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PRODUCTIVE AGRICULTURE PROJECT ANNUAL PROGRESS REPORT YEAR V, OCTOBER 2013 – SEPTEMBER 2014



October 2014

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ANNUAL PROGRESS REPORT

YEAR V, OCTOBER 2013 – SEPTEMBER 2014

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Executive Summary

In its final year USAID's Productive Agriculture Project achieved its goal of **increased income opportunities for farmers**. The project's beneficiary farmers reported 148 percent increase in their income over the baseline, well above the 25 percent target. This year the farms generated \$765,482 in incremental sales attributed to the project. This came as a result of identifying market opportunities and addressing gaps in the target value chains to increase farmers' access to these markets. Onion farmers reported 193 percent increase in income and orchard farmers reported a 56 percent increase in income despite late frost which damaged their orchard crop.

During the year the project partners reported \$1.5 million of new private sector investment in critical upgrades in storage, processing, input stores and farm infrastructure and machinery. These upgrades are badly needed in Tajikistan, especially in less-developed Khatlon. The project facilitated five new investments in cold storages with the storage capacity of 250-400 MT each collectively valued at about \$550,000 and two new investments in fruit and vegetable processing facilities collectively valued at over \$300,000 once completed¹. These investments were made in Khatlon which has very few processing and storage facilities. The project supported investments in two pilot mobile refrigerated units to demonstrate the benefit of precooling fruits and vegetables right after harvest in the field, to extend the produce' life. One hundred farmers received incentive grants to purchase tractors to increase their farm productivity. These tractors were used as collateral to secure loans from financial institutions which helped finance their purchase.

The project expanded the network of certified input dealers in Khatlon by creating demand for improved inputs. As a result of market growth, the dealer network reported a \$496,481 increase in sales. The project used a variety of interventions including fairs, stakeholder meetings, demonstrations and training to promote the use of certified inputs and good agricultural practices. A big highlight of the year was International Agro-Expo in Khatlon organized in August 2014. This year the input dealer network grew to 45 input dealers country-wide, including 23 dealers in Khatlon—at least one dealer in each of the 12 Feed-the-Future (FtF) districts. The project supported a wholesale input dealer Sugdagroserv (SAS²) to open five new retail input stores in Khatlon and sign agreements with five other dealers for the sale of certified inputs. Prior to this, farmers in remote districts of Khatlon had to travel up to 150 km to major input markets, often to buy counterfeit and low-quality inputs. The project continued supporting input dealers in developing their businesses, establishing stronger network of wholesalers and retailers and promoting demonstrations and embedded technical assistance for the use of certified inputs.

During the year the project directly supported 300³ farms to access new productive technologies for early onions and orchards. The project continued seeing strong increases in yield of the participating early onion and orchard farmers who used certified inputs and had access to agricultural extension services, mechanization, financial services and marketing facilitated by the project. As a result, early onions yielded 42.4 tons per hectare, which is a 19 percent increase over the baseline. Gross margin on early onions was \$8,447 per hectare, which is a 408 percent increase over the baseline. Orchard crops yielded 1.2 tons per hectare, which is a 10 percent increase over the baseline. This led to \$403 gross margin per hectare, which is a 76 percent over the baseline.

² Changed name to Neksigol in July 2014

³ 2013/2014 voucher program

As indicated in an August 2014 survey, most farmers continued to use certified inputs and apply good agricultural practices even when these inputs were no longer subsidized by the project. During the year the project's farmers applied new farming technologies and management practices to almost 311 hectares of land. They invested over \$1.0 million in new machinery, other equipment, and facilities, which helped increase their productivity and, ultimately, incomes.

The project facilitated almost \$1.8 million in loans from financial institutions by the value chain actors, to fuel investments into these value chains. The project supported the development of a sustainable private-sector-based and an NGO-based agricultural extension service, which continues providing these critical services to the farmers beyond the end of the project.

Using local service providers the project continued looking for new market opportunities for the farmers. The project's marketing efforts included stakeholder meetings, open field days and fairs, which helped establish linkages between the value chain participants and resulted in a number of commercial transactions (sales of produce and inputs). Through the Association of Agribusinesses of Tajikistan (AAT) the project opened two sale points for Khatlon farmers at the wholesale markets in Dushanbe and Bokhtar district of Khatlon. This year no farmers complained about not being able to sell their produce.

Highlights of the Year

Performance Against Key Indicators

Farm Income, Yield and Gross Margin

The project directly supported 300 farms to access new productive technologies for orchards and early onions through its voucher programs during the 2013/2014 production season. This support coupled with increased access to extension, mechanization and financial services resulted in a 19 percent increase in yield for early onions and a 10 percent increase in yield for orchards.

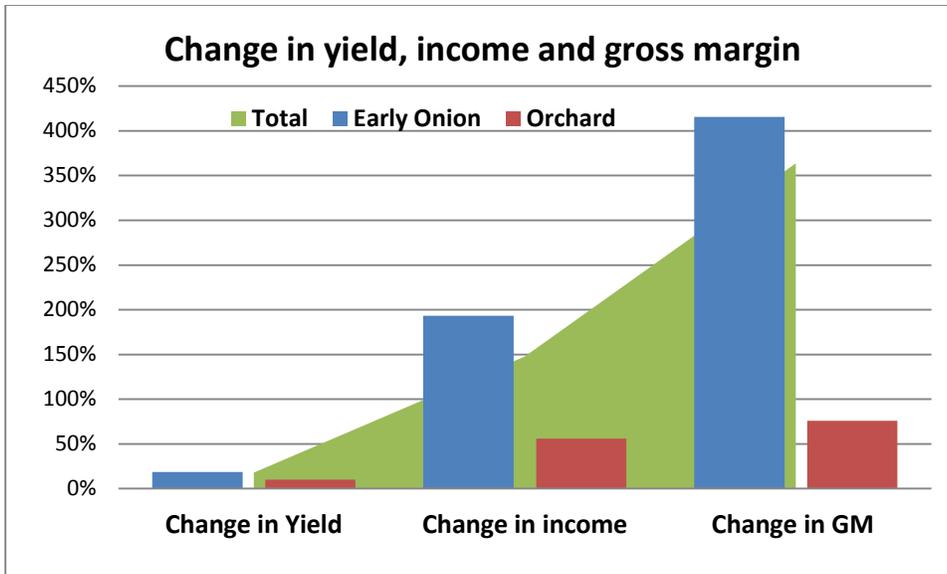
With the market development work on increasing access to profitable markets, through improved infrastructure, buyer-farm linkages and trade promotion the project farmers reported an increase in their collective sales by \$765,482. Onion farmers reported a 193 percent increase in income and \$6,809 increase in gross margin per hectare. Orchard farmers reported a 56 percent increase in income and a \$174 increase in gross margin per hectare despite severe frost damage.

Table 1. Change in Farms' Average Yield for Year 5 disaggregated by commodity

Yield	Unit	Early onion			Orchard			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Baseline	Ton	35.5	39.0	35.8	1.1	0.9	1.1	13.3	10.8	12.6
Actual	Ton	42.3	44.8	42.4	1.3	0.9	1.2	16.6	11.9	14.9
Change Value	Ton/ Ha	6.7	5.8	6.7	0.1	0.0	0.1	3.2	1.1	2.2
Change	%	19.0%	14.9%	18.7%	11.0%	5.4%	10.1%	24.2%	10.5%	17.8%

Table 2. Changes in Farms' Income and Gross Margin for Year 5 disaggregated by gender

		Income -USD				Gross margin (USD/Ha)		
Commodity	Gender	#1 - Change in Income (Sales)				#5 - Gross Margin		
		Baseline	Actual	Value Change	Target 25%	Baseline	Actual	change in %
Early Onion	Male	324,071	944,295	\$ 620,224	191.4%	\$ 1,661.6	\$ 8,446.7	408.3%
	Female	22,385	71,743	\$ 49,359	220.5%	\$ 1,332.4	\$ 8,459.3	534.9%
Subtotal		346,456	1,016,038	\$ 669,583	193.3%	\$ 1,638.6	\$ 8,447.2	415.5%
Orchard	Male	150,988	247,147	\$ 96,158	63.7%	\$ 215.5	\$ 451.6	109.5%
	Female	20,646	20,388	\$ (258)	-1.3%	\$ 350.8	\$ 6.7	-98.1%
Subtotal		171,635	267,534	\$ 95,900	55.9%	\$ 229.4	\$ 403.2	75.8%
Total	Male	475,060	1,191,442	\$ 716,382	150.8%	\$ 675.6	\$ 3,175.2	370.0%
	Female	43,031	92,131	\$ 49,100	114.1%	\$ 519.3	\$ 1,999.0	284.9%
Total		518,090	1,283,573	\$ 765,482	147.8%	\$ 660.5	\$ 3,061.5	363.5%

