не может обеспечить достаточный объем воздуха; корни сгниют и весь растение погибает. Если слишком мало дождя, растения не могут получить доступ к питательным веществам почвы и питательные вещества не могут передвигаться по всему растению. Растения увядают, чтобы предотвратить потерю воды своих листьев, и если засуха длиться на протяжении долгого времени, то они погибнут. Все фермеры по всему миру показали умные способы сохранения недостаточного количество воды и дренировать избыточной воды. (Ямки Zai и культуры, посаженные гребневым способом являются 2 примерами).

Потребности растений в свете

Растения имеют потребность в энергии солнца для роста. Они преобразовывают энергию света в химическую энергию. Как только растение получает энергию этим способом, оно используется всеми животными, которые питаются этими растениями. Однако, различным видам культур потребуется разное количество света и неодинаковое общее количество часов света (или тьмы) в один день. Кукурузе, бобам и картошке потребуется высокий уровень света для отличного роста, когда луку морковке и шпинату необходимо мало света. А также существует отличие в продолжительности дня. Чтобы процветать и производить фрукты или злаки, многим растениям потребуется определенное количество часов тьмы. Другие растения цветут независимо от полученного ими количество часов света или тьмы. Некоторые овощи

(салат-латук, свекла и шпинат) цветут только когда они получают более чем 12 часов солнечного света.

Потребности растений в почве

Растениям потребуется почва из за несколько причин. Почва обеспечивает место для корней растений, чтобы “закрепить» растение и держать его на месте, и таким образом оно может правильно расти. Корни растений подкармливает растение, посредством поглощения воды и питательных веществ из почвы. Корням также потребуется воздух, которого они извлекают из почвы. Если почва полностью залита водой, корни не могут нормально дышать и правильно функционировать. Некоторые культуры (как рис) извлекают оксиген из воды и следовательно не страдают от этой проблемы. А также если почва загрязнена (например, нефть или топливо автомашин просачиваются в почву) растения не могут отлично развиваться и даже могут заболеть.

Воздух

Подобно человеку, растения тоже дышать воздухом. Они получают оксиген через свои листья и корни, выделяют углекислый газ. Без оксигена растения погибают. Растения также подвержены загрязнением воздуха, например, фабрики выделяют отходы в воздухе, или запыленные сельские дороги. Мелкие частицы оседают на листья растений и получение солнечного света становится не возможным, и таким образом, их продуктивность снижается. В некоторых случаях, загрязнение воздуха непосредственно может быть вредным для растений (сера и другие загрязнения).

Вредители и болезни

Как и люди, растения могут быть повреждены множествами различными вредителями и болезнями. В список вредителей входят разного рода насекомые, или вредители большого размера как крысы или животные, как особый вид растений. Болезни также приходят в разных формах. Они могут быть вирусными или бактериальными, или многие другие виды микроорганизмов, которые препятствуют росту и развитию растений. Когда в огромных земельных площадях засеивают единой культурой (например, кукуруза засеивают в каждом хозяйстве по всему району или провинции), вредители и болезни, которые предпочитают эту определенную культуру, обеспечены благоприятной средой для роста и размножения. Вспышки болезней или вредителей быстро распространяются по всем огромным территориям и причиняют большой ущерб.

Примером является Мозаичный Вирус Маниока. Это болезнь вызвала очень большой ущерб в Африке, что в некоторых странах больше не могут выращивать урожай. Самым хорошим способом уменьшение вероятности подобных вспышек является посадка разнообразных культур на одном поле, севооборот разных видов культур, выращиваемые на определенном маленьком участке из года в год, защита многообразия видов в вашей среде. Например, защищены определенные виды птиц, они могут питаться некоторыми видами насекомыми, которые распространяют болезнь. Птицы могут помочь при контролировании болезни. Содействуя разнообразию сельскохозяйственных культур и другим растениям, а также разнообразие животных и насекомых, которые помогают поддерживать баланс и предотвращают вспышки вредителей и болезни.

Викторина № 7. Здоровье растений

1. **«Самым ограничивающим питательным веществом»** для роста растений является:

a. Азот b. Фосфор

c. Питательные вещества являются основной причиной слабого развития растений в любом моменте времени.

d. Большинство питательных веществ можно заменить химическими удобрениями.

2. Какие из нижеперечисленных веществ являются источником питательных веществ растений? a. Химические удобрения b. Вода c. Солнечный свет d. Мульча e. Все выше указанные f. Только пункт A и D

3. **Правильно или неправильно**:

a. Растения никогда не получают достаточное количество воды.

b. Всем растениям необходимо одинаковое количество солнечного света, чтобы правильно развиваться.

c. Растениям, как и людям, необходимо дышать воздух.

d. Растения также как и человек может заболеть.

4. Способы уменьшение вспышек вредителей и болезней в хозяйствах включают: a. Севооборот выращиваемых культур в хозяйстве каждого из года в год. b. Выращивать разнообразные виды культур на одном участке. c. Предотвратить многообразие видов в вашей местной среде. d. Все выше указанные пункты

Полевое упражнение № 9: Здоровье местных растений

Цель:

После этого упражнения участники могут:

- ❖ Объяснить ключевые, лежащие в основе здоровье растений в местном контексте

Необходимое оборудование:

- ❖ Флипчарты и маркеры
- ❖ Образцы нездорового растительного материала

Ожидаемые результаты:

- ❖ Члены группы определили некоторые основные вопросы, относительно здоровье растений в их местности и обменялись идеями о способах решения проблемы.

Необходимое время:

30 до 45 минут

Подготовка: Незамедлительно перед собранием группы, фасилитатор должен собрать образцы нездоровых растений (эти растения, которые страдают либо от стресса питательных веществ, либо от вредителей или обострение болезни).

Предлагаемая процедура:

1. Покажите разные образцы нездоровых растительных материалов группе. Спросите:
   - ❖ Вы видели такие образцы в своем хозяйстве?
   - ❖ Вы знаете, что вызывает эту проблему?

   2. Продолжайте проведение дискуссии о здоровье растений. Определили ли члены группы самые важные и общие проблемы здоровье растений на местном уровне. Приводите примеры из всех территорий, имеющие значения для роста растений: питание растений; большое или малое количество воды; эффект выращивание полевых культур в тени; разные виды почв и какие растения хорошо растут в этих территориях; а также вредители и болезни (с акцентом на более вредные).

   3. После определения необходимых веществ для здорового роста растений, помогите группе определить причины некоторых основных проблем, которые влияют на местные культуры. Продолжайте с помощью обсуждения разные пути решения этих проблем и могут ли быть осуществлены другие стратегии. Попросите группу рассмотреть возможности тестирования некоторые методы работы, рекомендованные в этом уроке и посмотреть, как улучшиться ситуация.

Annex 45. Entering the Community (in Russian)

Урок 3. Войти в состав сообщества

В этом уроке

После этого урока вы можете:

 Описывайте, как войти в состав сообщества и собрать различные информации

 Перечисляйте различные способы по определению потенциальных участников группы

 Описывайте, как удостовериться, что женщины, молодые и необеспеченные люди включены в список.

Войти в состав сообщества

Самой первой и важной задачей организатора группы является в том, чтобы получить признание во всем сообществе. Возможно, это очень трудно и займет время. Поэтому начните медленно, начиная с маленьких шагов.

Подготовьте себя. Соберите информацию о сообществе и их лидеров от других социальных работников и правительственных чиновников. Кто живет в этом сообществе? Чем они занимаются, чтобы заработать на пропитание? Какие основные проблемы существуют в сообществе? Какие организации помогают людям?

Представьте себя. В начале, очень важно получить поддержку от местных лидеров. Познакомьтесь со старшими, руководителями или другими влиятельными людьми в сообществе. Объясните им о главных целях проекта – о том, что проект постарается помочь людям улучшить их жизненные условия. Попросите лидеров организовать собрание, чтобы познакомить вас с местными жителями.

Расскажите им о проекте. Объясните в собрании об идеях проекта. Описывайте о целях и методах проекта, и спросите людей, каким подходящим способом вы можете помочь им. Объясните им, что вы можете делать, а какие задачи вы не в состоянии выполнить. В особенности, проясните им, что вы не будете раздавать им деньги и средства на благотворительной основе. Объясните им, что люди сами должны выполнить работу, а ваша задача состоит в том, чтобы помочь им при его выполнении.

Соберите основную информацию

Вы можете собрать информацию о сообществе и их проблемы несколькими путями:

 Совместные методы оценки стоимости сельскохозяйственной земли, как например составление карты, трансектные обходы, сезонные календари и таблицы. Выберите методы, которые дают вам необходимую информацию и примените их по назначению (Таблица 3).

 Индивидуальные беседы с членами сообщества, а также с главными действующими лицами, в том числе поставщиками средств производства, потенциальными покупателями и правительственными чиновниками.

 Сосредоточьтесь на групповых дискуссиях с членами сообществ. Хорошо было бы провести дискуссии с мужчинами и женщинами по отдельности, чтобы удостовериться, что женщины тоже имеют возможность высказать свое мнение.

 Аэрофотоснимки, так например «Гугл Земля». С оборудованием глобального местоположения, вы можете использовать программное обеспечение, чтобы показать местонахождение на карте.

 Второстепенная информация, так например правительственные данные о территории, отчеты вашей организации или другие экспериментальные организации, которые работают в этой территории.

 Формальные опросы, чтобы собрать базовую информацию о территории.

 Непосредственное наблюдение. Вы можете изучить многое о сообществе, если будете держать ваши глаза и ухо открытыми. Поговорите с людьми, внимательно наблюдайте и выслушайте, задавайте вопросы. Это приведет ко многим другим вопросам, или возможно даже к потенциальному решению:

a) Возможно, кукуруза с фиолетовыми листьями страдает от нехватки фосфора (где мы можем приобрести удобрения?)
b) Грузовик, собирающий арбузы показывает, что фермеры продают свою продукцию (Кто торговец? Куда доставляют эту продукцию?)

Кто-то с записной книжкой на руках посещает дома, наверное он собирает кредиты (Существует ли проблема с кредитом?).

Таблица 3. Совместные методы оценки стоимости сельскохозяйственной земли

Метод	**Подход**	**Использование**
Картография	Местное население начертают карту свое сообщества. Указывая на ключевые признаки и проблемы	Понять местную географию и проблемы, такие как земельная собственность, сельскохозяйственное производство, проблемы, связанные с почвой и водой
Трансектные обходы	Местное население проводят контрольный обход сообщества, отмечая важные признаки и проблемы. Нарисуйте секцию, указывая на эти пункты	Определить природные ресурсы и их взаимосвязь с сельскохозяйственной продукции
Сезонный календарь	Попросите местных жителей нарисовать календарь, указывая в нем на ежегодное количество атмосферных осадков, выращиваемых культур, увеличение сельскохозяйственных животных, применение рабочей силы, проблемы со здоровьем и т.п.	Понять сельскохозяйственную систему и изменения в течении всего года
Исторический план-график	Старцы описывают историю сообщества и прежний статус сельскохозяйственного предпринимательства и природных ресурсов	Понять историю сообщества и многолетних изменений, которые влияют на него
Ежедневный график	Мужчины и женщины описывают, чем они занимаются каждый час дня	Покажите им задачи мужчин и женщин, определяя проблемы и возможности

Метод	**Подход**	**Использование**
Диаграммы Венна	Люди определяют организации, которые влияют на них, и нарисовать карту взаимосвязи между ними	Понять институциональную картину, определить главных действующих лиц
Таблицы	Люди перечисляют пункты (как например виды сельскохозяйственных культур), потом описывают их в соответствии с определенными критериями (как например свобода урожая, продукции и доходность)	Периодически сравнивать взаимозаменяемые культуры, животноводства, деревья, предпринимательства, и т.п.
Расстановка	Люди перечисляют пункты и распределяют их в соответствии с определенными критериями	Определите приоритеты и выберите среди ряд альтернатива

Какие виды информации?

Какие виды информации вы должны собрать о сообществе? В начале, вам необходимо свободно воспринимать сообщество и их существующую ситуацию. Позже вы можете сосредоточиться на те территории, где вам необходимо сконцентрировать свое внимание, и местные жители должны почувствовать свою значимость.

Возможно, люди с неохотой дадут вам определенную информацию. Такие вопросы как: «Сколько гектаров земель они имеют в своем распоряжении или сколько животных они имеют?» являются больными вопросами для них. Часто очень легко задать косвенные вопросы, как например “Сколько кукурузы или риса вы производили в прошлом году?” Исходя из ответов, вы можете посчитать размер земельных владений самостоятельно.

Проверять разные источники данных, чтобы удостовериться в их правильности информаций. Например, правительственные данные могут говорить об одном, но местные жители сказать другое. Вряд ли обе информации могут быть правильными!

Убедитесь, что вы получаете от разных людей в сообществе: бедных и обеспеченных, мужчин и женщин, молодых и пожилых, землевладельцев и безземельных, земледельцев и скотоводов, фермеров и торговцев.

Определите свою целевую группу

Проекты имеют специальные задачи конкретную цель, кому они намерены помочь: например, женщинам или молодым людям, или же фермерам, выращивающие хлопок. Вначале вы должны выяснить, кому проект может помочь.

Вы должны определить людей, которые подходят по вашим критериям различными способами:

 Как местные органы содействия. Часто у них есть ясное представление, о том есть, кто есть кто сообществе. Они могут предлагать кандидату присоединиться к группе. Однако будьте осторожны: в некоторых местах социальные разногласия, как например: в этнические и кастовые группы означает, что определенные группы людей автоматически не допускаются.