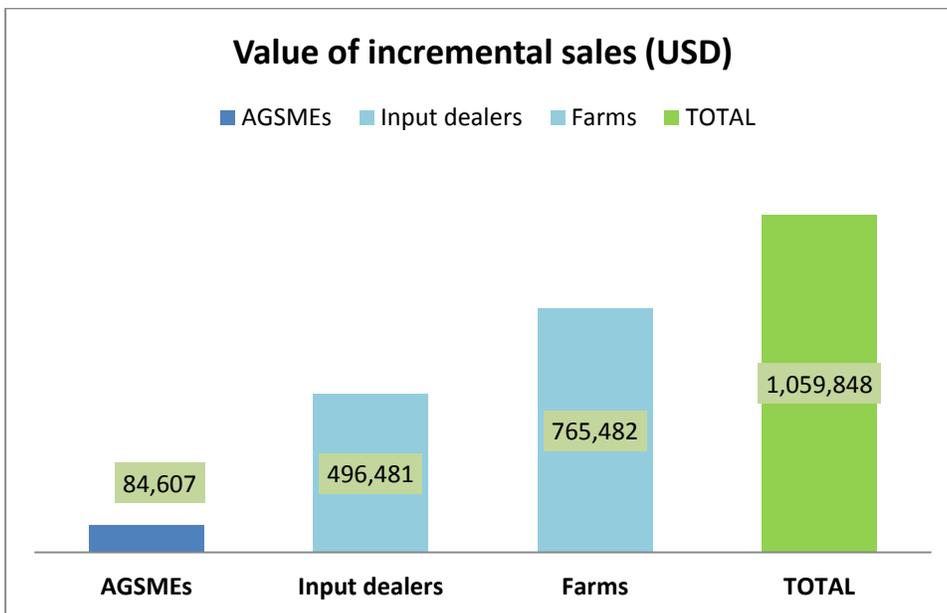


Sales Increase – Agriculture SMEs, Input Dealers and Farms

This year eight partner agricultural SMEs reported an \$84,607 increase in sales. The project provided various degrees of technical support with marketing, developing business and financing plans, developing vertical and horizontal linkages and accessing bank loans.

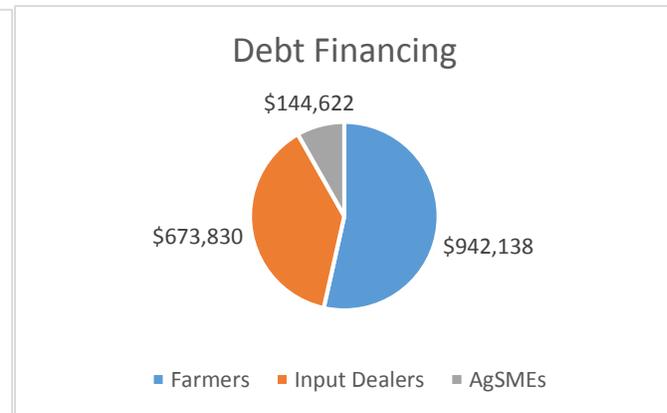
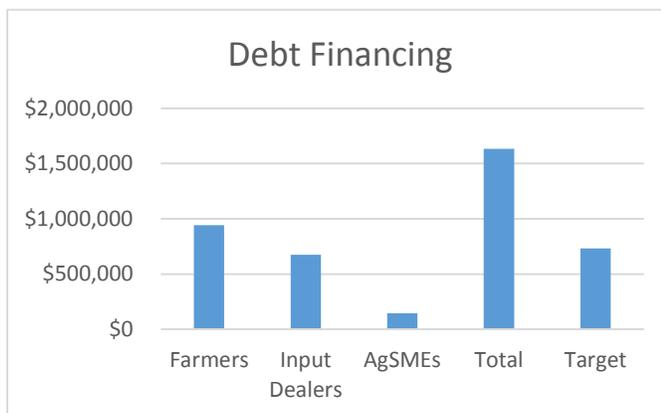
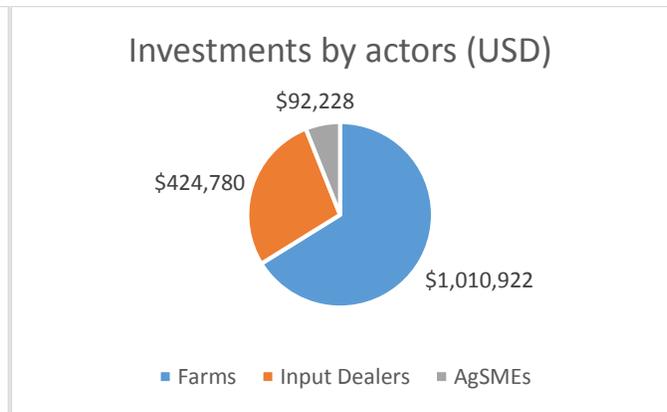
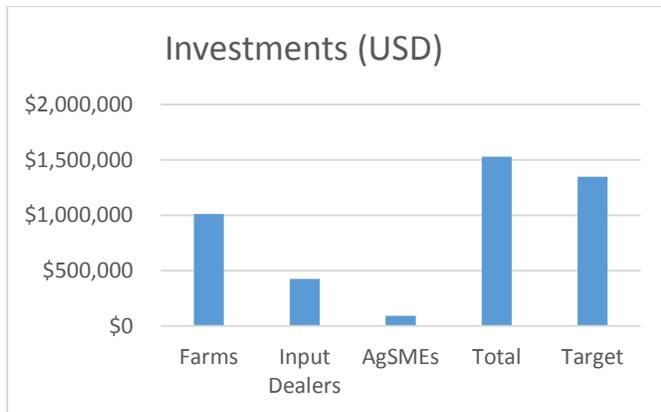
The project’s 19 agro-input dealers reported a \$496,481 increase in sales. The project assisted the input dealers in Khatlon with marketing of their products, establishing linkages, improving supply of certified inputs and building their capacity to provide extension services to the farmers.

The project farmers reported an increase in their collective sales by \$765,482.



Investment and Financing Increases

The project exceeded its Year 5 investment target of \$1,349,000 by 13 percent and more than doubled its debt financing target of \$731,000 reaching \$1,527,931 and \$1,760,591 respectively. The reported investments include owners' capital contributions only and do not include borrowed funds. Much of the investment and debt financing was driven by the mechanization loan product and input dealers, which the project supported in accessing financing as part of the voucher program.



Major Milestones Achieved (Success Stories)

The following three “success stories” illustrate important initiatives undertaken by the Project in Year 5 and their successes.



SUCCESS STORY

USAID helped 100 farmers from Khatlon region in Tajikistan to purchase good quality tractors

Farmers from Khatlon region in Tajikistan received keys of the new tractors from USAID representative



Photo: Muzaffar Yorazizov

Farmers are driving home on new tractors

Tajikistan, March 2014

“After purchasing the tractor with the help of USAID ProAPT grant, this spring we were able to plough up our field with attached seed drill on time. This is the best help for farmers”, says Zokirov Nurullo

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The U.S. Agency for International Development (USAID) hosted two Tractor Distribution events in Khatlon district to celebrate the purchase of 84 tractors by farmers from the 12 western districts of Khatlon, the target area for the USAID Feed the Future initiative.

Tractor Distribution Ceremonies were organized by the USAID Productive Agriculture Project (ProAPT) in coordination with the partner NGOs and Khatlon Region Administration. On March 14 the ceremony was held in the center of Qubodiyon district where 45 farmers received the tractor keys and on March 18 in Qurghonteppa with 39 farmers receiving tractors. Government authorities, Deputy Chairman of Khatlon district, USAID representatives, two tractor suppliers, financial institutions, local district and jamoat authorities and more than 80 farmers who worked with the Project participated in the event.

The ceremony was the final event of the 2013-2014 USAID ProAPT's Tractor Grant Program, that provided Tajik farmers in Khatlon region, who are in need of agricultural machinery, with an outstanding opportunity to purchase good-quality tractors with the USAID ProAPT financial support. The goals of the Tractor Grant Program (Mechanization Finance Program) were to provide farmers with financial grants for purchasing the tractors and consulting services for accessing external funding. The project grant covered 25 percent of the purchase price of the tractor for each grantee. Finance specialists of USAID ProAPT carried out financial analysis of the farms and helped them access two-year from financial institutions to purchase the tractors. The tractors were procured from Madadi Tursunzoda and Agrotekhservice farm machinery dealerships with a combination of cash and credit.

Zokirov Nurullo, a member of dehqon farm Fathuddin in Qumsangir district of Khatlon region, purchased a new tractor MTZ-80x in January 2014 after receiving a grant from USAID ProAPT.

“After purchasing the tractor with the help of a grant from USAID ProAPT, this spring we were able to plough up our field with an mounted seed drill on time. This is the best help for farmers”, says Zokirov Nurullo.



SUCCESS STORY

USAID ProAPT Supports Agribusiness Development in Southern Region of Tajikistan

USAID ProAPT makes successful steps in market developing in the Khatlon region of Tajikistan.



*Buyers/exporters considering various sorts of onion grown in the districts of Western Khatlon, Tajikistan, May 2013
Photo: Muzaffar Yorazov*

“USAID ProAPT has made possible the expansion of AAT activities in marketing development in the Khatlon region. We will reach our goals on development, which will ensure the sustainability of an existing marketing network even after ProAPT ends.”

-Rahmatov Mirahmad

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Washington, DC 20523-1000
<http://stories.usaid.gov>

Limited investment with fragmented market access, which has inhibited value chain growth, are typical issues of the agricultural sector in southern Tajikistan at present. The marketing segment of the value chain is not well organized or prevalent to southern farmers. Producers are not motivated to increase production of other fruits and vegetables because they don't foresee the ability for increased sales through current existing marketing channels. As a result, neither farmers nor agricultural product processors and exporters are able to increase their profit.

Strengthening the market segment of the value chains is a crucial element of the USAID Feed the Future 2010–2015 strategy for Tajikistan. It is also one of the strategic goals that USAID Productive Agriculture Project (ProAPT) is focusing on in 2014. USAID ProAPT has facilitated new partnerships among value chain actors (producers and buyers) and invested in building the capacity of local project partners such as the Agrobusiness Association of Tajikistan (AAT), which is commercially driven and will continue serving the market after ProAPT ends.

AAT is one of the project's collaborating partner NGOs providing services on marketing development. AAT has been working for eight years mainly in the Sughd region of Tajikistan, but this year with the help of USAID ProAPT, it started marketing activities in the Khatlon region. Currently AAT has a branch in the Khatlon region and works with more than 300 farmers from the target zone of the project.

AAT has now successfully started market development in the target district of the Khatlon region. After conducting market research in target districts, AAT has delivered 300 sim-cards to beneficiaries (farmers) and started a weekly dissemination of information about prices of agricultural goods on markets through SMS.

AAT has also arranged a number of meetings of early onion producers with buyers/exporters within past two months that resulted in signing 15 contracts for 368 tons of onion (563,000 TJS). Both farmers and buyers were satisfied by what turned out to be very profitable deals. At present AAT continues to work in this major direction.

Rahmatov Mirahmad, executive director of AAT, noted that with USAID ProAPT active support AAT managed to greatly expand and strengthen its activities in the agricultural market network development in the Khatlon region.



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SUCCESS STORY

USAID ProAPT continues improving Farm-Level Linkages in Western Khatlon

USAID ProAPT organizes Open Field Days on development of horticulture and early ripening onion for farmers in Khatlon region



Photo: Muzaffar Yorazizov

Tajik farmers learning best practices on early onion planting

Tajikistan, March 2014

“There are many things that dehqons still are not aware of, like correct way of early onion planting, deceases of onion and ways of curing them. Therefore, it is important to attend such events and receive consultations from USAID ProAPT consultants and agronomists who are specialists in their field and can help in solution of various issues”, says Tagoev Ismoil

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From January through the end of March 2014, USAID Productive Agriculture Project organized 5 Open Field Days (OFD) in Qubodiyon, Vakhsh, Qumsangir and Jilikul districts of Khatlon region. These events were organized with the help of the partner NGO “Parvozi Parastu” which conducting training on “fertilization, disease and pest management of early onion”, “fertilization, disease and pest management of orchards”, “preparing solutions and methods of using pesticides” and “safety measures when using pesticides”. During these events, US experts and local agronomists made presentations and provided consultations to dehqan farmers who participated in ProAPT’s voucher program. At these events ProAPT also collected expressions of interest from the farmers interested in participating in ProAPT’s investment grant program.

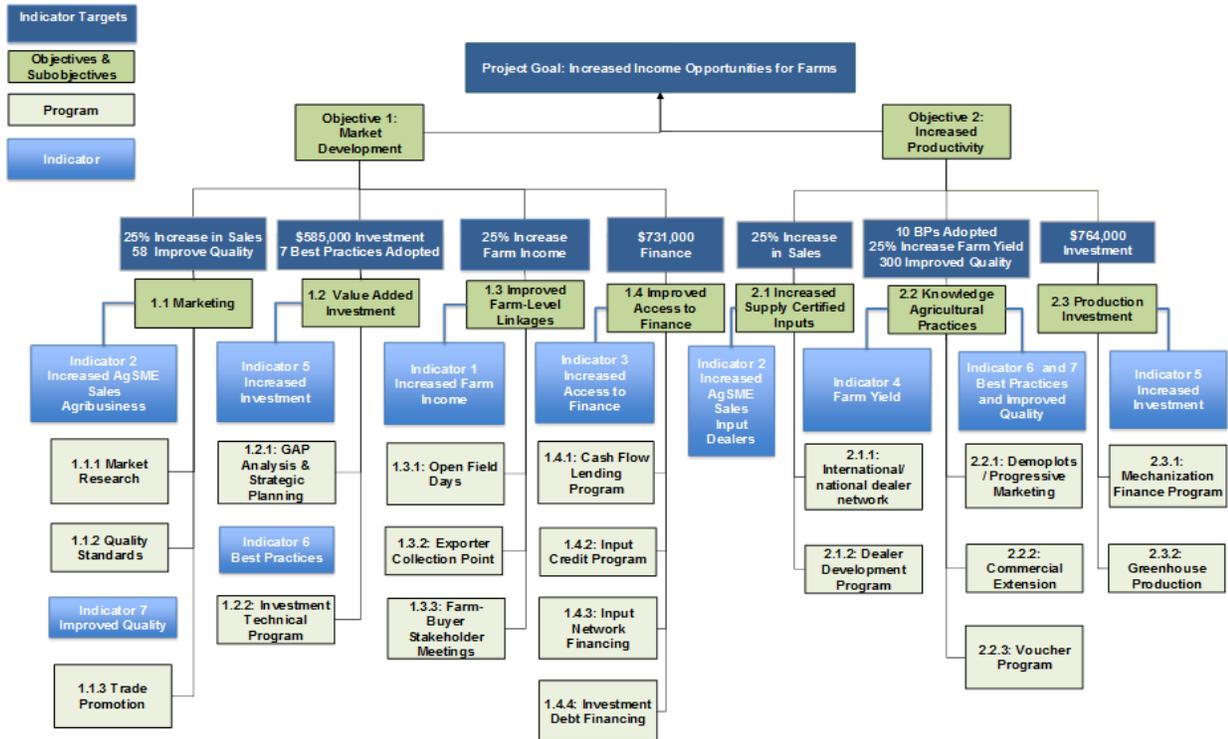
The events drew the farmers from the 12 nearby districts of Khatlon, representatives of local government authorities, representatives of the district departments of agriculture, financial institutions, agricultural machinery dealers and input dealers. On average more than 50-70 people participated in each OFD in the named districts, making a total of 301 people.

The project also conducted OFDs in Qubodiyon and Vakhsh districts on growing early onions from transplants. During the OFD on January 22, agronomists recommended that farmers plant onions in January rather than September or October. January planting has several advantages: farmers have to pull weeds only once in the spring. Usually farmers have to do this two times a year before harvesting the onion. It should be noted that a special onion planter invented by one of the farmers, was used for the onion replanting demonstration.

One of the participants, Tagoev Ismoil, head of the dehqan farm “Rahmatullo Mahsum” of Qubodiyon district noted:

“There are many things that Tajik farmers still are not aware of, like proper methods of tree pruning, diseases of fruit trees and ways of curing them. It is important to attend these open field days and receive consultations from the USAID ProAPT consultants and agronomists who are specialists in their field and can help in finding solutions for various issues.”