 Расстановка по благосостоянию. Попросите группу местных жителей разбирать людей по категориям благосостояния (богатые, бедные, очень бедные, и т.п.). Вы можете достать список семей у старости деревни или местных органов.

 Размер земли. Земля является самым важным преимуществом в сельскохозяйственном сообществе. Вы можете попросить фермеров группировать себя в соответствии с величиной земли, находящиеся в их распоряжении. Другим критерием является виды домов (виды крыши: соломенная, черепица или металлическая?), доступ к орошению или количество животных в стаде.

 Продовольственная безопасность. Вы можете разделить домашнее хозяйства на группы, в зависимости от того, есть ли у них достаточно еды для употребления, испытывают недостаток в течении 1-2 месяцев в год или же нуждаются в еде в течении длительного периода времени.

 Гендер, возраст и ВИЧ статус. Вы можете выбрать женщину, молодого человека или же людей, которые живут со СПИДом.

 Самоидентификация. На собрании сообщества, вы можете попросить людей, которые соответствуют вашим критериям продвинуться дальше. Например, “домашнее хозяйство, которое имеет менее чем 2 гектара земли, и заинтересован в разведении кур”.

Некоторые из этих вопросов могут показаться деликатными и запретными. Многие пастухи не дают точную информацию о количестве животных в их стаде, а люди отказываются сказать, что они заражены СПИДом. Поэтому будьте осторожны: если вы не уверены, попросите совета у местных жителей, о том какие вопросы вы можете задавать.

Кого включить в группу?

Возможно, самым огромным риском в работе по проектам развития является прекращение сотрудничество с богатыми, хорошо образованными и вежливыми людьми. Не исключено, что группа окажется самым успешным.

Возможно. Таких людей не окажется в вашей целевой группе. Среди всех людей в сообществе, существуют такие жители, которые могут обойтись и без вашей помощи: они сами вполне в состоянии помочь себе. Когда вы обслуживали их, подразумевали ли вы эту работу в качестве социального работника?

Между тем, возможно, вам необходимо будет ориентировать людей подняться дальше по социально-экономическим ступенькам. Они не способны избегать круговорота нищеты, но они могут преодолеть его с помощью незначительного содействия с вашей стороны.

С другой стороны, ваша группа не должна состоят из самых бедных жителей. В зависимости от проекта, будет лучше начать с почти обеспеченными фермерами, которые могут извлечь выгоду от мероприятий проекта.

Например, маркетинг зависит от продуктивного избыточного дохода, которого могут продавать – и мала вероятность, что бедное население имеют прибыль. Бедное население может извлечь выгоду от проекта другими способами; например они могут работать наемные рабочие для участников группы маркетинга.

Обеспеченные и образованные люди захотят присоединиться к группе, так как они думают, что они могут воспользоваться этим с выгодой для себя. Они также могут вложить свой вклад этот проект – например, может у них есть необходимые навыки (такие как бухгалтерские и отраслевые знания). Но будьте осторожны и не попадайтесь в сети **высокопоставленный людей** – так как хорошо образованные люди могут использовать группу в своих целях, чем в интересах других.

Если группа нацелена на бедное население, богатые люди сразу понимают, что они не могут извлечь выгоду и таким образом теряют интерес к группе. Например, они находят все мероприятия одновременно бессмысленными и не имеющий ценности: они могут заработать намного больше занимаясь чем-нибудь другим.

Иногда лидеры сообщества хотят быть вовлеченными, хотя они не являются членами вашей целевой группы. Вы можете пожелать включить их в группу, чтобы получить их поддержку и таким образом, они выступить перед членами вашей группы примером для подражания. Или возможно вы можете найти подходящую роль для них (как например “консультант группы”, чтобы воспользоваться их услугой, и при этом не включая их в группу).

Поговорите с женщинами

Часто мужчины и женщины имеют разные роли в обществе. И оно меняется в зависимости от местности. Например:

 Женщины могут быть ответственными за домашнее хозяйство, заботы о детях, садоводством и присмотром мелкого скота (такие как козы и кур). Также они часто занимаются удалением сорняков и доением домашних животных. Они могут выполнить большинство работы на ферме, особенно когда мужчины уезжают.

 Мужчины могут позаботиться о крупнорогатом скоте, выполнить тяжелую работу на полях, почти весь год они проводят в городе в поисках заработки.

Это означает у мужчины и женщины бывают разные идеи, навыки и знания. Они сталкиваются с наиболее трудными проблемами и у них разные интересы.

Женщины могут сталкиваться с большими преградами в обществе, и для них в трудно будет стать членом группы, посещать собрания и участвовать в тренингах:

 Вероятно, они придерживают мнения своих отцов и мужей.

 Возможно, они стесняются или боятся выразить свои реальные мнения, особенно в общих заседаниях.

 Вероятно, они не могут посещать собрания из-за своих домашних обязательств (вы не можете участвовать на собрании, если ты должна готовить ужин, и в тоже время присмотреть за детьми).

 Им не разрешают говорить с другими мужчинами, кроме своих родственников. Или они чувствуют себя не комфортно, когда говорят с незнакомым мужчиной.

 Они не могут совершить поездку, особенно ночью.

 По сравнению с мужчинами, многие женщины недостаточно образованы. В некоторых странах, только малое количество женщин в сельской местности грамотные. Многие девушки вынуждены, бросают учебу, чтобы выйти замуж.

Как помочь женщинам

Для местного агента мужского пола очень трудно работать с женщинами (а также для местных агентов женского пола работать с мужчинами). Ниже перечислены некоторые предложения:

 Работать как команда. Пара местных агентов – мужчина и женщина – могут работать вместе в сообществе

 Поговорите с группой женщин вместе. Женщины почувствуют себя свободней, если нет мужчин вокруг.

 Планируйте собрания так, чтобы женщины тоже могли поучаствовать. Лучшее время и место для проведения собрания зависит от ситуаций. Спросите женщин, какое место и время для них больше подходит.

 Способствуйте женщинам для участия в собрании. Выходите из ваших принципов и дайте женщинам право участвовать в дискуссиях. Приготовьте специальное место, чтобы усадить женщин (а не на заднем ряду!). Поощряйте их привезти своих детей на собраниях. Во время собраний, дайте им шанс высказаться.

 Создайте отдельную женскую группу. В некоторых обществах, отдельные женские группы являются единственным путем для убеждения их вовлечения. Женская группа может быть очень активной, особенно в управление деньгами и решения подобных вопросов.

 Заполучите доверия женщин. Вы можете заполучить доверие женщин многими способами: через примеры подражания, специальные тренинги, распределив между ними ответственности, внимательно выслушав и поощряя их.

 Повышать чувствительность мужчин. Часто мужчины не осознают, что у них есть преобладающие действия. Помогите им осознать ситуацию и потенциалы женщин, способствуйте им понять, что если они выслушают женщин, то вся семья и сообщество будет обеспечена.

 Установите задания и квоты. Вы можете установить задачи (скажем, 40%) для определенного количества женщин в группе или участников в учебном курсе. А также сама

группа может решить, что многие из их должностных лиц должны быть женщины (например, 2 из 5).

 Избегайте обременять женщин. Осознавайте опасность прибавить еще одно бремя к существующей тяжелой нагрузки. Часто женщины должны выполнить скучные повторные задачи.

Поговорите с молодежью

Молодежь – подростки, молодые женщины и мужчины – также сталкиваются со многими проблемами. В основном, они хорошо образованы, чем пожилые жители, и у них очень широкий кругозор и большие амбиции. Но у них недостаточно возможностей в традиционном обществе: их не слушают, у них нет земли, скота или капитала, чтобы работать, и им не разрешают принять собственные решения. Многие (особенно молодые парни) уезжают в город в поисках лучшей доли. Девушки и молодые женщины по сравнению с мальчишками и молодых парней стремятся иметь некоторые возможности.

Сироты (часто те, чьи родители умерли от СПИДа) и ранимые дети сталкиваются с подобными проблемами.

Вы можете использовать те же методы, которые применили для женщин, чтобы помочь молодым парням стать высоко оценёнными членами группы, или создайте их собственную группу.

Помните про самых бедных и малоимущих

Больные или с ограниченными возможностями люди часто являются самыми малоимущими жителями в сообществе. Выясните кто они, где они живут и с какими проблемами они сталкиваются. Вероятно, люди, зараженные ВИЧ и сироты СПИДа очень нуждаются в помощи.

Постарайтесь найти способы помочь этим людям. Например, вы можете обсудить поддержку группы людей, живущие с ВИЧ выращивать питательные овощи и продать остаток урожая. Или содействуйте созданию группы, которая отложить некоторую часть своей прибыли для оплаты обучения сирот в школе.

Annex 46. Promoting Innovation Course – Lesson 6. Collecting and Recording Observations (in Russian)

Урок 6. Сбор и учет наблюдений

Решение по поводу сбора информаций

Группа Ачинга решает какую информацию собирать на своем эксперименте.

[ГРАФИКА 053: Ачинг, Доркас и Джозефина ведут обсуждение о своих цыплят. Ачинг: “Мы должны каждую неделю посчитать количество цыплят.” Доркас: “И делать записи относительно их здоровья и состояния.” Джозефина: “А также записать сколько труда необходимо вложит на сбор корма для них.”]

Рисунок *35. Решить какую информацию необходимо собирать.*

Важно хорошо вести учет записей эксперимента. Те вещи, которые необходимо решить:

- Что вы хотите посчитать или измерить?
- Как вы будете мерить их?
- Когда (и как часто) вы должны измерить их?
- Как вести учет?

Что вы хотите посчитать или измерить?

Группа Ачинга решила, что им необходимо записать три вида информации:

- Количество закрытых и свободных цыплят, которые выжили в течении 8-ми недельного периода;
- Общее состояние здоровья и активного роста закрытых и свободных цыплят;
- Необходимый труд, чтобы накормить цыплят.

Они должны записывать два вида информации одновременно и для закрытых, и для открытых цыплят. Они должны записать труд, только для закрытых птенцов, так как свободные птенцы сами ищут себе еду.

[Графика 54: Тетрадь с текстом и таблицей:

Наблюдайте каждую Субботу

	Под корзиной	Свободные
Количество цыплят	•/	•/
Здоровье цыплят	V	V
Труд, чтобы накормить цыплят	V	x

Рисунок 36. Решить, какие данные собирать

Наблюдения для эксперимента с культурами

Наблюдение зависит от вида эксперимента. Если вы сравниваете местный сорт кукурузы с двумя новыми сортами, наблюдения включают:

- Сроки посадки, прополки и сбора урожая;
- Количество и дата применение удобрений;
- Количество растений, которые показывают признаки вредители или болезни, вид и тяжесть инфекции (каждую неделю);
- Высота растения (каждую неделю);
- Количество собранных растений (при сборе урожая);
- **Вес собранных початков** (при сборе урожая).

Обратите внимание, что только вы действительно заинтересованы в весе початков при сборе урожая. Но такие вещи, как борьба с вредителями и заболеваниями также важны: они помогут вам передавать результаты эксперимента и решить следует ли принять новый сорт.

Запись этих и других информаций также показывает все ли участки обрабатываются одинаково.

Сбор множество информаций из эксперимента выглядит заманчивым. Но это требует времени и усилий, и делает его трудным, чтобы проанализировать результаты. Лучше отмерьте наиболее жизненно важные вещи, и запишите другие вещи, как только вы заметите их.

[ГРАФИКА 055: Несколько фермеров толпятся вокруг растение кукурузы: один считает початки, другой измеряет рост, третий осматривает листья, четвертый держит блокнот и карандаш.]

Рисунок 37. Не пытайтесь собрать слишком много информации.

Как вы будете измерять их?

Вам необходимо точно решить, как и когда измерить или посчитать каждое наблюдение.

Например, как можно измерить высоту растений? С земли до верхушки роста? Или до вершины самого высокого листа (который может быть выше)? Вы пользуетесь мерной лентой?

Как можно измерить урожайность кукурузы? Вы считаете количество початков? Вы весите зерно кукурузы? Перед очистки от листовой обертки или после очистки или шелушения? До или после высушивания? Ваши весы точные? Если вы посчитаете мешки, сколько килограммов содержит каждый мешок? Являются ли мешки стандартного размера?

[ГРАФИКА 056: 3 фермера: один посчитывает початки, другой считает мешки, третий взвешивает мешки с помощью весов]

Рисунок 38. Решить, что измерить и как измерит его.

Когда и как часто вести наблюдения?

Регулярное посещение экспериментальных участков – хорошая идея – возможно каждую неделю. Это позволяет группе наблюдать, что происходит с культурами (или животные, если эти пробы проводится с животными) и поддерживает их интерес в эксперименте. Тщательно наблюдение культур также повышает их информированность об определенных аспектах, например, как вредители со временем могут повредить урожай.

Некоторых видов информаций необходимо собирать регулярно: высота растений, вредители и болезни, проблемы с сорняками, и здоровье животных.

Другие виды данных необходимо записать только один раз: сроки посадки и сбора урожая, количество использованных удобрений и урожай.

[ГРАФИКА 057: На странице календаря отмечено “11 Июля: собирать и взвесить урожай”]

Рисунок 39. Планировать когда и как часто собирать данные.