Logical Framework



Objective 1: Market Development

Market development is the key to growth for Tajikistan's agricultural sector. In Year 5 the project's work in the target value chains – early onions and orchards - targeted both domestic and export markets. With productivity increasing through the use of certified inputs and good agronomic practices, development of market channels became even more critical. Under Objective 1, Market Development, the project worked to increase trade volumes while also working with industry to improve product quality and marketing. To address fractured linkages between buyers and farms, the project continued to link buyers and sellers to facilitate trade and improve the flow of market information necessary to generate the quality products the market demands so farms can receive the increased income. The project catalyzed investments in the target value chains to address current gaps in infrastructure. The most needed and accessible upgrading was in the area of refrigerated storage, but the project also supported investment in value added processing.

1.1 Marketing

1.1.1 Market Research

Early in its final year the project developed a Request for Proposals (RFP) for the provision of marketing services for the project's beneficiaries. The project received three proposals from LLC Consulting Engineering Services, NGO Bonuvoni Khatlon and the AAT. The successful bidder was to carry out a weekly market research for target commodities and agricultural inputs; to provide a limited scope agricultural extension services; to identify markets for the project's farmers; to develop markets for agricultural inputs; and to improve communication between farmers, input dealers and buyers. The activities were designed to achieve the project's logical framework objectives 1.1 Increased Marketing, 1.3 Improved Farm Level Linkages and 2.2.2 Commercial Extension. AAT won the contract based on the best value proposition.

From early 2014 AAT carried out weekly research of markets in Dushanbe ("Dehkonbozor", "Shohmansur", Ganjina", "Farovon" and "Varzob" markets), Qurghonteppa ("Hoji Sharif", "Central market Barakat" and "Ahmadbozor" markets), Gissar ("Central" market) and Khujand ("Panjshanbe" market). AAT collected price information on main inputs (seeds, mineral fertilizers and pesticides) and target commodities (early onion, tomato, watermelon, lemon, grapes and apricot). They also looked for input dealers to sell certified inputs and for buyers to buy the target commodities.

This market information was disseminated among the project farmers via SMS and at the stakeholder meetings. The research indicated that prices for agricultural inputs such as fertilizer did not fluctuate, as it was the off season. Prices for early onions rose rapidly at the end of April and began to fall sharply in the beginning of June. Prices for local fruits, such as apples, apricots, grapes, peaches, and watermelons, rose from May to mid-June by an average of 10 percent.

AAT also studied the wholesale export collection points in the north, particularly near the rail road collection point Kirgizbaza in J. Rasulov district of Sughd Province. It is a main rail road warehouse used by exporters of agricultural products to Russia. It was found that the price of early onions rapidly fell starting the last week of May since Uzbekistan began exporting onions in large volumes, putting a downward pressure on the price in the Russian markets. On the domestic market, the price for early onion varied from 1.00 TJS to 1.50 TJS per kg depending on quality. According to AAT surveys, early onion in Sughd region was expected to ripen by June 20; therefore, the project recommended that beneficiaries sell their onion earlier.

This timely market information helped the farmers make informed decisions about when to sell their products and what price. This information was also useful when signing wholesale contracts with the buyers. When the farmers saw

a steady decline in market prices, they could sell their products slightly below the market price before the price dropped even further.

1.1.2 Quality Standards

AAT organized a series of stakeholder meetings with producers and buyers at which the buyers informed the farmers about the factors that affect the price of their produce. The first meeting was conducted in Qabodiyon district in early May with 106 entrepreneurs from Khatlon, Sughd Province and Dushanbe. At the meeting Akmal Bobojonov, an exporter, made a presentation on the standards for early onion exports. Exporter Boboev Mazbut informed the group about the factors that affect the price of early onion. The RFP discussed in Section 1.1.1 Market Research also called for addressing product quality issues. The project was planning on procuring moisture testing equipment for AAT so that they can provide moisture testing services to the members. However, due to funding limitations this equipment was not procured.

1.1.3 Trade Promotion

AAT was the project's trade promotion partner in Khatlon in Year 5. By the end of the year AAT achieved the following results⁴:

- On a weekly basis, distributed via SMS to 280 project beneficiaries targeted commodity prices in the wholesale markets in Qurgonteppa (Khatlon), Dushanbe, Hisor (DRS), and Khujand (Sughd). This service helped Khatlon farmers to monitor the trends in prices for agricultural products and to sell their products at best prices. As a result, in Year 5 not a single farmer complained about not being able to sell onions. When the buyers came, the farmers knew the wholesale market prices and did not keep the “ceiling” price.
- Promoted products of project farmers to potential buyers in Dushanbe, Hisor, and Sughd markets.
- Organized meetings of buyers and producers to link farmers to markets. Facilitated communication and negotiations with domestic and international buyers with regards to price, volume, sorting, quality, size and packaging. More information on stakeholder meetings is provided in Section 1.3.3 Farm-Buyer Stakeholder Meetings.
- Provided trainings on marketing, market planning, contract negotiation, quality standards, PHH, sorting, grading, packaging, customs, and transportation to domestic and international markets. Farmers were very eager to attend these trainings. This information influenced the farmers' choices of onion varieties to grow, so that they are more suitable for export.
- Provided free individual consultations on the same subjects.
- Developed a website, <http://agrobusiness.tj>, to promote its members and attract domestic and international buyers. The website provides information on member products, production volumes, and standards (quality, size, packaging, and hygiene).⁵ The project's communication specialist worked with AAT to make sure that USAID marking and branding requirements are adhered to.
- Identified and assessed new potential markets.

⁴ These results are related to marketing only. AAT's work related to stakeholder meetings and points of sale is featured in Section 1.3 Improved Farm Linkages, and distribution of production information is in Section 2.2.2 Commercial Extension.

⁵ Several pages are under construction.

- Developed a database of buyers and sellers. Upon receiving crop data from a seller, informed potential buyers about crop condition and availability for sale. Terms of the sale were negotiated by farmers and buyers with assistance of AAT.

In its marketing efforts AAT worked closely with the NGO agronomists. The parties shared information on crops grown in their respective districts, harvest times, volumes and prices in the field.

AAT is committed to providing these services to the farmers and identifying market opportunities for them after the end of the project. A survey carried out by AAT in 2014 indicated that farmers are willing to pay for help selling their produce and for SMS on market prices. Even in 2014 the farmers were paying a full or partial price for these services with cash or crops.

In August 2014, under a contract from the project AAT organized 2014 Agro-Expo in Qurghonteppa, Khatlon. It brought together more than 100 agricultural entrepreneurs - farmers, buyers, input dealers, extension service providers – and academia, donors and Tajikistan government officials. The event allowed to showcase the produce producers by the farmers of Khatlon Province and connect them with the markets. The event was truly international with participants coming from India, the Netherlands, Sweden, and Turkey. Among the guests were U.S. Ambassador Susan M. Elliott and Khatlon Province Chair Davlatsho Gulmahmadzoda.

1.2 Increasing Value Added Investment

1.2.1 Gap Analysis and Strategic Planning

In Year 5 the project continued helping potential investment partners with the preparation of their business plans, as part of the process of identifying and reviewing investment proposals. As part of the business planning process, the project looked at the gaps that the proposed investment was to bridge to pursue the market opportunities and advised the prospective partners on their strategic investment decisions. Dr. Clive Kaiser, a Farmer-to-Farmer (F2F) volunteer and associate professor from Oregon State University, visited seven potential cold storage investments and provided advice on storing fruits and vegetables, cooling equipment and construction elements.



Additionally, the project carried out a research on mobile refrigerated units (MRU) for a pilot in four districts of Khatlon. The project wanted to test the MRUs for precooling perishable fruits and vegetables in the field at harvest. Precooling fruits and vegetables at harvest extends their life. These MRUs can be also used as collection points to aggregate produce for buyers. Usually it takes buyers several days to collect 20 tons of produce from a large number

of small farms. The MRUs were intended to be used by small and medium-sized farms, which make up a significant portion of the farming pool in Khatlon. The MRUs can be more easily built from locally available materials and financed by smaller groups of farmers using their own resources and loans from financial institutions. If proven successful, this idea can be easily replicated by a large number of farmers. The project paid LLC Lola, a local manufacturer, selected on a competitive basis, to construct two 20-MT MRUs for \$14,000 each. The MRUs were built out of used 20-ft shipping containers equipped with a generator, a microcontroller CoolBot and an air conditioner.

1.2.2 Value Added Investment

During the year the project invested significant effort in identifying partners for investments in value added infrastructure – cold storages, processing facilities and input dealerships – and identified 100 potential investment partners. This was done by meeting with local, district and regional governments and farms. This outreach was done by the project staff, partner NGOs, local government officials, financial institutions and others. In its outreach, along with other marketing materials the project and the partners used a multi-media presentation developed earlier in the year. During these meetings the project and the partners explained the type of investments supported and the process of applying for investment grants. Investments identified and funded in Year 5 are presented in Table 3.