Советы для сбора данных и наблюдения

- Выполнить все измерения при тех же условиях, используя те же методы.
- По мере возможности, быть постоянным при применении процедуры и сбора данных.
- Собирать данные с каждого участка отдельно: не сложить данные участков с такой же отработкой вместе. (Вы можете сделать это в конце эксперимента, если очевидно, что не было никаких проблем в выполнении эксперимента.)
- Запишите дополнительные полезные наблюдения: погода, виды и количество сорняков, ущерб вредителей, условия почвы, сроки прополки и применения удобрений, вещи, которые пошли не так, болезни, применимые химические вещества, и кто на какие участки работал.

[ГРАФИКА 058: Фермер пишет в блокноте: “11 Июля: погода жаркая и сухая”] *Рисунок 40. Ввести записи о вещах, такие как вредители и погода.*

Как записать информацию

[ГРАФИКА 059: Ачинг, Доркас и Джозефина обсуждают своих цыплят. Ачинг: “Мы должны тщательно внести записи, в противном случае мы забудем их. Доркас: “Мы должны иметь стандартную форму, которую мы все будем использовать.” Джозефина: “Давайте использовать школьную тетрадь.”] *Рисунок 41. Используйте школьную тетрадь для ведение записи.*

Некоторые советы:

- Отдельные листы бумаги можно легко потерять. Вместо этого, используйте школьную тетрадь, который достаточно большой, чтобы записать все наблюдения, которые вы ведете для вашего эксперимента.
- Используйте отдельные страницы для разных регистрационных листов.
- Всегда укажите дату ведение наблюдений.
- Если запись ведется более чем одним человеком, оставьте пространство на листе для имени человека.
- Записывайте свои наблюдения сразу же, после того как они выполняются. Напишите их прямо в книге, а не на клочке бумаги, которые передаются позже.
- Напишите замечания аккуратно и четко.
- Не измените или не удаляйте свое замечание, которые вы делали раньше. Вместо этого, напишите примечание или пояснение с коррекцией.

Создание бланка для записей

Вам необходимо создавать бланк, таким образом, вы можете записывать свои наблюдения. Ниже приведен бланк, созданный группой Ачинга, чтобы записать количество цыплят (Таблица 6).

Женщины решили посчитать цыплят каждую Субботу вечером, когда они возвращаются с рынка.

Бланк имеет два столбца: один для варианта (цыплята, закрытые под корзиной), и один для контроля (находящиеся на свободе).

Существует одна строка для каждой недели, до 8 недель (когда цыплята будут достаточно большими, чтобы постоять за себя).

Также существует дополнительная строка внизу, где они могут посчитать проценты.

Каждые три женщины копируют бланк таблицы в своей тетради.

Таблица 6. Бланк для записи выживания цыплят

Дата начала: Дата окончания:

Неделя	**Под корзиной**	**Находящиеся на свободе**
Количество вылупившихся		
Количество живых цыплят в конце недели 1		
2		
3		
4		
5		
6		
7		
8		
Процент выживших цыплят (количество живых цыплят за 8 недель, разделена на количество вылупившихся цыплят x 100)		

Запись здоровье цыплят

Женщины также хотят сравнить общее состояние здоровья цыплят, находящиеся под корзиной, с теми которые находятся на свободе. Они записывают такие вещи, как состояние перьев цыплят, их относительные размеры, выглядит ли один здоровее другого (например, одни лапы могут выглядит вялыми, а другие активным).

Они будут собирать эту информацию раз в неделю, в тоже время, когда они считают цыплят.

Они решают, что они могут записывать свои наблюдения о сравнении на одной строке (Таблица 7).

Таблица 7. Регистрационный лист для наблюдения здоровье и жизненность цыплят

Неделя	**Комментарии**
1	
2	
3	
4	
5	
6	
7	
8	

Учет труда

Учет труда может быть сложным: для труда, выполненную в течении дня, трудно вспомнить точно, кто-то сколько минут потратил. Ещё более трудно вспомнить, сколько времени провел вчера или позавчера.

Некоторые рекомендации:

- Запись каждого задания и количество времени, которое оно занимает для его выполнении.
- Обновление записей каждый день.
- Если работу выполняют несколько человек, ведите учет как долго занимает каждый из них. Таблица 8 показывает бланку, чтобы использовать или адаптировать его.

Таблица 8. Регистрационный за ежедневный труд

Неделя	**Занимаемые минуты**							
	Воск	Пн.	Вт	Ср	Чт.	Пт.	Сб.	**Итого**
1								
2								
3								
4								
5								
6								
7								
8								

Простые способы для записи данных

Многие фермеры и другие сельские люди не привыкли записать вещи сверху вниз. Некоторые из них неграмотны. Такие участники все ещё могут заниматься исследованиями! Но вам необходимо найти простые способы для записи наблюдений.

Рассмотрим это, используя простые нарисованные линии вместо слов или строк или вместо номеров (| | | = 3).

Также вы можете использовать палочки, камушки или крупные семена для подсчета. Например, чтобы записать труд, фермеру может положить счетчики (палочки, камушки или крупные семена) в горшок, каждый раз когда она идет кормить птенцов.

[ГРАФИКА: Таблица с графикой вместо слов:

Цыплята Ачинга	**[графика 060: Цыплята, находящиеся под корзиной]** **Под корзиной**	**[графика 061: Свободные цыплята]** **Свободно гуляющиеся**
[ГРАФИКА 062: Несколько яиц и только, что вылупившиеся цыплята] Вылупившие	Hill IIII II 12	Hill IIII III 13
Неделя 1	Hill IIII 1	Hill III
2	Hill IIII 1	Hill I
3	Hill IIII	IIII
4	Hill IIII	III
5	Hill IIII	III
6	Hill IIII	III
7	Hill IIII	III
8	Hill IIII 9	III 3

]

Рисунок 42. Вести учет неграмотными людьми возможно.

Ведите запись простым способом

При проведении эксперимента или обследования, заманчиво собрать много данных, потому, что это интересно или может пригодится.

Но сбор горы информаций может занят много времени, и проанализировать информацию будет трудно. Поэтому лучше всего решить записывать некоторые вещи для наблюдения и убедиться, что вы ведете аккуратные записи о них. Выберите из тщательно, привлекая несколько людей в обсуждении, таким образом, вы получите разные точки зрения.

Вы можете «Запись» в столбце вашей бланки, чтобы написать наблюдения о других аспектах, которых вы не регулярно измеряете.

[Графика 063: Фермер выглядит запутанным с многими тетрадями и бланками]

Рисунок 43. Не пытайтесь собирать слишком много информаций.

Краткий отчет

- Важно вести хороший учет эксперимента. Сначала вы должны решить, что вы хотите посчитать или измерить. Убедитесь, что вы записывайте самые важные вещи, и не пытайтесь собрать слишком много информаций.
- Решите для себя, как именно вы будете выполнять каждое наблюдение, и как часто

соберете информацию. По возможности, убедитесь, что все измерения выполнены одинаковым способом, в тех же условиях.

• Создайте бланки, чтобы помочь себе в записи информаций. Используйте тетрадь, чтобы записать данные, а не отдельные листы бумаги, которые могут потеряться.

Упражнение 7. Планирование сбора данных

Это упражнение ведет участников через шаги, которые необходимы для сбора и записи наблюдений из эксперимента. После данного упражнения участники начинают вести свои собственные эксперименты.

Цель

Определить, что измерить в эксперименте. Разработать метод ведение записи.

Необходимое оборудование

Большие листы бумаги, маркеры

Ожидаемые результаты:

- Бланки для записи наблюдений из эксперимента

Занимаемое время:

1 час

Подготовка:

Упражнение 6: Разработка эксперимента

Предлагаемая процедура:

1. Напомните участникам о результатах Упражнении 6, когда они разработали эксперимент.

2. Разделите участников на те же группы, как и в Упражнении 6. Попросите их перечислять виды наблюдений, которые им необходимо: урожай, высота растений, количество цыплят, и др.
3. Попросите групп обсудить, как они будут измерять каждый элемент и как часто они выполняют это. Например: “Высота растений: Каждую субботу, измерите высоту пять растений на каждом участке с мерной лентой. Измерите расстояние от земли до самой высокой точки растений.”

4. Попросите группу, разработать бланк для каждого элемента, используя большие листы бумаги. Убедитесь, что они думают, в соответствии с требованиями каждого вида наблюдений.

5. Пригласите каждую группу, предоставить свои бланки и их обоснование на пленарном заседании. Пригласите делать комментарии по каждой форме и

предложения по улучшению.

6. Объясните участникам, почему они должны использовать тетради, а не отдельные листы бумаги, вести свои записи. Пригласите их копировать бланки в свои тетради (если у них есть).
7. Tell the participants that they are now ready to start their own experiments. Guide them if necessary as they do so.

Вопросник по Уроку 6

1. **При сборе данных, нет необходимости снимать все мерки при одинаковых условиях, используя те же методы.**

   A. Правда

   B. Неправда

Правильный ответ: B. Вы хотите иметь возможность сравнить одно измерение с другим. Это означает, что вы применяете их на те же условия.

2. **В эксперименте, измерение всего, что может пригодиться, является хорошей идеей.**
   Этим способом, вы убеждаетесь, что вы не пропустите ничего важного.

   A. Правда

   B. Неправда

Правильный ответ: B. Если вы измеряете множество вещей, это вас приведет в замешательстве. Лучше всего измерять некоторые вещи, но ведите запись о другом факторе, который может оказаться интересным.

3. **Пометьте правильное оборудование для вещей, которых вы хотите измерять.**

A. Урожай кукурузы	1. Мерная лента
B. Количество дней между посадкой и урожая урожай	2. Увеличительное число и
C. Высота растений	3. Весы
D. Определение вредителей в урожае	4.Календарь

Правильные ответы: A3, B4, C1, D2.

Annex 47. Tip Sheet – Fruit Diseases

Консультативные услуги домохозяйствам и мелким дехканским хозяйствам в Таджикистане (FAST)

Болезни поражающие Цветки, Листву и Фрукты

1. Бурая гниль- Зрелый фрукт

2. Бурая гниль- Зеленый фрукт (M. fructicola)

3. Бурая гниль- Гниение цветка (M. fructicola)

4. Бурая гниль- Мумификация плода(M. fructicola)

Botryosphaeria rot (B. dothidia) 5.

6. Anthracnose rot (C. acutatum)

Peach scab on fruit (F.

Rhizopus fruit rot (R.

5. Гниль Botryosphaeria (B.dothidia)

6. Гниль Anthracnose (C.acutatum)

7. Персиковая Парша (A. Carpophilum)

8. Плодовая гниль Rhizopus(R. stolonifer)

Gilbertella rot 9.

Mucor rot 10.

Powdery mildew 11.

Jacket rot 12.

9. Гниль Gilbertella

10. Гниль Mucor

11. Мучнистая Роса

12. Гниение кожуры

Bacterial spot - fruit 13.

Bacterial spot - leaf 14.

Phomopsis - tendrils 15.

Phomopsis - twig blight 16.

13. Бактериальная пятнистость

14. Пятнистость листьев

15. Phomopsis

16. Phomopsis-увядание вете

Leaf curl 17.

Leaf curl 18.

Verticillum wilt 19.

Verticillium wilt 20.

17. Курчавость листьев

18. Курчавость листьев

19. Verticillum-Увядание

20. Verticillum-Увядани

Данная публикация стала возможной благодаря помощи американского народа, оказанной через Агентство США по международному развитию (USAID). Взгляды автора, выраженные в данной публикации, не обязательно отражают точку зрения USAID или Правительства США. Университет Иллинойс является исполнителем Программы Консультативные услуги домохозяйствам и мелким дехканским хозяйствам в Таджикистане (FAST).

Annex 47. Tip Sheet – Fruit Diseases

21. Leucostoma

22. Рак

23. Листовая ржавчина

24. Sori-листовая ржавчина

25. Гнилая ржавчина

26. Гуммоз-камедетечение

27. Гуммоз-камедетечение

28. «Фони» вирусное заболевание персика.

29. Бактериальный рак

Абиотические (физические) повреждения

30. Красная пятнистость

31. Неровность

32. Пятнистость

33. Повреждение градом

34. Поедание коры оленем

35. Неправильная формировка

36. Краснуха Болезнь

Annex 48. Carrot Production Materials for Household Farmers (in Russian)

FAST – Farmer Advisory Services in Tajikistan

CARROT

Маслихат оиди парвариши сабзи дар хонаводахо

Чаъмоварандаи маълумот Юлдашали Хасанов.

Кургон Теппа 2015

Сабзи - яке аз зироатхои пахнгашта дар Чумхури ба хисоб меравад. Дар таркиби сабзи витаминхои бисёр, кислотахои органики, канд ва дигар моддахои зарури хело зиёд мебошанд. Аз хама мухиммаш дар таркиби он аз хама зиёд каротин аст. ки он ахмияти калон дорад. Сабзи дар хўрок ба шакли тару тоза баъди тоза кардани пусташ ва хамчунин коркарди он (шарбати сабзи) ва барои таомхои хунук ва гарм истифода бурда мешавад. Дар асоси тибби кадим- сабзи барои муоличаи зардпарвин, (желтуха) касалихои чигар, муоличаи касалихои шабкури низ истифода бурда мешавад. Навъхои зерин бисёртар парвариш карда мешаванд: Мшаки сурх, Мирзои сурх, Нантская-4 ва гайрахо.

1. Тайёр намудани замини кишти сабзи:

Пеш аз кишти сабзи бояд замини кишт мешударо интихоб намуд, барои ин замини хамвор ва сергизо гирифта мешавад.Баъди ин корхо заминро дар чукурии 20 – 25 см, побел ё дар чукурии 25 – 30 см, бо ерии техника шудгор мекунанд. Баъди нарм кардан, хамвор кардан ва майда кардани курумбхо, хати обгири кашида мешавад, хатаки обхурии сабзи дар масофаи 50 – 60 см, гирифта мешавад, чукурии чуякхо бояд 15 – 20 см бошад.