Table 3. Value Added Investments

Investment Grant #	Partners	Contact	Capacity	District	Investment	Amount of Grant	Intended Purpose of the Grant Funds
Investment grants							
1	Mahmadaliev Said	918-62-26-80	400 MT	Bokhtar	Refrigerated Packhouse	\$38,675	Refrigeration Equipment, Generator, Racks
2	Sadulloev Izzatullo	918-62-48-43	900 MT	Qurgonteppa	Refrigerated Packhouse	\$38,675	Ruberoid (to protect roof from leakage), Polystyrene (brick with insulation for partition room), Metal door with insulation, Refrigeration Equipment
3	Sharipov Nazarbek	95-176-17-03	400 MT	Bokhtar	Refrigerated Packhouse	\$38,675	Refrigeration Equipment, Air conditioning, Generator, Foam (for thermal insulation of walls)

4	Eshbekov Shamsiddin	93-506-08-90	100 MT	Jilikul	Warehouse storage of vegetables (without refrigeration equipment)	\$16,174	Rooftop, plastic windows, iron Door, Foam (for thermal insulation of walls), venting equipment
5	Hamroev Abdurasul	93-526-82-30	60 MT	Jilikul	Refrigerated Packhouses (with refrigeration equipment)	\$27,552	Acquisition of metal doors, plastic windows, the obtaining of refrigeration equipment, air conditioner, generator ventilation equipment, plastic water tanks, insulation of walls and ceiling, Racks
6	Eshmurzoev Normat	93-830-01-02	5 MT/10 H	Shahrituz	onion processing plant	\$35,810	Acquisition of equipment for processing and drying of fruits and vegetables, air conditioner
7	Madrahimov Rahimjon	938527778	20 MT	Qumsangir	MRU collection points (fruit and vegetable trade)	\$13,579	MRU
8	Muminov Orif	933254442	20 MT	Bokhtar	MRU collection points (fruit and vegetable trade)	\$13,579	MRU
	TOTAL					\$222,718	

Grants for cold storages were used to purchase insulation materials, insulated doors, windows, air conditioning, refrigeration and ventilation equipment, shelves, plastic water containers and other such assets.

The project supported investments in two MRUs by two farmers in Qumsangir and Khuroson districts of Khatlon, selected on a competitive basis. These farmers agreed to use the MRUs in demonstrations to producers, exporters, agrodealers, and other value chain actors of best practice technology for storing and precooling perishable fruits and vegetables at harvest. The MRUs were demonstrated at two OFDs in 2014 at which the project explained the purpose and price of these MRUs and introduced the manufacturer. The manufacturer received two more orders for these MRUs at the OFDs. The project's contribution was 80 percent of the cost of the MRU and the farmer's contribution was 20 percent.

In Year 5 the project used \$222,718 of grant funds to facilitate new investments in the cold storages, MRUs and processing facilities listed above. During the year the project also continued monitoring the investments made in the previous years.

1.3 Improved Farm-Level Linkages

1.3.1 Open Field Days

Open Field Days (OFD) are necessary to demonstrate the results of new productive technologies to and establish linkages between the farmers and other value chain actors. In Year 5 the project conducted 12 OFDs, which were organized in partnership with international suppliers of certified seed and pesticides. More information on demo plots

is provided under Section 2.2.1 Demonstration Plots/Progressive Marketing. The OFDs brought together 957 participants - farms, buyers, input suppliers, financial institutions, government officials, local service providers, donors, machinery dealers and other donor projects. The farmers viewed demonstration results, heard feedback from buyers on product quality and quantity, and met with input suppliers of inputs and other stakeholders. This gave farmers the information they need to make informed choices about production. The events also provided critical value chain actors like input suppliers and financial institutions an opportunity to market their products. The OFDs also featured discussions and demonstrations of best agronomic practices for growing early onions and orchards. They included selecting planting stock, tree pruning and grafting for orchards and the importance of proper plant and row spacing and transplanting for early onions. They also featured discussions on and demonstration of pest control, use of fertilizers and irrigation.

1.3.2 Exporter Collection Point

Stakeholder meetings and the 2012-2013 orchard voucher programs identified the lack of collection points in Khatlon as a major constraint. Collection points - not only for collecting of agriculture produce but also for precooling – are very important to extend the shelf life of the product. During the harvest period buyers/exporters cannot get the required volume from one farm. They end up running refrigerated trucks from one farm to another which takes a lot of their time and costs a lot of money.

In Year 5 AAT worked with the cold storage facilities in the North which aggregated the farmer produce for export. AAT organized meetings with these cold storage owners and exporters in order to establish connections for the use of cold storages as exporter collection points. These activities are covered under Section 1.1.3 Farm-Buyer Stakeholder Meetings. In Year 5 the Project supported the establishment of five cold storages in different districts of the FtF region, which will be used as collection points.

Additionally, the Project supported the demonstrations of two mobile refrigerated units (MRU) to be used as precooling collection points during harvest time which falls on a hot season. As mentioned above, usually it takes buyers several days to collect 20 tons of produce from a large number of small farms. Now the buyers can collect this amount from one 20-ton MRU. The MRUs are discussed in detail in Section 1.2.2 Value Added Investments.

1.3.3 Farm-Buyer Stakeholder Meetings

In 2014 the project awarded a contract to AAT to organize monthly stakeholder meetings and to provide marketing services to the project farmers. The meetings were organized in Shahrtuz, Qubodyon, Jomi, Vakhsh and Qumsangir districts of Khatlon. AAT brought to these meetings exporters from Sughd and buyers from Dushanbe's wholesale Dehkonbozor market. Prior to harvest, the buyers informed the farmers about their standards for early onions, and their pricing and contracting mechanisms. AAT developed a contract template stipulating rights and responsibilities of both parties. These meetings resulted in 15 formal forward sale contracts valued at TJS 563,000 (over \$112,000) for 368 tons of early onions.

One of the biggest success factors is that the project linked AAT with the partner NGOs and agrosshops in Khatlon. The NGO and agrosshop agronomists informed AAT about varieties and volume of early onions grown by project farmers, as well as harvest times and field prices in their respective districts. Collectively they put a lot of effort in visiting each field and making yield projections, which helped with attracting buyers.

In the second quarter of 2014, through AAT, the project opened two points of sale for project farmers in the wholesale markets Dehqonbozor in Dushanbe and Zargar market in Bokhtar district of Khatlon.⁶ More than 5 MT of fresh produce—mainly tomatoes, plums, onions, apples, and melons—were sold through these sales points as of mid-July 2014. Prior to this, the farmers could not access these markets due to cut-throat competition for market space with local vendors. According to a survey conducted by AAT in 2014, farmers' biggest complaint was about not being able to sell their produce at profitable prices. AAT's sales points now allow farmers to sell directly to buyers, which helps raise their profit. These sales points also provide an effective venue to advertise high-quality products to wholesale buyers. As a result of these efforts, in 2014 no project farmers complained about not being able to sell their onions.



Sales point in Bokhtar district of Khatlon

1.4 Improved Access to Finance

1.4.1 Cash Flow Lending Program

The project continued working with interested financial institutions on structuring loans to the project farmers seeking debt financing. In its final year the project focused on building relationships between the farmers and financial institutions and facilitating financing of the project-supported investments. To help farmers to access loans from financial institutions, the project supported two financial analysts employed by partner NGOs Parvozi Parastu and Mehrubon. These analysts supported the project beneficiaries looking for financing throughout the entire process – from loan application to beyond loan disbursement. The analysts performed financial analysis of the investment including proforma cash flow, income statement and balance sheet, which were presented to financial institutions. The project developed simplified templates for proforma cash flow and a set of ratios to evaluate the proposed investment.

1.4.2 Input Credit Program and 1.4.3 Input Network Financing

The project worked with the input dealers and suppliers at each level of the input network to determine their financing needs and options for supplier credit. The project worked with them to establish the right mix of self-financing, supplier credit, and loans from financial institutions. Incentives for accessing formal credit provided to retail input dealers that participated in the prior year voucher programs, were a success. In Year 5 input dealers reported \$673,830 in loans from financial institutions, unsubsidized by the project. They borrowed for working capital and investments in stores, warehouses and vehicles.

The project worked on building trust within the input network. Having built relationships with the input dealers in Khatlon, SAS now provides limited credit to their partner input dealers. Normally, for new customers the line of

⁶ Located about 12.7 km southwest of Qurgonteppa.

credit is for about \$10,000–\$12,000 for one month. SAS is willing to sell more inputs on credit to partner input dealers but would appreciate a guarantee mechanism. In their experience, the default rate is about 4–5 percent.