2. Муддатхои кишти сабзи:

Сабзиро дар се фасл коридан мумкин мебошад:

Кишти бахори – аз мохи февраль то мохи апрель,дар ин муддат бояд навъхои тез паз ва миена пазро (*навъи Мшаки сурх, Мирзои сурх*) интихоб намуд. Ин дар мохи июн аллакай бо сабзии нав таъмин мекунад.

Кишти тобистона ё кишти такрори – киштро баъди гунучини галлагихо, кишти барвактаи картошка ва чугоримакка, дар охири июн, мохи июл гузаронидан мумкин, аст дар ин муддат бояд навъхои миена паз ва дер пазро (*Мирзои сурх, Нантская 4*) интихоб намуд, баъди гунучин намудани хосил дар мохи ноябрь хатман онро ба захира хона, дар чукурии махсус – гузоштан лозим аст.

Кишти тирамохи – дар ин муддат навъхои зимистона (*Нантская 4, Московский красный)* интихоб карда мешавад, Ин навъхо одатан дар моххои октябр ва ноябрь кишт карда мешавад, вакти интихоби чои кишт бояд замини офтобрасро интихоб намуд, то

ки рузхои офтобии моххои зимистонро сабзи истифода карда тавонад, ин гарави хосили барвакти мебошад.

3. Тайёр намудани тухми барои кишт.

Тухмии сабзи дар таркиби пусташ равганхои эфириро зиед дорад, барои он, ки дар табиати ёбой ва дар фаслхои хушки тухмии сабзиро аз нобуд шавий эмин нигох медорад. Барои хамин барои пурра сабзидани тухмии сабзи бояд онро пеш аз кишт гузаронидан тайёр намудан лозим мебошад. Барои ин тухмии сабзиро аз равганхои эфирии дар пусти тухми буда озод намудан лозим. Бо хамин максад тухмии сабзиро дар байни материали дока е дар халтачаи материали пахтагй дар оби харорataш 45 - 50^0C гузошта мешавад. Тухмии дар материали дока буда ва дар халтача бударо дар ин оби тайер карда шуда чайконида мешавад то равганхои эфириро шуста шуданаш. Баъди ин тухмиро дар оби хунук чайконида барои хушк намудан мегузоранд, барои дуруст гузоштани ин, усулро метавонед такрор намоед. Бо ин усул коркард намудани тухмии сабзи имконият пайдо мекунад дар муддати кутох, яъне дар 4 – 5 руз неш зада мебарояд. Пеш аз кишт тухмиро дар махлули аз сирпиёз тайёр намуда ба муддати 3 соат гузоштан, гарави аз касалихои дар таркиби хок буда эмин нигох доштани тухми мебошад.

Тайёр намудани тухмии сабзи пеш аз кишт дар сари замин.

4. Гузаронидани кишт:

Кишти дар кадом фасл интихоб шударо аз талаби агротехникии сабзи гузаронида мешавад, меъери кишти сабзи вобаста аз навъхои он аз 8 кг то 12 кг гузаронида мешавад. Киштро агар дар замини назди хавлиги гузаронида шавад, барои ин аз кутии тунукагй метавонем «сеялка» и дасти рост намоем, барои ин кутиро аз бари поен 5 чо сурох мекунем ва тухмиро дар он гузошта бо ерии даст ин тараф он тараф чунбонида кишти тухмии сабзиро мегузаронанд. Фаркияти гузаронидани кишти тобистона ё такрори дар он мебошад, ки баъди пошидани тухми болои замини киштро бояд мулчарони (*бо когаз, материалхо ва кохи майда*) кунем, ин усул тухмиро дар вакти сабзиш аз нури тези офтоб эмин нигох медорад. Дар хамма мудатхои кишт болои замини киштро бо компост, поруии пусида, материалхо, когаз порахо, *афти кишти сабзи*

бо рохи хашари хамсояхо

8. Обмонии сабзи:

Вобаста ба фасли кишти сабзи, обмонии он фаркияти калон дорад: барои кишти фасли бахори, то пурра баромадани сабзи бояд дар хар 2 – 3 руз об мондан лозим аст. Дар фасли тобистон бошад то неш зада баромадани сбзи бояд намнокии заминро 75 – 80 % нигох доштан лозим аст.Агар дар хамин фурсат боя гон сабаб намнокии замин кам шавад, тухмии сабзи намебарояд ва дар зери хок нобуд мешавад. Баъди пурра сабзидани сабзи обмониро дар хар *(вобаста ба обу хаво*) 6 – 8 руз бояд гузаронд ин

6- 8 маротиба, дар вакти нашъу намои сабзи (*вобаста ба навъи он ва шароити обу хаво*) бояд 7 – 12 рмаротиба об дода шавад.

Обмонии сабзиш баъди кишт дар замини кишти сабзи, бо кумаки хамсояхо

6. Химояи сабзи аз зараррасонхо:

Асосан ба химояи табиий такя намудан лозим то ки камтар захролуд шавии замин ва одамони дар наздикии замини наздихавлигие ки сабзи кишт карда шудааст. Барои аз зараррасонхо эмин нигох доштан, бояд дар замини кишти сабзи, кишти омехтаро истифода бурдан лозим аст. Сабзи бо пиёз, укроп, гашнич, зироатхои реша мева (*лаблабу*), барои кишти тирамохй

бошад дар болои хатакхои сабзи зироатхои фосилавй (сидерати) омехта карда коридан натичаи хуб медихад.

7. Чамоварии хосили сабзи: муддати чамоварй ва холати лундаи сабзи.

Ба чамоварии хосили сабзи шуру намудан лозим, дар вакти баргхои сабзи ранги тираи торик мешавад, баргхои поен ранги зард мегирад, лундахо калон шуда ранги хоси худро мегирад ва лунда дар вакти шикастани онхо овози шикастани чуби сахтро медихад.

Чамоварии хосили сабзи дар замини хонавода бо кумаки хамсояхо

Annex 49. Tomato Technology Packet (in Russian)

FAST – Farmer Advisory Services in Tajikistan.

TOMATO

Парвариши помидор дар хонаводахо.

Чамоварандаи маълумотхо: Юлдашали Хасанов.

Кургон Теппа 2015

Помидор - яке аз мухимтарин зироатхои сабзавоти ба хисоб меравад. Меваи он таъму маззаи хуб дорад ва аз дигар сабзавотхо фарки калон дорад. Дар таркиби он витаминхо, моддаххои минерали, кислотахои органики ва охар хело зиёд мебошанд. Помидор яке аз зироатхои зарурии озукави ва диабети ба хисоб меравад. Меваи он ба шакли тару тоза ва коркард шуда истифода бурда мешавад.

Аз онхо шарбат,шакаробхо,салатхо,паста,консервахо,пудра ва гайрахо тайёр карда мешаванд. Дар тибби хозира помидор ба сифати табобати пархези ба бемороне, ки гирифтори касалихои меъда мебошанд, истифода бурда мешавад.Дар минтакахои Кулоб, Кургон Теппаи вилояти Хатлон навъхои зерини помидор кишт карда мешаванд “Подарок”, “Ракета”, “Факел”, “Файзободии сурх”, “Новичок”, “Волгоград 5/95”, “Финиш” , «Садокат», «Новичок новый Русский» ва гайрахо.

Помидорро аз тухми ва аз нихол парвариш менамоянд:

1. **Парвариши помидор аз тухми**: барои ин аввал заминро ба кишти тухми тайёр карда мешавад.
    - Ба замини кишти ба хар сотикаш 350 – 400 кг, поруи пусида партофта мешавад, барои турушии заминро бе таъгирот мондан ба хар сотик замин 6 – 7 кг, охаки ношукуфта партофта, баъди ин заминро побел мекунанд ё ин ки бо ерии техника шудгор мекунанд.
    - Тухмии помидорро дар халтачаи материали пахтагин гирифта дар оби марганцовкадор, ранги марганцовка гулоби бошад кифоя аст. Баъд ду се руз дар чои гарм харорataш 25 – 30^{0}С нигох медоранд. Тухмии неш зада баромадаро дар чуякхои пешаки тайёр карда шуда мекоранд.

Кишти тухмии помидор

Парвариши нихоли помидор дар гармхона

Кишти нихоли помидор дар замини кушод дар чуякхои пеш тайёр карда шуда.

2. **Парвариши помидор аз нихол:**

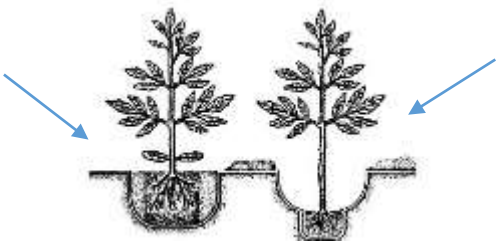
Тухмии помидорро пеш аз ба гармхонахо коридан, усули тайёр намудани тухми ки пешаки дар коридан аз тухми фахмонида шуд мисли хамон тайер карда мешавад. Баъди тухми неш зада баромаданда сар кард онро ба гармхона, пешаки тайёр карда шудааст корида мешавад, барои тайёр намудани гармхона бояд чунин корхоро анчом дода шавад:

- Вобаста ба микдори замин, гармхона аз кандани чукури 40 см,(*чукури кандан аз сармо задани нихолхо пешгири кардан мебошад*) сар мешавад, бо накшаи 1 х 3 ё 1 х 10 метр. Дар ин чукури дар баландии 15 – 20 см поруи нави нопусида мегузоранд, барои додани био гарми аз поен ва аз болои он дар баландии 15 – 20 см, омехтаи поруи пусида бо хок (*1 х 1, хоки замини хосилхез гирифта мешавад)* , Болои чукурии тайёр карда шуда бо навдахои дарахти бед е тут, кач карда мисли ним доира намуда пушида мешавад, байни ин навдахоро низ бо навда ба хамдигар сахт баста мешавад. Болои гармхона бо пленка пушида мешавад ва 3 - 4 руз пеш аз коридани тухми, ба замини гармхона об пошида мешавад, то гази пору баромада равад.

3. **Коридани нихол дар замини кушод: заминхои назди хавлигй:**

Баъди гузаронидани побел кардан е гузаронидани шудгор, заминро хамвор карда, курумхояшро майда карда, чуяки об дихи кашида мешавад (*бо ерии даст*). Накшаи чуяки об дихи дар масофаи аз хам дигар 60 см, 70 см е 90 см, вобаста аз навъ кашида мешавад. Чуякхо дар чукурии 25 см, гирифта шуда, пеш аз кишт об гирифта мешавад то ки замин нишаста чои худро гирад, баъди об чойхои нохамвориро хамвор карда ба кишти нихоли помидор тайёри мебинанд. Коридани нихолхо, бо накшаи зерин гузаронида мешавад: 60 х 25, 70 х 30 е 90 х 25 см. Нихолхо аз гармхона гирифта оварда шуда дар чуякхои пешаки тайер карда шуда корида мешавад, чукурии кишт вобаста аз нихол: 12 – 15 см кишт гузаронида мешавад, баъди кишт хатман 18 соат об гирифта мешавад.

Кишти нихоли помидори дар тубакча парвариш карда



Кишти нихоли помидор дар чуяк хо бо нихоли бе тубакча парвариш ёфта.

Кишти нихолхои помидор дар замини тайёр карда шуда .

4. **Коркарди байни каторхои кишти помидор**:
Коркарди якуми помидорро баъди кишташ 10 руз пас озукаи якум е ин ки пеш аз побел кардан е шудгор кардан 350 – 400 кг, поруи пусида пошида бошед ин микдор озука ба як мавсими кишти помидор барраси мекунад. Агар дорухои минерали низ дастрас бошад, дар ин вакт ба хар 1 сотик 3 – 4 кг, карбамид, 3 – 4 кг суперфосфат, дар масофаи аз растани 10 – 12 см, ва дар чукурии 10 – 15 см, дар зери хок гузошта мешад. Баъди озука додан хатман бегохи (*обгирии шабонаро истофода баред)* об гирифта мешавад 6 – 8 соат. Коркарди дуюм баъди обгири дар рузи 3 – 4 бо ерии кетман нарм карда шуда алафхои бегонаро решакаш карда мешавад. Озука дихии дуюм бораро баъди 15 – 20 рузи озукаи якум дода мешавад, дар ин вакт ба хар 1 сотик 2 – 3 кг, карбамид, 2 – 3 кг суперфосфат дода мешавад, ба зери хок дар масофаи аз растани 14 – 16 см, дар чукурии 16 см, бегох дар вакти салкини об гирифта мешавад. Коркардхои оянда мисли коркарди дуюм факат бе озука гузаронида мешавад. Обро факат бегох (*обгирии шабона*) гирифта мешавад, то ки то сахар оби чуякхо ба каъри замин кашида шавад. Об дар хайоти помидор роли асосиро мебозад, агар замин бе об монад ва дуру дароз бе намигари бошад лундахои помидор торс мекафад ва ба касалии пусиши болои помидор гирифтор мешавад. Обгирии бе меъер ба маззаи помидор таъсири худро мерасонад ва мазаи помидор бе масза мешавад, хосилро мепартояд, лундахои помидор мекафад, ба касалихои замбуруги гирифтор мешавад. Обгирии бо меъер растании помидорро рушд медихад, решаи помидорро зиед намуда онро пуркувват мекунад.