1.4.4 Investment Debt Financing

The project continued working with investment partners who needed financing for their investments and helped them build relationships with financial institutions. The Project worked with these investments groups to help identify the best source and terms. In quarter 1 of Year 5 the project carried out a survey of eight banks and eighteen microfinance institutions in Khatlon to identify the best partners for the project beneficiaries. Four financial institutions in Khatlon (OJSC Agroinvestbank, MCO OXUS Microfinance, MDO IMON International, and MDO Humo and Partners) were selected as lending partners for the project's investment activities in Khatlon. These institutions have large branch networks in the 12 target districts of western Khatlon and offer loan products suitable for the project's beneficiaries (e.g., lower interest rates of 18–24 percent p.a., longer loan term up to five years, longer grace period up to 50 percent of loan maturity, and flexible repayment schedules). The project held meetings with the selected institutions to discuss further cooperation and co-investment process.

Two financial officers of partner NGOs Parvozi Parastu and Mehrubon worked with investment partners on developing business plans and analyzing the proposed investments. They provided support to the investors throughout the process of applying for a loan from a financial institution, from filling out a loan application, to providing guidance on collecting all required documents.

When analyzing the proposed investments, the financial officers identified financing needs and recommended that the following two investment partners take loans from financial institutions:

- In August 2014 Abdurasul Khamroev from Jilikul district of Khatlon received \$3,500 from MDO FINCA Tajikistan to purchase construction materials for a cold storage for fruits and vegetables. The loan was for 18 months with an annual interest of 27 percent with a four-month grace period.
- In February 2014 Normat Eshmurzoev from Shahrtuz district of Khatlon received TJS 10,000 from OJSC Agroinvestbank to purchase construction materials for his fruit and vegetable processing factory. The loan was taken for 12 months with an annual interest of 24 percent with a bullet principal payment at the end of the loan term and monthly interest payments. Having established a successful relationship with the bank, in August 2014 the client applied for a \$50,000 loan for 36 months to purchase equipment and construction materials.

The project developed training materials and conducted training for its investment partners on business planning, accounting and agricultural lending. The trainings emphasized practical aspects of applying for a loan, where to apply, what can be used as collateral, how to compare interest rates, the use of loan proceeds, and consequences of default. Training participants shared their personal experience with borrowing from financial institutions.

In January 2014 the financial analysts of the partner NGOs carried out two trainings on agricultural lending for 21 beneficiaries (including 6 women) of Qurgonteppa and Qubodyon district. The training participants discussed where to get a loan, which financial institutions offer best loan terms, acceptable collateral, using loans according to the stated purpose, delinquencies and their consequences. The training participants shared their personal experiences of taking loans. At the end of the training the participants filled out forms where they indicated their interest in receiving additional training in agricultural lending (4 participants), farm management (5 participants), orchard management (2 participants), greenhouse management (1 participant) and crop production (2 participants).



In Year 5 the project agriculture SME partners reported taking \$144,622 in loans from financial institutions for investments in warehouses, other infrastructure and equipment. Farmers reported taking \$942,138 in loans from financial institutions for investments in farm infrastructure, machinery and equipment.

Objective 2: Increased Productivity

The project continued strengthening the businesses and networks involved in the input supply system and supporting the private sector to promote inputs, products and services which improve farm productivity. Tajikistan exhibits a typical cycle of limited investment, weak productivity and fragmented market access which has inhibited value chain growth. In order to break this cycle, private sector players must recognize where there are commercial incentives to make investments to take advantage of market opportunities. Farms must shift towards input-intensive production models which require more significant technical knowledge and cash investments. Input dealers must adopt more progressive methods of marketing, provide technical assistance and facilitate financing which will allow them to expand their sales to farms. Financial institutions must recognize agriculture, which employs 46.5 percent of the labor force, as a market segment they must learn to reach if they are to remain competitive in the long-term. Recognizing that the private sector is both the vehicle for and intended beneficiary of interventions, in Year 5 the project carefully structured its interventions to demonstrate opportunities and build the private sectors' capacity to pursue them. Most activities employed an element of demonstration that was aimed at helping actors evaluate the relative returns of upgrading products, processes and functions. Even with demonstration, oftentimes, actors are still reluctant to put their own capital at risk to make needed investments. In these cases, the project offered smart subsidies which were designed to buy down the risk of such investments.

2.1 Increased Supply of Certified Inputs

In Year 5 the project continued supporting the business development of input dealers, establishing stronger network of wholesalers and retailers and promoting demonstrations and embedded technical assistance for the use of certified inputs. The project also worked on addressing financing constraints in the input supply chain. These activities resulted in increased availability of certified inputs in Khatlon, increase in input dealers' income, farm productivity and quality of farm products.

2.1.1 International/National Dealer Network

Through the project's activities, such as voucher programs, fairs, stakeholder meetings, demonstrations, and training, in Year 5 the dealer network grew to 19 national dealers (including 11 in Khatlon). To support building a strong input network, in Quarter 1 of Year 5 the project announced a tender for interested wholesale dealers to develop retail

dealer network in Khatlon. This was done to improve the relationship between the international and national wholesale and retail dealers, to improve the market for certified high quality agricultural inputs in Khatlon and to improve the service quality and scope of the retail input dealers. The project received four proposals from OJSC SAS, LLC Agroservice Khovaling, Consulting Engineering Services and NGO Bonuvoni Khatlon.

SAS was selected for this activity based on the best value proposition. In January and February 2014 SAS conducted research on agricultural input supplies in the 12 target districts of Khatlon. SAS organized meetings with the district authorities and the heads of local departments of agriculture in order to build better relations and develop the market for agricultural inputs. The research indicated that most agro-shops do not carry quality input supplies. As a result, farmers have a limited choice and have to travel to Dushanbe or Hisor to get quality inputs. Furthermore, there is a lack of knowledgeable specialists in the districts. Most specialists and farmers have outdated knowledge and use outdated or even expired inputs. For instance, fungicide DNOK and insecticide Thiodan are banned in Tajikistan and many other countries. However, many retailers smuggle banned or counterfeited pesticides from China, Uzbekistan and Kyrgyzstan. Out of more than 20 quality insecticides available in Tajikistan, Tajik farmers know and use only Bi-58 and Nurrel-D.

Another big problem is that the farmers do not share their experience and know-how. They are using outdated methods learned from their forefathers at the time of the Soviet Union. For instance, they do not use planters for planting vegetable seeds. More than 70 percent of the seeds and pesticides sold in the local markets are low quality products smuggled into the country. They have a negative impact on the soil and products and can cause serious health issues for the future generations in Tajikistan. Most of these products are made in homes and warehouses in violation of standards. Many districts have only small agro-shops in local markets, which do not comply with the sanitary and epidemiological requirements and safety regulations.

Based on this research, SAS selected five locations for opening new retail agro-shops Mehroj; the city of Qurgonteppa and J. Rumi, Vakhsh, Qubodyon, Khuroson and Jomi districts of Khatlon Province. These districts were chosen because of their long distance from major input markets in Dushanbe, Qurgonteppa, Regar and Hisor. The table below presents information on the shops and grant amounts.

Table 4. SAS Agroshops

Grant #	Partners	Contact	Region	Amount of Grant, USD
1	Mehroj	927370210	Khuroson	\$15,000
2	Mehroj	927370210	Qubodiyon	\$15,000
3	Mehroj	927370210	J.Rumi	\$15,000
4	Mehroj	927370210	Vakhsh	\$15,000
5	Mehroj	927370210	Jomi	\$15,000

Prior to this farmers in these districts had to travel up to 150 km on poor roads to buy agricultural inputs. Most of the time they bought smuggled uncertified inputs made in China or Kyrgyzstan. To overcome logistical challenge of supplying retailers in Khatlon from their base in Khujand, SAS rented a warehouse in Qurgonteppa. SAS is an exclusive Tajikistan representative for several major agricultural input suppliers, including Syngenta (Switzerland), Dupont (USA), Bayer (Holland) and Agrapic (Germany).

Additionally, SAS signed contracts for the sale of certified inputs with five other input dealers in Khatlon in Qurgonteppa and Qumsangir, Shahrtuz, Bokhtar, and Yovon districts. These partner stores have to sell at least 40 percent of SAS's inputs. SAS committed to accepting returns of merchandise unsold by the partners at the end of the season, to reduce their risk. SAS also committed to rewarding several agrodealers annually with promotional gifts and sending one best agrodealer to an OFD in Holland. Now SAS has either its own store or a partner store in almost every district of Khatlon. About 70 percent of SAS's 48 staff members are now in Khatlon, which SAS sees as agricultural region with the biggest potential in Tajikistan.

Each SAS agrosshop has three employees: a senior seller, a junior seller, and an agronomic advisor. All of them receive 40 hours of free training when they are hired. Agronomists also get training internationally (in Holland, Kazakhstan, and other countries), which is required by international input suppliers. In the immediate future, SAS is planning to hire a three-person team for each shop to provide spraying services especially for orchards and vegetables. The spraying teams will be trained in Almaty by Syngenta regional manager. Each team will have a sprayer, protective clothing, and a vehicle. SAS is also planning on opening an agritech service center in Khatlon and a mini lab in five of their Khatlon stores for soil analysis. Soil test costs only \$40 and results are good for 2–3 years.

According to SAS, they are the only official (vs. contraband) supplier of certified inputs in Tajikistan. Thus, creating a demand for certified inputs in Tajikistan in general and Khatlon in particular and bringing SAS to Khatlon is not a small feat. Just for comparison, SAS has only two retail stores in the North and opened only three retail stores in the last three years without the project's support. SAS's sales of certified inputs doubled since 2012, when they opened their first store in Khatlon.

The project continued identifying international input suppliers and linking them to the local dealers through their participation in agricultural fairs such as Agro-Expo 2014 held in Qurgonteppa, Khatlon in August 2014. The fair was organized by AAT under a contract with the project and brought together over 100 agricultural entrepreneurs from Tajikistan, including processors, agriculture input dealers, farmers, buyers, cold storage owners and retailers. Exhibitors showed products from as far away as India, Turkey, Holland and Sweden. The expo was attended by a number of high ranking US and Tajikistan Government officials including the American Ambassador to Tajikistan Susan M. Elliott and Khatlon Province Chairman Davlatsho Gulmahmadzoda. During Year 5 international suppliers of certified seeds and crop protection products Syngenta and Bejo provided training to partner farms and input suppliers on the use of certified crop protection products, high quality seeds and how to identify counterfeit or adulterated products.

2.1.2 Dealer Development Program

As earlier technical assistance and voucher programs have generated results (increased farmers' yield and income) and increased demand for inputs and services, the project shifted focus toward addressing infrastructure, business capacity, and financing needs to allow input dealers to expand their outreach and growth. International input suppliers indicated that business capacity of local input dealers is a significant impediment to developing the market for quality inputs. Dealers do not have auditable, computerized accounting systems, have limited access to email and Skype, and rarely use bank transfers. They also have limited working capital or access to bank loans, which prevents them from making advance payments to wholesalers to stock inputs.

The project supported its partner retail dealers directly and through SAS by providing training on new varieties of seeds and crop protection products, marketing, merchandizing, assisting with access to finance and recordkeeping,

consulting, and building market linkages. In the project's final year, SAS provided 10 trainings on the topics mentioned above to a total of 195 participants.

The project made grants of \$5,100 to upgrade the shops of five retail input dealers in Khatlon who participated in the voucher programs so they could comply with international standards. The shop upgrades included cosmetic repair, equipment (refrigerator for storing pesticides and pheromones, air conditioner, voltage regulator, generator, scale, computer, printer, etc.), furniture (shelves, desk, chairs, etc.), windows, doors and signs. The table below presents a list of the shops and grant amounts.

Table 5. Grants to input dealers

Grant #	Partners	Contact	Legal Status	District	Grant Amount, USD
1	Mufarakhov Jaloliddin	93-424-99-00	private entrepreneur	Jilikul	\$5,100
2	Juraev Ismoil	93-411-01-07	private entrepreneur	Shahrituz	\$5,100
3	Muminov Orifjon	918-63-51-67	private entrepreneur	Qurgonteppa	\$5,100
4	Ziebutdinov Dilovar	93-840-63-63	private entrepreneur	Qubodien	\$5,100
5	Samadov Ashurali	917905477	private entrepreneur	Kizil-qala	\$5,100

All partner shops are now furnished with modern displays to display a wide range of certified seeds, pesticides, and fertilizers, as well as tools like ploughs, shovels, hoes, and planters. All stores have tables with brochures, pamphlets, guidebooks, and other information on best agricultural practices. The stores are planning to expand the range of their products as demand for their inputs grows.

In early September 2014 the project carried out an assessment of ten partner input dealers. The project judged their performance based on their geographic coverage, financial performance and the number of clients. Only six dealers were assessed as successful. Four input dealers could not meet the targets set by the project. These input dealers have seasonal business. They have their clientele and serve specific geographic regions but do not have enough experience for distributing certified inputs. These dealers participated in the project's voucher program but upon its completion could not further develop their business. They focused their efforts on selling food and household goods. These dealers did not receive grants for store upgrades.

2.2 Knowledge of Agricultural Practices

2.2.1 Demonstration Plots/Progressive Marketing

At the end of October 2013 the project carried out a competition for demonstration plots. The agronomists employed by partner NGOs advertised this opportunity to farmers in all 12 districts of Khatlon. Thirty four farmers (31 for orchard and 3 for early onion demo plots) expressed their interest to participate in the competition. The project rated the applicants and selected 10 farms for the orchard demo plots and 3 farms for the early onion demo plots.

The project's demonstrations were designed to illustrate that although certified inputs (including complex fertilizer, crop protection products and R1 seeds) cost more than inputs frequently used in Tajikistan (such as urea, pesticides imported from china, and local reproductions of seeds) certified inputs can provide greater profits due to increased income and sales price of products. For example, a one hectare orchard demo plot in Bokhtar district brought TJS 14,219.38 in profits while a traditional orchard of the same size in the same district brought only TJS 8,257.9.

A one hectare early onion demo plot in Vakhsh district using seedling replanting methodology brought TJS 59,052.21 in profits while a traditional manual seed sowing methodology of early onion plot of the same size in the same district brought only TJS 17,567.19. Tables below provide more detail on these two cases.

**Table 6. Orchard control plot dekhkan farmer Navnihol Faizulloeva Niginamo, Bokhtar district
Early local varieties of apricot 1 Ha**

Expenses	unit price TJS	Unit	Total TJS
Plowing	3.0	100	300
Pruning	0.0	0	0
Weeding	1.0	100	100
Water (3 times/season)	3.0	100	300
Watering (labor)	0.5	190	95
NPK (kg)	0.0	0	0
Chorus (fungicide)	0.0	0	0
Carbaphos (insecticide)	0.0	0	0
BI 58 (insecticide)	70.0	2	140
Backpack Sprayer	100.0	1	100
Protective Clothes	0.0	0	0
Application of Manure, kg/ha	100.0	5	500
Spraying Services (3 times/season)	50.0	1	50
Harvesting	30.0	20	600
Land Tax/Ha	240.0	1	240
Water Tax/Ha	250.0	1	250
Caretaker Salary/Ha	500.0	1	500
Other Expenses	1.0	100	100
Total Expenses			3,275
Yield (kg)	4,020		
Total Expenses (TJS)	3,275		
Cost per 1kg (TJS)	0.8		

Market Price (TJS)	3.0
Gross Income (TJS)	12,060
Profit (TJS)	8,785
Profit Tax 6%	527
Net Profit (TJS)	8,258

**Table 7. Orchard demo plot dekhkan farmer Navnihol Faizulloeva Niginamo, Bokhtar district
Early local varieties of apricot 1 Ha**

Expenses	unit price TJS	Unit	Total TJS
Plowing	3.0	100	300
Pruning	4.0	190	760
Weeding	1.0	100	100
Water (3 times/season)	100.0	3	300
Watering (labor)	0.5	190	95
NPK (kg)	3.4	500	1,700
Chorus (fungicide)	700.0	1	700
Carbaphos (insecticide)	80.0	2	160
BI 58 (insecticide)	70.0	2	140
Backpack Sprayer	650.0	1	650
Protective Clothes	0.0	0	0
Application of Manure kg/ha	0.0	0	0
Spraying Services (3 times/season)	50.0	3	150
Harvesting (labor)	300.0	2	600
Land Tax/ha	240.0	1	240
Water Tax/ha	250.0	1	250
Caretaker Salary/ha	500.0	1	500
Other Expences	1.0	100	100
Total Expenses			6,745
Yield (kg)	6,835.0		
Total Expenses (TJS)	6,745.0		
Cost per 1kg (TJS)	1.0		
Market Price (TJS)	3.2		
Gross Income (TJS)	21,872.0		
Profit (TJS)	15,127.0		
Profit Tax, 6%	907.6		
Net Profit	14,219.4		