5. **Чеканка е кам кардани шохчахои помидор:**
Дар вакти рушди помидор, аз меъер зиед бошад нуктаи сабзиш е шохи болои помидорро чеканка (*шикастани шохча – аз бисер баланд шавии помидор пешгири кардан)* карда мешавад. Дар вакти бисер зиед шавии баргу поя, баргхои зиедатиро (*агар дар зери ин барг лундаи помидор набошад) бо ерии кайчи е корча гирифта мешавад).*

Чеканкаи помидор

6. **Химояи помидор аз зараррасонхо ва касалихои он***:*
Дар заминхои кишти помидор чунин зараркунандахо зарари худро мерасонанд:

- *Ширинча – бар зидди ин зараррасон аз махлули табиий истифода бурдан аз манфиат берун нест, барои он пустлоки тухмро майда карда дар гирду атрофи нихоли помидор мегузоред, зардоби чакаро бо омехтаи собуни чомашуи мепошед, когазхои тиллоиро дар зери нихоли помидор мегузоред ин нури офтобро ба кафо яъне ба зери барги помидор медихад ва ширинча нобуд мегардад. Кирминаи кирми пахта – ин зараррасон дар вакти пухтани помидор зарари худро медихад. Барои он махлули табиий: 500 грамм лундаи пиёзро майда карда дар дег партофта бо 3 литр об 30 дакика чушонида мешавад ва баъди он хунук карда 50 грамм собуни чомашуи омехта карда дар вакти салкинии хаво коркард гузаронида мешавад. Ба гайри ин 3 – 4 кг,баргу пояи растании «банги девонаро» майда карда дар 3 литр об 30 дакика чушонида баъд хунук карда ба он боз 7 литр об илова ва 50 грамм собуни чомашуи омехта карда дар вакти салкинии хаво коркард гузаронида мешавад.Бо ин усул аз зараррасонхо халос гардида замини назди хавлигиро аз захролуд шави нигох медоред. Яке аз зараррасонхо ин «тукумшулук» мебошад, ки растании помидорро зарар медихад. Бар зидди ин зараррасон пошидани хоки хушк, охаки хушк натичаи нагз медихад.*

Симкирмхо

Ширинча дар барги помидор

Кирминаи кирми пахта дар помидор

Гамбусаки колорадй дар помидор

7. *Дар баъзе маврид гамбусаки колорадй. Бар зидди ин зараррасон коркард мисли коркард зидди кирминаи кирми пахта мебошад.*

8. **Чидани хосили помидор ва истифодаи дуру дарози хосили он:**

Барои истеъмоли хона помидорро дар вакти пурра пухта расиданаш ва дурахшон шуданаш чида гирифтан фоидаовар мебошад. Агар барои шумо хосили помидорро барвакт чамовари кардан лозим ояд дар вакти лундахои помидор рангашонро

Хосили помидори навъи «Новичок новый Русский»

Хосили чамоварда шудаи помидор.

дигаргун кардан яъне ранги тира гирифтан чидан лозим. Барои дуру дароз нигох доштани лундахои помидорро ба пакетхои когази чойгир намудан лозим аст. Барои дар муддати дароз истифода бурдан лундахои помидорро коркард карда мешавад, аз онхо консерва, хушк мекунанд, пудра мекунанд ва фушурдаи поидор низ мекунанд.

Annex 50.

Консультативные услуги домохозяйствам и мелким дехканским хозяйствам в Таджикистане (FAST)

Персиковые, Сливовые и Гибридные Подвои Nemaguard- Немагуард

Мощный подвой, устойчивый к корневым, нематодным наростам. Отлично подходит для почв с хорошими дренажными условиями. На почвах с плохим дренажем, необходима посадка на холмике. Для нектарина, абрикоса, сливы, чернослива, миндаля.

Lovell- Ловэлл

Более устойчив к влажным почвам, чем Немагуард. Более морозоустойчивее. Чувствителен к нематодным проблемам на песчанных почвах. Для слив, персика, нектарина, абрикосов, чернослива, миндаля.

Atlas™*- Атлас

Преимущества: очень мощный подвой, по устойчивости к нематодам похож на Немагуард, продуктивный, увеличивает размер фруктов. Недостатки: возможная нетерпимость к почвам с повышенной влажностью, на некоторых сортах наблюдается задержка созревания плодов. (например сорт Zaiger- Зайгер)

Viking™*- Викинг

Преимущества: мощный подвой, скороспелое дерево, по устойчивости к нематодам похож на Немагуард, продуктивный, увеличивает размер фруктов, отмечена устойчивость к влажным почвенным условиям. (например сорт Zaiger-Зайгер)

Titan- Титан

Титан подвой на основе миндаля и Персик-Немагуард гибридного саженца. Преимущества: высокая мощность, возможная устойчивость нематодным корневым наростам. Высокая корневая устойчивость дерева, терпимость к известковым почвам. Недостатки: чрезмерно мощное развитие на хороших почвах, возможная задержка развития плодов, восприимчивость к корневой гнили больше чем у персиковых саженцев, нетерпим к влажным почвенным условиям. В настоящее время не используется питомником Dave Wilson Nursery.

Данная публикация стала возможной благодаря помощи американского народа, оказанной через Агентство США по международному развитию (USAID). Взгляды автора, выраженные в данной публикации, не обязательно отражают точку зрения USAID или Правительства США. Университет Иллинойс является исполнителем Программы Консультативные услуги домохозяйствам и мелким дехканским хозяйствам в Таджикистане (FAST).

Marianna 26-24- Марианна 26-24

Неглубокая корневая система, более выносливей к влажным почвам чем Ловэлл или Немагуард. Устойчив к грибковым заболеваниям корневой системы, к нематодным корневым наростам. Сравнительно небольшой рост взрослых деревьев. Для абрикосов, слив и большинства сортов миндаля.

Myrobalan 29C- Миробалан 29 С

Неглубокая но мощная корневая система. Выносливость в влажным почвам. Имунитет к корневым нематодным наростам, устойчивость к некоторым грибковым заболеваниям корневой системы. Размер взрослых деревьев больше по сравнению с Марианна 26-24. Для абрикосов, слив и большинства сортов миндаля.

Citation-Сайтейшн

Карликовые персики и нектарины 2.4м. -4.2м. Карликовые абрикосы и сливы ¾ от стандартной высоты. Очень устойчивы к влажным почвам, вызывает раннюю спячку в сухих почвенных условиях. Устойчив к тяжелым зимам. Устойчив к корневым нематодным наростам. Деревья плодоносят в молодом возрасте (например сорт Зайгер- Zaiger)

St. Julian "A"-Джулиан “А”

Полу-карликовый подвой для холодных районов с колебающимися температурами. Весенние температурные колебания погодных условий.

Hansen 536- Хансен 536

Преимущества: Очень мощный подвой, устойчивая корневая система с небольшим числом веток жировиков. Недостатки: необходима посадка на почвах с хорошим дренажом. Восприимчивы к бактериальному раку, фитофтора и к грибковым корневым заболеваниям. В настоящее время не используется питомником Dave Wilson Nursery.

Яблоневые Подвои

Domestic Apple-Доместик Эппл

Самый крепкий подвой для яблонь. Мощная, глубокая корневая система, устойчивая к холодам. Устойчив к влажным, сухим и бедным почвам. Высота деревьев без обрезки от 5 до 9 метров. Деревья на данном подвое могут быть разной высоты в зависимости от обрезки.

M-111

Отличный и распространенный подвой для яблонь. Вызывает раннее и обильное плодоношение. Выдерживает влажную, сухую и бедную почву. Устойчив к кровяной

яблоневой тле и корневой гнили. Карликовые деревья достигают до 85% размера обычного дерева.

M-27

Чрезвычайно карликовый подвой для яблок. Деревья карликовые 6-8 м, идеально подходит для посадки высокой плотности, малых пространств в саду. Вызывает раннее и обильное плодоношение. Неглубокая корневая система, молодым деревьям возможно потребуется опора. Подвой хорош для выращивания в контейнерах.

M-7 & M-7A

Карликовый подвой достигает высоты до 65% от стандартных размеров. Вызывает раннее и обильное плодоношение. Устойчив к бактериальным ожогам, мучнистой росе, умеренно устойчив к корневой гнили. Хорошая корневая устойчивость. Очень зимостойкий, широко применяется. Недостаток: склонность к всходам веток жировиков.

M-9

Преимущества: карликовый подвой высотой 40 - 45% от стандартных размеров, увеличивает размер фруктов, возможное ускорение созревания. Недостатки: слабость к бактериальным ожогам и кровяной яблоневой тле, дереву необходима опора. Неглубокая корневая система может быть чувствительна к засухе.

Mark- Марк

Карликовые деревья достигают половины размера стандартного дерева. Устойчив к бактериальным ожогам, фитофторе и корневой гнили. Высокая корневая устойчивость, не требуется опора. Небольшое количество или отсутствие веток жировиков. Вызывает обильное плодоношение, во избежание нагрузки на дерево необходимо прореживание фруктов. Необходимо плодородная почва, постоянная влага. В настоящее время не используется питомником Dave Wilson Nursery.

BUD-9- БАД 9

Карликовый подвой высотой 1/3 от стандартных размеров. Примерная высота 3м., ширина до 1.8 м. Устойчив к Фитофторе. Отличная скороспелость и морозоустойчивость. Хорош для выращивания в контейнерах.

Вишневые Подвои Mahaleb - Махалеб

Самый зимостойкий из наиболее распространенных вишневых подвоев. Незначительное снижение роста отмечено у черешни. Вызывает раннее и обильное плодоношение. Большая стойкость к корневому, бактериальному раку, к некоторым нематодам. Не терпим к влажным почвам.**Mazzard - Маззард**

Стандартный подвой для черешни. Мощный подвой, более стойкий к влажным почвам чем Махалеб (при хороших дренажных условиях). Устойчив к корневым нематодным заболеваниям и к корневой гнили.

Colt - Кольт

Подвой для черешни. В тяжелых почвах, дерево достигает размеров 70-80% от стандартной высоты. На других почвах уменьшение высоты отмечается меньше. Явная устойчивость к бактериальному раку. Сравнительная терпимость к влажной почве (при хорошей дренажной системе). Деревья начинают плодоношение в раннем возрасте.

NEWROOT-1 НЬЮРУТ-1

Карликовый подвой для вишни от ZAIGER. Карликовые вишни достигают высоты 2.5-3.6 м без обрезки. Способствует раннему плодоношению. Идеально подходит для выращивания в контейнерах. Более универсален, чем Mazzard и Mahaleb. Лучше приспособлен для глинистых почв, чем Mazzard и Mahaleb.

GM61/1

Распространенные сорта вишни на данном подвое будут достигать половины стандартной высоты от 4-6 метров без обрезки. Сравнительно терпим к влажным почвам. Вызывает раннее плодоношение. Деревья на подвое GM61/1 при зеленой обрезке могут иметь любой необходимый низкий рост. В настоящее время не используется питомником Dave Wilson Nursery.

Грушевые Подвои

Winter Nelis / Domestic Pear Seedling

Для Европейских и гибридных груш. Мощный, сравнительно терпимый к влажным почвам подвой. Устойчив к грибкам вызывающим корневое гниение. Взрослые деревья достигают высоты 6-7 метров.

OHxF97

Для Европейских, Азиатских и цветущих сортов груш. Мощный, широкоприменяемый подвой. Зимостойкий, терпим к влажным почвам. В настоящее время не используется питомником Dave Wilson Nursery.

OHxF333

Европейские и Азиатские сорта груш на подвое OHxF333 имеют 2/3 высоты стандартных размеров около 3.5-4.5 метров. Широко используется, устойчив к заболеваниям.

Betulaefolia - Беталуэфолиа

Подвой для цветущих и Азаитских сортов груш. Очень энергичный, хорошо чувствует себя как во влажной, так и в сухой почве, а также в щелочной почве. Устойчив к увяданию груш. Более энергичный подвой, чем Calleryana, и более зимостойкий.

Calleryana - Каллерианна

Подвой для цветущих и Азаитских сортов груш. Предпочтительный подвой для теплого климата и песчанной почвы. Адаптирован для влажных почв. Отмечается уменьшение высоты на азиатских сортах груш, повышается плодоношение у молодых деревьев.

Annex 51. Tip Sheet - Controlling Shot hole Disease

What is shot hole disease and why it is important to control.

Shot hole fungus, sometimes called by its more scientific name Coryneum blight, is a fungal disease that attacks peaches, nectarines, almonds and apricots. This disease attacks the leaves and fruit. When it first appears on leaves, it causes purplish brown spots on the leaves. These purplish brown spots die, and the dead interior of the spot drops from the leaves leaving a hole about two to four mm in diameter. A purple or brown margin surrounds the hole, hence its name, “shot hole” fungus.

If this fungus is left untreated and wet or humid weather is present, then the fungus spreads to the fruit, causing red or brownish spots to develop. These red or brownish spots make the fruit hideous and impossible to sell.

The fungus spreads to the new branches of the tree where it causes brown spots or lesions – full of the fungus – to develop. When the leaves drop from the trees in the autumn, this disease infects the fresh leaf wounds that remain after the leaves drop. In the spring of next year, shot hole fungus spreads from the lesions on branches to new leaves emerging from the tree. The fungus continues to spread to newly formed leaves and developing fruit. This disease cycle continues year after year unless a fungicide prevents it.

Infected fruit is safe to eat. The fruit does not have to be peeled or washed because it will not harm humans or animals.

How to control shot hole fungus

Shot hole fungus is best controlled in the autumn with a fungicide sprayed on infected trees immediately after the leaves drop. When leaves drop from infected trees during this season, they leave behind a fresh wound in the branch. The shot hole fungus rapidly infects this fresh wound.

The fungus stays dormant during the winter. When new leaves emerge in the spring, they become infected by the fungus remaining in the leaf wound.

The best control method is to spray the tree with a copper fungicide or Bordeaux mixture to protect the leaf wounds from infection. This spray must be applied immediately when the trees drop their leaves, or it will not work.

The second best time for controlling the fungus is in the spring when the new leaves are emerging from the trees. A copper fungicide or Bordeaux mixture is sprayed on the leaves as they are emerging from the tree to protect the leaves from infection. A second spray is required if it rains after the spraying was done. A second spray may also be required about three weeks after the first spray to protect the new leaves and young fruit.

Never apply any pesticide or spray when the tree is in bloom.

Annex 52. Tip Sheet - Irrigating Fruit Trees

Proper irrigation of fruit trees is one of the four steps needed for improved fruit quality and to receive a better income from your fruit production. Proper irrigation of fruit trees is necessary for the healthy growth of stems and leaves as well as larger fruit size. Not watering often enough causes the tree to grow slowly, have few branches and leaves and produce small fruit. Not watering often enough may also cause fruit to drop from the tree before it is ripe and weaken the tree to diseases and insects.

Watering too often causes plant roots to suffocate and die. When tree roots begin to die from watering too often, the tree may be ”loose” in the soil, e.g. it may move readily in the soil when pushed or it may fall over during strong winds. Watering too often may cause a disease that “chokes” the trunk of the tree where it meets the soil and the tree suddenly dies in the middle of the summer.

The other three steps needed to produce good quality fruit are proper pruning, thinning of fruit and proper fertilizer application to the fruit trees.

Water is essential for fruit tree growth of stems and leaves and the production of large, high quality fruit. If fruit trees do not receive enough moisture - e.g. not well-watered or rainfed - often enough, this lack of water causes the leaves and stems to grow poorly. The tree will look unhealthy. A lack of water for fruit trees during hot weather causes leaves to turn brown along the edges, or yellow and drop from the tree. If the watering problem is not resolved, branches will die.

Fruit trees that receive water frequently enough and in sufficient volumes will be full of new leaves and stems. The tree will look healthy. The fruit will be large and high quality.

As fruit is growing, it requires a constant supply of water from the tree to become large. If water is not supplied adequately to the fruit as it is growing, the fruit will stay small. If water is not supplied to the tree for an extended period of time, it will cause fruit to drop from the tree before it is ripe. Having enough water for the tree when it is producing fruit is a necessity for good quality fruit production.

Irrigation water should be applied more often during the summer months compared to the spring and fall months. Fruit trees receive water from their roots. This water is transported from the roots to the leaves by the trunk and stems. Irrigation water is lost from the leaves to the air much like our perspiration. As temperatures become hotter and during windy weather, water is lost more rapidly

from the leaves than during cooler weather or when winds are not blowing. If water is lost from the tree more rapidly, irrigation water must be applied to the soil more often.

If water in the soil is not adequate, the tree first begins to drop leaves, so it does not use as much water. If irrigation water is not applied soon enough, fruit starts to fall from the tree. If irrigation water is still not available, branches of the tree begin to die.

Irrigation ditches should be placed no closer than .5 to .75 m from the tree. If irrigation water is applied close to the tree trunk, it may cause the tree or tree roots to die. Some tree roots become diseased if the soil is wet for long periods. In some cases, the tree trunk may also become diseased where it enters the soil.

Root and trunk diseases in wet soils are common in peach, nectarine, apricot, cherry and plum, but are less common in apple and pear trees For this reason it is best to construct the irrigation ditch at least .5 m to as much as .75 m from the trunk. Water will move from the irrigation ditch underground through the soil to the tree roots at that distance. Tree roots will grow toward the water from the ditch and concentrate there.

During the first season of growth, some farmers construct a small basin - connected to the irrigation ditch - around the tree. Water from the irrigation ditch flows to the basin around the tree. After one or two seasons, this basin is no longer used. Keeping irrigation ditches .5 to .75 m from the tree helps prevent diseases of the roots and the trunk from occurring particularly in peach, nectarine, apricot, cherry and plum.

Irrigation ditches are where fruit tree roots grow best. Fruit tree roots grow best where there is a good mixture of air, water and fertilizer. Roots of fruit trees planted near irrigation ditches will grow toward the water in the ditch. If the soil around the tree is dry in areas far from the irrigation ditch, tree roots will not grow in that direction. If water is applied to both sides of the fruit trees evenly, tree roots will grow evenly in all directions to receive this water.

Fertilizers, manure and compost applied near the irrigation ditches will dissolve in the soil and water and release nutrients to the tree. Tree roots will pull this water inside the tree and take these dissolved nutrients inside the tree as well. Fertilizers, manure and compost are best applied where there is irrigation water to move them inside the tree.

Annex 53. Tip Sheet - Pruning

Pruning is one of the four steps necessary for improved fruit quality and increased income from your fruit production. The other three steps are: (1) thinning young fruit so the remaining fruit grows larger, (2) fertilizing properly, and (3) irrigating the fruit trees properly. Pruning fruit trees when they are young establishes the structure of the tree early in its life, which is essential. A well-formed structure allows the tree to support the fruit without breaking. Proper pruning distributes the leaves and fruit so that each tree produces a maximum amount of good quality fruit distributed throughout the tree where it is easiest to harvest. Proper pruning permits more sunlight to enter the inside of the canopy of the tree. More sunlight to the interior of the tree produces healthy-looking fruit with more color. Fruit that looks better brings a higher price at the marketplace.

Pruning the fruit trees includes two steps: 1) removing unwanted wood with shears, loppers, or saw, and 2) training the tree to grow in the form that is easiest to manage and produces high-quality fruit.

Diagram 1. Trees pruned with an open center

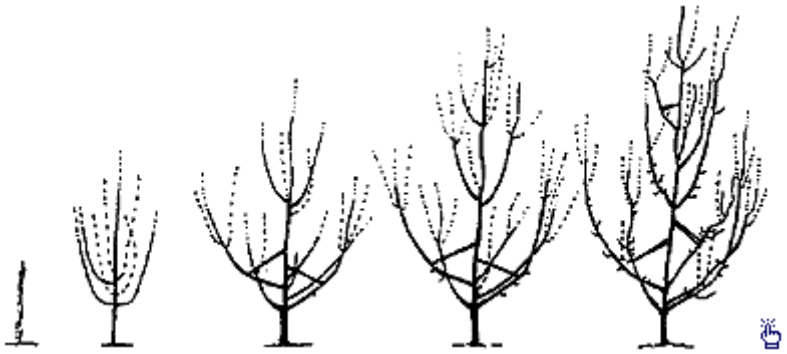


Diagram 2. Trees pruned with a central leader stem

Fruit trees differ in performance depending on the way in which they are pruned; therefore, they are pruned in one of two ways: (1) with an open center or (2) in central leader form, where the central growing stem is maintained. Fruit trees pruned with an open center are those that tend to grow wide, including peach, nectarine, apricot, and Japanese plum trees. In the open center form of pruning, the middle of the tree is removed so that sunlight can penetrate to the interior of the tree. This method removes shade caused by a central leader and makes picking easier because the tree tends to grow wide. Sunlight penetrating to the interior of the tree improves the quality of the fruit produced and enables fruit to be formed throughout the entire canopy of the tree

Modified central leader pruning is used on trees that tend to grow more vertically, maintaining the central stem of the tree. Branches growing from the central leader are spaced so that sunlight can easily penetrate to the inside of the tree. Trees that are generally pruned in central leader form include apples, pears, cherries and European plums.

Photo 1. Tree with correct radial distribution of branches

Large limbs should grow from the trunk of the tree like spokes on wheels to distribute the leaves and fruit in the canopy of the tree.

Most pruning of established fruit trees is done in the winter months when trees are dormant. Winter pruning, or dormant pruning, allows significant changes to be made to the tree's structure with little risk of damage. Large limbs may be removed during dormant pruning if needed.

*Photo 2. Tree with waterspout*s

The second most important time for pruning is in the spring after new growth has occurred, which is sometimes called "summer pruning", even though it is usually done in late spring. Summer pruning helps to keep trees smaller. Summer pruning removes undesirable new growth when young and small rather than waiting until winter. Unwanted growth includes substantial new vertical growth coming from larger limbs (*watersprouts*) or from the base of the tree (*suckers*). Other unwanted growth includes downward-growing branches, those growing towards the interior of the tree and branches that are crossing each other. Summer pruning is when new suckers are removed from the rootstock before they become large.

If unwanted growth is removed when it is first seen, there is no need for pruning shears. This type of new growth is soft and succulent, not tough and woody. New growth can be pulled from the tree easily. If summer pruning is delayed, the soft, succulent growth becomes hard and woody and must be cut from the tree. Small branches can be pruned from the trees any time of the year.

Photo 3. Tree with a limb spreader

Branches that produce a healthy balance of new growth and fruit are best trained at a 45° angle. Branches growing vertically will produce leaves and stems but very little fruit. Branches growing horizontally will grow very slowly but will flower and fruit very well. Therefore, training branches to a 45° angle gives the branch a good balance between growth and fruit production. Fruit tree branches can be forced to grow at this angle when they are young – two years or less in age. Branches that are growing vertically can be bent to this angle using sticks called “limb spreaders”.

Annex 54. Tip Sheet - Thinning

Thinning, or removing some fruit so that the remaining fruit gets larger, is one of the four steps needed for improving fruit quality and receiving a higher income from your fruit production. The other three steps are proper pruning, proper fertilizing and proper irrigating of the fruit trees. When fruit trees are permitted to grow without proper pruning, proper fertilizing, additional water and no thinning of fruit, the number of fruit produced will be large but few fruit will have good quality. If fruit is not removed from trees early, the remaining fruit will be more weight than the limb can hold and these limbs may break. Farmers will see a better income from their orchards and reduce limb breakage if fruit trees are thinned.

Removing fruit results in better quality fruit and improved income. Removing some of the fruit when the fruit is very small results in more food and energy produced by the tree given to the remaining fruit. When the remaining fruit receives more food and energy, the remaining fruit becomes larger. Larger fruit brings more money at the marketplace than small fruit.

Thinning fruit must be done when the fruit is small. The fruit tree collects energy from the sun through its leaves. The fruit tree also collects nutrients from the soil from its roots. Energy and nutrients are distributed among all the fruit growing on the tree. If there are too many fruit, each of the fruit will receive less energy and nutrients, grow poorly and result in smaller fruit. When the tree has fewer fruits remaining, each fruit receives more energy and nutrients and becomes larger.

Unnecessary fruit is removed when the fruit is small, 2 cm in size or smaller. If fruit is allowed to become large and then removed, energy and nutrients that could have gone to the other fruits is also removed. Other fruits remaining on the tree never receive the energy and nutrients in removed fruit. Once large fruit is removed, the energy and nutrients can never be given to the remaining fruit.

Thinning the fruit of peaches, nectarines, apples, apricots and plums. Thinning of fruit is not done to cherries, pomegranates and almonds because very little increase in fruit or nut size occurs when thinning is done to these trees.

Fruit thinning is done by hand or pole. Each year in the spring fruit is removed from orchard trees so the remaining fruit will become larger. Peaches and nectarines are removed by hand or with a long stick. Fruit is removed by gently pulling or twisting the fruit from the branch. On limbs higher in the tree, a long stick may be used to gently hit the limb several times, knocking the fruit to the ground.

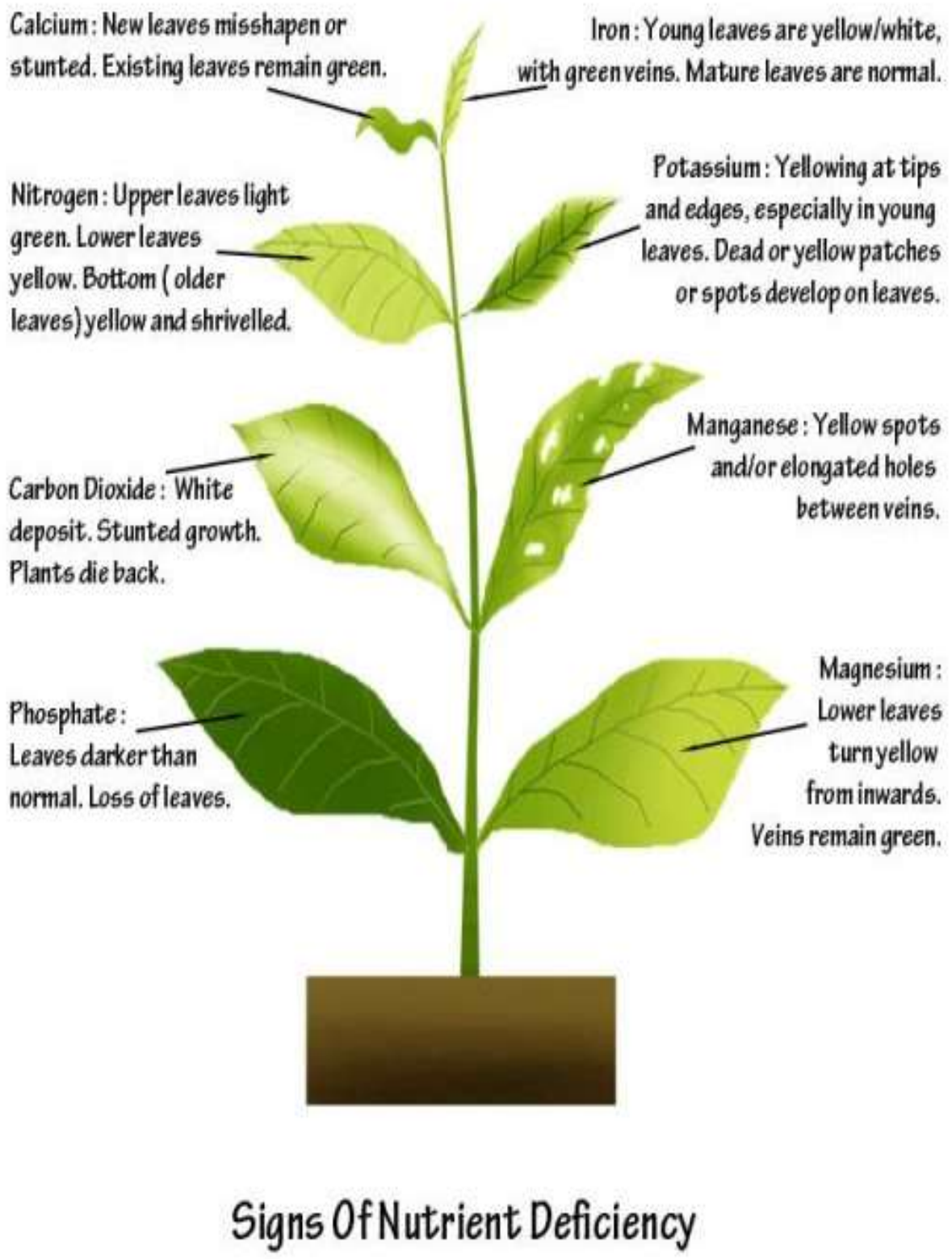
The amount of fruit to remove depends on the number of fruit on the tree and the mature size of the fruit. Large fruit such as apples must have more space between fruit than smaller fruit such as apricots. In some years there may be many more fruit than in other years. When this happens, more fruit must be removed. When the amount of fruit on the tree is small, less fruit is removed.

Thinning apricots and plums. Apricots and plums are small. Remove fruit so the remaining fruit is 5 to 10 cm apart on the branch. Remove fruit by hand or a long stick. Remove the smallest fruit when possible.

Thinning peaches and nectarines. Peaches and nectarines fruits are larger and thinned from 7 to 12 cm apart. In some years more fruit must be removed than in others. Peach and nectarine fruit is normally removed by hand.

Thinning apples. Apples produce fruit in clusters. Leave no more than one or two fruit in each cluster of fruit. Remove the smallest fruit when possible. If there is much fruit on the limbs, fruit should be 15 to 20 cm apart. Apples are normally removed by hand.

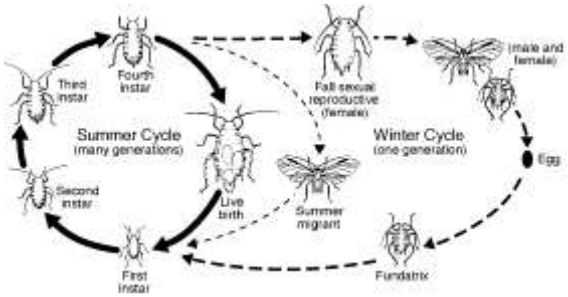
Annex 55. Tip Sheet - Signs of Nutrient Deficiency



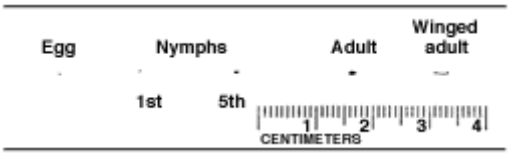
Signs Of Nutrient Deficiency

Annex 56. Tip Sheet – Aphid

Adult aphid *young immature to adult*



General life cycle of aphids *Hand lens*



1. Adults: Cucumber aphids are small aphids, approximately (1-2 mm) in length. Earlier stage aphids are less than 1 mm. Adult aphids can give birth to live young and reproduce quickly.
2. 'Scouting'* the hoop house on a weekly basis is extremely important. Look for aphid under the leaves with hand lens. Closely scout cucumber plants that are close to openings such as doors, end walls, and weeds inside the hoop house.
3. Aphids can transmit several different plant viruses and it is important to have basic knowledge of the lifecycle and stages of development.
4. What to do if you have various populations using a hand lens:
    - 0 to 5 adults per leaf: monitor closely on leaves
    - 6 to 20 adults per leaf: use spray program or introduce biological control
    - 21 and above per leaf: continue spray programs or flood hoop house with biological control agents

*Scouting (verb): Routinely walking the hoop house and looking at plants
http://www.ipm.ucdavis.edu/PDF/PESTNOTES/pnaphids.pdf

Annex 57. Tip Sheet - Orchard Calendar

The following is a seasonal calendar of normal Orchard operations:

January

- Dormant Pruning
- Pest Control - Horticultural oil application - scale insects, spider mites and aphids
- Weed control and sanitation
- Apply fertilizer, one application for the year
- Irrigation - every two to three weeks

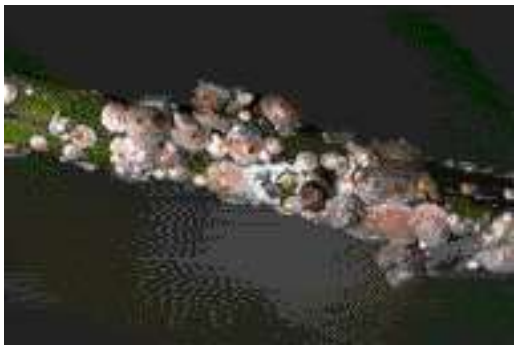


Figure 1. Scale insects

February

- Thin early peaches and apricots
- Grafting and budding
- Pest control -second horticultural oil application, spray copper fungicide or Bordeaux mix to control Coryneum blight or shot hole fungus (second best time for control)
- Irrigation - every two weeks

March

- Pest control - aphids and ants, stinkbugs, spray copper fungicide or Bordeaux mix to control Coryneum blight or shot hole fungus (second best time for control)
- Prune grapes
- Thin peaches, apples, pear, plum, grapes
- Summer pruning - remove unwanted new growth
- Grafting and budding
- Limb spreaders
- Irrigation every two weeks
- Weed control

Figure 3. Limb spreader

April

- Summer pruning – remove unwanted new growth
- Grafting and budding
- Limb spreaders
- Thin apples and pears
- Pest control - aphids and ants, stinkbugs
- Irrigation every two weeks
- Weed control

May

- Harvest
- Sanitation – Pick up fallen fruit from the ground and compost it
- Pest control - aphids and ants, stinkbugs
- Irrigation every week
- Weed control

June

- Harvest
- Sanitation – Pick up fallen fruit from the ground and compost it
- Pest control - spider mites
- Irrigation every week
- Weed control

Figure 2 Stinkbug

July

- Harvest
- Sanitation – pick up fallen fruit from the ground and compost it
- Pest control – spider mites
- Irrigation every week
- Weed control

August

- Harvest
- Sanitation – pick up fallen fruit from the ground and compost it
- Pest control – spider mites
- Irrigation every week
- Weed control
-

Figure 3 Spider mites

September

- Harvest
- Sanitation – pick up fallen fruit from the ground and compost it
- Pest control
- Irrigation every two weeks
- Weed control

October

- Harvest
- Sanitation – pick up fallen fruit from the ground and compost it
- Pest control
- Irrigation every two weeks
- Weed control

November

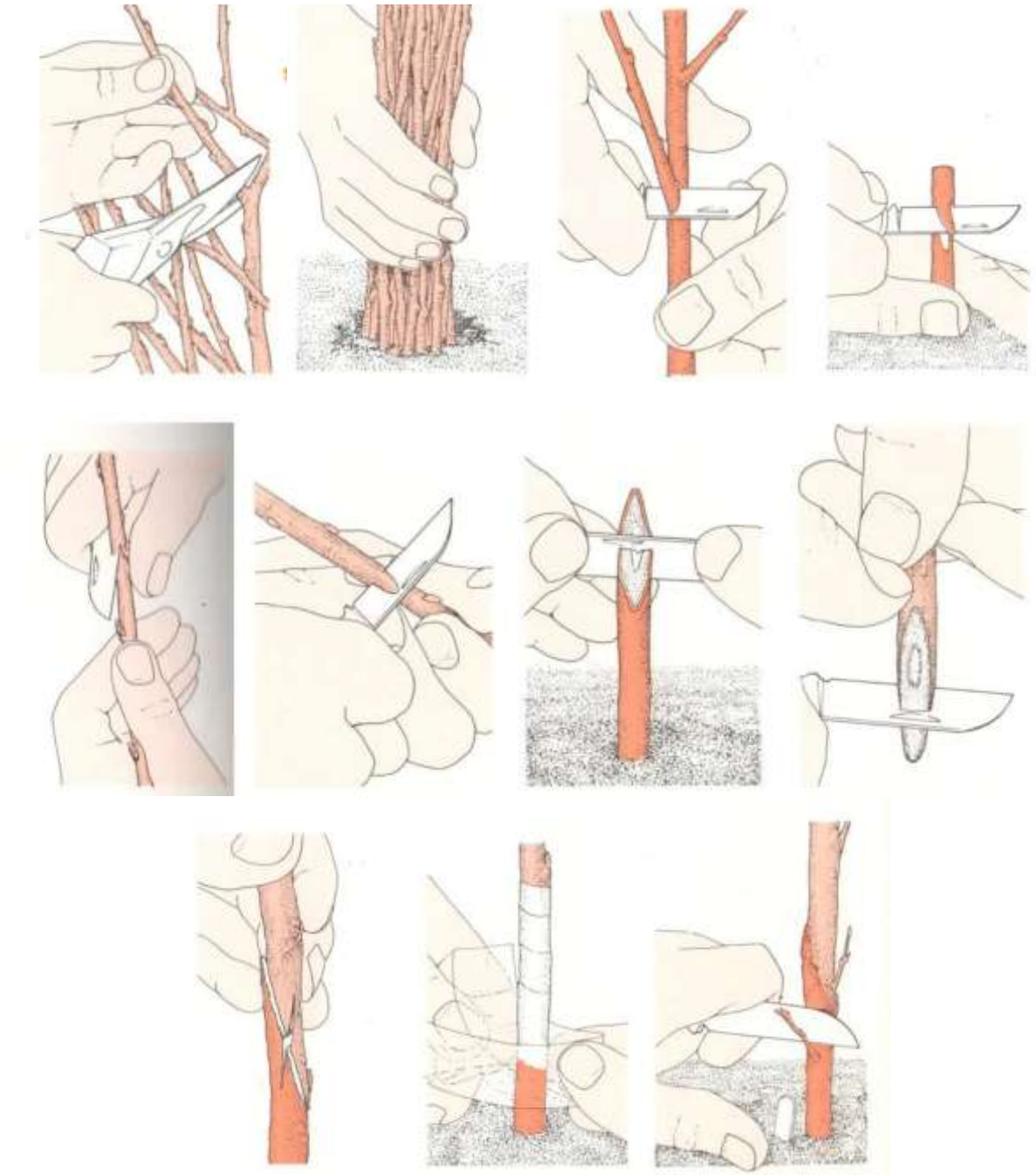
- Harvest
- Pest control - spray copper fungicide or Bordeaux mixture **immediately after leaf drop** for controlling Coryneum blight or shothole fungus (best time for control)
- Irrigation
- Begin dormant pruning after leaf drop
- Weed control

December

- Dormant pruning
- Pest control – horticultural oil application – scale insects, spider mites and aphids
- Irrigation - apply every three weeksWeed control

Annex 58. Orchard Tree Grafting Steps (in Russian)

Барномаи Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон (FAST)



Маводи мазкур бо кӯмаки мардуми Амрико таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣпешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур маҳсули Барномаи «Хизмати машваратӣ барои хонаводаҳо вахоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқатнакунад. Донишгоҳи Иллинойс амаликунандаи барнома мебошад.

Annex 59. FAST Orchard Calenda

БАРНОМАИ ХИЗМАТИ МАШВАРАТӢ БАРОИ ХОНАВОДАҲО ВА ХОҶАГИҲОИ ХУРДИ ДЕҲҚОНӢ ДАР ТОҶИКИСТОН (FAST)

РУШДИ БОҒДОРӢ ВА ТОКПАРВАРӢ

2015

НУРИИ БОҒ ВА ТОКЗОР

а) Боғоти нав (ҷавон)ро- бо усули (траншей) хандақӣ бунёд кардан ва ба он андохтани нурии захиравӣ ба мақсад мувофиқ аст. Ба ҳар як ниҳол дар зери хандаки 45-60 см чуқурӣ доштa, ё чуқурчаи ниҳол 8-12 кг поруи нимпӯсида ё компостӣ нигоҳ доштa шуда- 0,8 P_2O_5 (4-5кг суперфосфат) 0,25-0,3 кг K_2O (0,5-0,6 кг хлориди калий)-ро андохта, аз болояш 20-40см хок пӯшонида баъд ниҳолро шинонида ба чуқурчаи ниҳол 10-20 литр об рехтан тавсия дода мешавад. Дар ин ҳолат ба боғи навбунёд дар соли аввал ғизо (нурӣ) дода намешавад. Нуридиҳӣ танҳо дар соли 2-юм ва минбаъд тавсия дода мешавад.

МЕЪЁРИ МИЁНАИ НУРИҲО ДАР БОҒҲОИ ҶАВОН БАРОИ ЯК НИҲОЛ

[illegible]	[illegible]	[illegible]			[illegible]	
		Пору, кг	N, г	P_2O_5, г	N, г	P_2O_5, г
1-2	1,5 - 2	10	18	18	60	40
3-4	2,5	15	30	30	100	60
5-6	3	20	40	40	140	80
7-8	3,5	25	60	60	180	100
9-10	4	30	75	75	220	130

НУРИИ БОҒИ ҲОСИЛДЕҲ

б) Вобаста аз синусоли боғ (3-13 сол) ба ҳар як ниҳол дар доираи назди тана андохтани 10-80 кг пору, 15-20 г N (45-60 г карбомид) 15-100 г P_2O_5 (0,1-0,85 кг суперфосфат) ва 10-100 г K_2O (0,02-0,25 кг сульфати калий) тавсия карда мешавад.

Пору, нуриҳои фосфорӣ ва калийгӣ беҳтар аст, ки тирамоҳ дар зери шудгори чуқур дар байни қаторҳо андохта шаванд. Нуриҳои нитрогенӣ одатан дар баҳор дар давраи нашъунамо ба шакли ғизо андохта мешаванд: Бори аввал баъди гулкунӣ, дуюм бор баъди ташаккули физиологии мева. Вобаста аз синну соли дарахт нурӣ аз танаи дарахт дар масофа ва чуқурии гуногун: то 2м–дар чуқурии 15 см, 2-3 м-25 см ва 4м-38-40 см андохта мешавад. Дуруст муайян намудани масофаи андохтани нурӣ аз дарахт ин ба 2 тақсим намудани диаметри давраи (кронаи) шохаҳои дарахт (М=Д:2) мебошад.

ИСТИФОДАБАРИИ НУРИҲО БА ДАРАХТОНИ БОҒ ВА ТОКЗОР ДАР ЗАМИНҲОИ ОБӢ

	Мӯҳлатҳои нуридиҳӣ	Дарахтони тухмдор			Дарахтони донакдор			Дарахтони чормағз			Дарахтони субтропикӣ			Токзор		
		150 кг/га			120 кг/га			80 – 100 кг/га			150 кг/га			120 кг/га		
		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
1	Зери шудгори тирамоҳӣ	-	100	50	-	60	40	-	60	50	-	60	50	-	90	60
2	Хангоми нармкунии барфоб [illegible]	50	-	-	20	-	-	-	-	-	-	-	-	20	-	-
3	Ғизодиҳӣ дар давраи нашъунамо: то гулкунӣ	60	-	-	60	-	-	60	-	-	30	-	-	30	-	-
4	Ғизодиҳии дуюм: а) ташаккулёбии физиологии мева	40	-	30	40	-	-	40	-	-	80	-	-			
	б) 10–15 рӯз баъди гул													50	-	-
	Ҳамагӣ	150	100	60	120	60	40	100	50	50	80	60	50	120	90	60

Эзоҳ: Дар амалияи истифодаи нуриҳо, меъёри онҳоро ба шакли моддаи таъсиррасон (N,P,K ба ҳисоби кг/га) муайян менамоянд ва меъёри ҳар як моддаи ғизоиро ба шакли нуриҳои гуногуни хоҷагӣ бо воситаи коэффитсиентҳои баргардонанда ҳисоб кардан мумкин аст:
N – ро ба карбамид -2,2; селитраи аммонийӣ -2,9; сулфати аммонийӣ – 5.
P_2O_5 - ро ба суперфосфати оддӣ (14 %) – 7; суперфосфати дучанда (28 %) – 3,57 ва (40 %) -2,5; аммофос – 1,6.
K_2O – ро ба хлориди калий -1,6 ; намаки калий – 2,5 ; сулфати калий – 1,8.
Ҳарсола 10 т/га ё ҳар се сол як маротиба 30 – 40 т/га пору истифода бурда мешавад.

Январ

п	в	с	ч	п	с	в
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Феврал

п	в	с	ч	п	с	в
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Март

п	в	с	ч	п	с	в
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Апрел

п	в	с	ч	п	с	в
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Май

п	в	с	ч	п	с	в
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Июн

п	в	с	ч	п	с	в
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Июл

п	в	с	ч	п	с	в
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Август

п	в	с	ч	п	с	в
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Сентябр

п	в	с	ч	п	с	в
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Октябр

п	в	с	ч	п	с	в
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Ноябр

п	в	с	ч	п	с	в
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Декабр

п	в	с	ч	п	с	в
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Annex 60. FAST Vegetable Calendar

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

БАРНОМАИ ХИЗМАТИ МАШВАРАТӢ БАРОИ ХОНАВОДАҲО ВА ХОҶАГИҲОИ ХУРДИ ДЕҲҚОНӢ ДАР ТОҶИКИСТОН (FAST)

РУШДИ САБЗАВОТКОРӢ

2015

НУРИИ САБЗАВОТ (ПОМИДОР, КАРАМ ВА БЕХМЕВАҲО)

Меъёр: - барои ҳосили миёнаи 200-250 с/га вобаста аз ҳосилхезии хок ва навъи зироат (барвақтӣ ё дер) N-120-160, P_2O_5-100-120 ва K_2O-60-80 кг/га ва 20-40 т/га пору(барои зироати пиёз ҳатман поруи пӯсида).

Мӯҳлатҳои нуриdиҳӣ: - ҳамаи пору, 70-75% P_2O_5 50-70% K_2O ба зери шудгор ҳамчун нурии асосӣ андохта мешаванд. Дар сурати 150 кг/га ва аз он зиёд будани меъёри N то 50%-и онро ҳангоми коркарди пеш аз кишти зироат меандозанд. Ҳангоми кишти тухмӣ 15-20 кг/га N, 25 кг/га P_2O_5 ва баъди саросар сабзидани тухмӣ ё баъди саршавии сабзиши ниҳол ғизои якум то 30% аз меъёри N, ҳангоми саршавии пайдошавии бех (сабзӣ, лаблабу, пиёз), ё саросар ғунчабандӣ (помидор), саршавии печонидани калла (карам) ғизои дуюм бо меъёри 50% N, 30% P ва K_2O ва баъди 15-20 рӯз аз ғизои дуюм ҳангоми гулкунии саросар ё ташаккулёбии ҳосил ғизои сеюм-боқимондаи N (20%) андохта мешавад.
Дар сурати аз 150 кг/га кам будани меъёри N пеш аз кишт ва ғизои сеюм дода намешавад.

	Мӯҳлатҳои нуриdиҳӣ	Бодиринг – 200 с/га				Помидор – 500 с/га			Карам – 300 с/га			Пиёз – 500 с/га			
		Меъёри истифодаи нуриҳои маъданӣ ба ҳисоби моддаи таъсирбахш кг/га, пору бошад ба ҳисоби физикӣ, тн/га													
		Пору	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	Пору	N	P_2O_5	K_2O
1	Зери шудгори тирамоҳӣ	20	-	80	75	-	80	80	-	70	50	30	-	40	40
2	Ҳангоми коркарди хок пеш аз кишт	-	-	-	-	-	-	-	[illegible]	-	-	-	30	35	30
3	Якҷоя бо кишт	-	20	20	-	20	20	-	25	20	-				
4	Ғизодиҳӣ дар давраҳои нашъунамо:														
	а) 2- ҳафта баъди ниҳолшинонӣ					40	-	-	40	-	-				
	б) 2- ҳафта баъди сабзиш												40	-	-
	в) 2-3 баргагӣ	-	30	-	-										
	г) пеш аз гулкунӣ														
	д) баъди ягонакунӣ														
	е) 10–15 рӯз баъди сабзиш														
5	Ғизодиҳии дуюм:														
	а) пеш аз гулкунӣ	-	60	-	-										
	б) ғунчабандӣ					80	-	20							
	в) саршавии печонидан								60	-	-				
	г) [illegible]											-	50	-	-
	д) [illegible]														
	е) 5-6 баргагӣ														
6	Ғизодиҳии сеюм:														
	а) гулкунӣ ва ташаккули ҳосили аввал	-	40	-	-	40	-	-							
	Ҳамагӣ	20	150	100	75	100	100	100	150	90	90		120	75	70

Эзоҳ: Дар амалияи истифодаи нуриҳо, меъёри онҳоро ба шакли моддаи таъсирбахш (N,P,K ба ҳисоби кг/га) муайян мекунанд ва меъёри ҳар як моддаи ғизоиро ба шакли нуриҳои гуногуни воқеӣ бо воситаи коэффитсиентҳои баргардонанда ҳисоб кардан мумкин аст:

N – ро ба карбамид -2,2 ; селитраи аммиакӣ – 2,9; сулфати аммоний – 5.
P_2O_5 ро ба суперфосфати оддӣ (14 %) – 7 ; суперфосфати дучанда (28 %) – 3,57 ва (40 %) -2,5 ; аммофос – 1,6.
K_2O – ро ба хлориди калий -1,6 ; намаки калий – 2,5 ; сулфати калий – 1,8.

Январ

п	в	с	ч	п	с	в
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Феврал

п	в	с	ч	п	с	в
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Март

п	в	с	ч	п	с	в
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Апрел

п	в	с	ч	п	с	в
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Май

п	в	с	ч	п	с	в
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Июн

п	в	с	ч	п	с	в
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Июл

п	в	с	ч	п	с	в
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Август

п	в	с	ч	п	с	в
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Сентябр

п	в	с	ч	п	с	в
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Октябр

п	в	с	ч	п	с	в
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Ноябр

п	в	с	ч	п	с	в
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Декабр

п	в	с	ч	п	с	в
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

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АЗ МАРДУМИ АМРИКО

Маводи мазкур бо кӯмаки мардуми Америко таҳия шудааст, ки он ба воситаи Агентии ИМА оид ба рушди байналмилалӣ пешниҳод мегардад. Мазмун ва мундариҷаи нашрияи мазкур Барномаи «Хизмати машваратӣ барои хонаводаҳо ва хоҷагиҳои хурди деҳқонӣ дар Тоҷикистон» буда, метавонад бо нуқтаи назари USAID ва Ҳукумати ИМА мувофиқат накунад.

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The U.S. Government's Global Hunger & Food Security Initiative

Annex 58. Copy of Planting Calendar for Crops

Product / Намуди маҳсулот	Season 1 harvest date / Мавсими 1 вақти ҷамоварии ҳосил	Season 1 Planting date / Мавсими 1 муҳлати кишт	Season 2 harvest date / Мавсими 2 вақти ҷамоварии ҳосил	Season 2 Planting date / Мавсими 2 муҳлати кишт	Season 3 harvest date / Мавсими 3 вақти ҷамоварии ҳосил	Season 3 planting date / мавсими 3 муҳлати кишт
Маккаи дон / corn for seeds			25 September to 15 Oktober\25 сентябр то 15 октябр	15 May to 10 July\15 май то 10 июл	0	0
Помидор / Tomato	10 - 15 June \ 10-15 Июнӣ	5 March to 20 March /с 5 Марта по 20 Марта	20 August to 25 Oktober\20 Август то 25 Октябр	15 May to 10 July\15 май то 10 июл	0	0
Бодиринг/ Cucumber	10 - 15 June / 10-15 Июнӣ	5 March to 20 March / с 5 Марта по 20 Марта	20 August to 25 Oktober / 20 Август то 25 Октябр	15 May to 10 July\15 май то 10 июл	0	0
Макка барои хуроки чорво / Corn for feed	20 - 25 July / 20-25 Июл	10 Марта по 10 Апреля / 10 March to 10 of April	25 Oktober to 15 November / 25 октябр то 15 ноябр	15 May to 10 August\15 май то 10 август	0	0
Сабзи / Carrot	20 - 25 July / 20-25 Июл	20 September to 10 October / с 20 сентября по 10 Октября	25 Oktober to 15 November / 25 октябр то 15 ноябр	15 July to 10 August\15 июл то 10 август	15 May to 15 June / 15 май то 15 июн	10 Oktober to 20 Oktober / 10 октябр то 20 октябр
Карам / Cabbage	20 - 25 July / 20-25 Июл	10 Января по 10 Февраля / 10 January to 10 of February	25 August to 15 Oktober / 25 август то 15 октябр	15 May to 10 August\15 май то 10 август	20 November to 5 January / 20 ноябр то 5 январ	10 September to 10 Oktober / 10 сентябр то 20 октябр
Картошка / Potato	15 May to 10 Jun / 15Май то 10 Июн	25 November to 20 December /25 Ноября по 20 Декабря	25 Oktober to 15 November / 25 октябр то 15 ноябр	1 to 10 August\1 то 10 август	15 May to 10 June\15 май то 10 июн	25 November to 20 December 25 ноябр то 20 декабр
Юнучқа / Alfalfa	25 March to 25 November / 25Март то 25 Ноябр	20 Август по 10 Октября / 20 August to 10 October	25 Oktober to 10 November / 25 октябр то 10 ноябр	0	0	0
Гандум / Wheat	15 May to 10 Jun	20 September to 25 November / с 20 Сентября по 25	0	0	15 May to 10 June / 15 май то 10 июн	25 November to 20 December / 25 ноябр то 20 декабр
Лук / Onion	20 August to 20 September /20 Августа по 20 Сентября	10 Февраля по 10 Марта/10 February to 10 of March	0	0	20 May to 10 June с 15 Апреля по 20 Мая	10 Сентября по 10 Октября /10 September to 10 October

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