Table 8. Traditional/Control Onion Plot, dekhkan farmer Jahon-S, Vakhsh district

Expenses	For 0.1 ha		for 1 ha	
	Unit	Total, TJS	Unit	Total, TJS
Soil analysis, ha	0.1	25	1	250
Seeds, kg	1.8	540	18	5,400
Land preparation, ha	0.1	75.3	1	753
Sowing, ha	0.1	30	1	300
Weeding, m/hours	10	252	100	2,520
Nitroammofoska, kg	0	0	0	0
Ammofos, kg	50	200	500	2,000
Urea, kg	50	130	500	1,300
Ridomil Gold, kg	0.25	31.75	2.5	318
Bi-58 new, l	0.2	14	2	140
Spraying, m/hours	3	90	20	600
Attendance, m/ hours	20	400	20	400
Water, m3	800	25.6	8,000	256
Harvesting, m/day	1	300	4	1,200
Land Tax, TJS	0.1	17.5	1	175
Other Expenses m/day	10	100	100	700
Total Expenses TJS	0	2,201	0	16,312
Yield, kg	3,500	3,500	35,000	35,000
Cost per 1 kg (TJS)				0.46
Market Price per kg (TJS)				1.0
Gross Income (TJS)				35,000
Profit (TJS)				18,689
Profit Tax 6%				1,121
Net Profit				17,567

Table 9. Onion Demo Plot, dekhkan farmer Jurakhon, Vakhsh district

Expenses	For 0.1 ha		for 1 ha	
	Units	Total, TJS	Units	Total, TJS
Soil analysis, ha	0.1	25	1	250
Seeds, kg	0.4	200	4	2,000
Land preparation, ha	0.1	150	1	1,500
Sowing, ha	0.1	30	1	300
Weeding, m/hours	10	200	100	2,000
Seedling replanting	0.1	200	1	2,000
Nitroammofoska, kg	50	220	500	2,200
Ammofos, kg		0	0	0
Urea, kg	40	104	400	1,040
Stomp (herbicide) liters	0.4	30	4	300
Ridomil Gold, kg	0.25	31.75	2.5	317.50
Bi-58 new, liters	0.2	14	2	140
Spraying, m/hours	3	90	20	600
Attendance, m/day	20	400	200	4,000
Water, m3	800	25.6	8,000	256
Harvesting, m/day	1	300	8	2,400
Land tax, TJS	0.1	17.5	1	175
Other expenses, m/hours	10	100	100	1000
Total expences TJS				20,479
Yield, kg	8,300	8,300	83,000	83,000
Cost per 1 kg				0.24
Market price TJS				1.00
Gross income (TJS)				83,000
Profit (TJS)				62,821
Tax from profit 6%				3,769
Net Profit (TJS)				59,052

On these demo plots the project also demonstrated the application of best agronomic practices such as selection of seedlings, tree pruning and grafting, inter-row tillage, irrigation, fertilizing and disease and pest management. The demonstrations culminated in Open Field Days (OFD), where the farmers and other stakeholders learned about economic benefits of using certified inputs and best agronomic practices. In Year 5 the project conducted 12 OFDs on the demonstration sites in Khatlon, training 957 participants. The results of the demonstrations were disseminated at OFDs, through radio and television interviews, newspapers, and newsletters.

USAID Farmer-to-Farmer volunteers Ross Panchelegon (orchard management expert), Michel Moscarali (orchard management expert) and Abubakr Diagne (plant protection expert) as well as local consultants shared their experience during the training events on the demo plots. In most target districts the farmers applied advanced agronomic practices and certified inputs recommended by the experts during the OFDs and are now enjoying higher yields. Having seen the benefits of applying best agricultural practices, the farmers continue applying them long after the end of the voucher program. An August 2014 survey of farmers who participated in the voucher programs in 2011–2012 and 2012–2013, indicated that in the 2013–2014 growing season, out of the farmers who are familiar with best practices (in their respective crops), 97 percent used tree pruning, 56 percent used grafting, 100 percent transplanted tomatoes, and 55 percent transplanted onions. More than 70 percent farmers continued to use certified seeds, more than 73 percent farmers continued to use certified fertilizer and more than 85 percent farmers continued to use certified CPP.

2.2.2 Commercial Extension

The project continued supporting agricultural extension services provided by SAS Consulting, two NGO partners and retail input suppliers. In Year 5 the NGOs Mehrubon and Parvozi Parastu in Khatlon oversaw 10 field agronomists and two senior agronomists to provide ongoing technical support to the farmers. Each extension agent/agronomist was trained by the project agronomist in the proper use of voucher inputs and by the project's Environmental Officer in integrated pest management, proper storage and disposal of pesticides, safe handling and protective equipment, and emergency measures in the event of an accident involving pesticides. Extension agents/agronomists were tasked with providing ongoing support to all voucher farmers throughout the season. An evaluation of the NGO extension/agronomist program indicated that voucher recipients received appropriate support and that additional training for extension agents/agronomists is required to enhance effectiveness. Extension agents also reported that farmers request and pay market prices for the services they value such as identification of pests/diseases and selection of appropriate pesticides; testing germination rates of farmers' seeds; etc.

At first the project fully subsidized extension services provided by the NGOs. In the last year of the project, the NGOs started charging for their extension services. The current year voucher program participants would receive these services free of charge, the prior year participants would pay a discounted price, and other farmers would pay a full price. In the last year of the project, the NGOs were required to develop sustainability plans and demonstrate how they can provide these extension services on a sustainable basis. Tables 10 and 11 below provide information on the paid extension services provided by the NGOs and payments received. These rates are for prior voucher program participants, discounted at about 30 percent from their standard prices.

Table 10. Pricelist for Extension Services per Crop in Target Districts

Crop	# Visits per season	Paid Services		
		Cash/ visit, TJS	Cash total, TJS	Payment by product, kg
Onion	12	15	180	200
Horticulture	6	20	120	25
Cereals	6	10	60	100
Melons and gourds	6	20	120	30 units (240kg)
Garden strawberry	6	20	120	25
Potatoes	6	20	120	25
Clover	5	10	50	10 bales

Table 11. Payments for Extension Services Provided by NGOs⁷

NGO Parvozi Parastu				NGO Mehrubon			
Month	Amount of received payment, TJS	Area served, ha	# of signed agreements	Month	Payment received, TJS	Area served, ha	# of signed agreements
April	640	145.5	0	April	1,575	124	1
May	1,105	64.5	22	May	1,850	127	1
June	1,720	52.0	5	June	2,225	127	1
Total	3,465	262	27	Total	5,650	378	3

In its final year, the project announced a request for applications to build the capacity of a retail input network to provide extension services. The project awarded the grant to wholesaler SAS. Under this grant, which covered only 24 percent of the total project cost, SAS:

- Developed a call center service where farmers can call in free of charge to get advice
- Carried out field visits as a fee service (covering transport costs)
- Sent text messages to promote its products and sales
- Published a biweekly newsletter distributed in Khatlon and Sughd Provinces and in Dushanbe
- Allowed farmers to place ads for their products in the newsletter for free
- Conducted 30 free trainings in Sughd and 30 free trainings in Khatlon for farmers and agronomists (50 percent of these training involve foreign trainers such as Syngenta, Bayer, etc.)
- Provided agronomic consultations to partner input dealers
- Sponsored participation by dealers in local and international trainings by local and international instructors
- Published and disseminated information materials (catalogues, brochures, and leaflets) for their partner shops
- Provided ongoing technical assistance to partner input dealers

In 2014 under a contract with the project, the industry association AAT joined the ranks of extension service providers and started disseminating via text messaging weather forecasts and prices of inputs (seeds, fertilizers, and pesticides) in Qurgonteppa, Dushanbe, and Hisor as well as answering farmers' questions via SMS.

⁷ Numbers as of July 2014

To supplement the support of extension agents/agronomists, the project also engaged international suppliers and experts in the training of extension agents, dealers and farms. In Year 5 the project made use of 15 Farmer-to-Farmer volunteers that provided training on fruit orchard management, cold storage of fruits and vegetables, growing onions, farm record keeping and farm management. They also provided training to the extension agents.

2.2.3 Voucher Program

In Year 5 the project did not provide input subsidies. During the year the project continued providing extension services to the last year voucher program participants. It also continued monitoring and evaluating the voucher program participants of the prior years.

2.3 Production Investment

2.3.1 Mechanization Finance Program

After the completion of the voucher program in late 2013, the project started accepting applications for tractor grants. The tractor grants were available only to the farmers who participated in the project's voucher programs. This year the project covered 25 percent of the purchase price of the tractor for each grantee. The other 75 percent came as a grantee's leverage. Part of this leverage had to come from a bank loan acquired specifically for the purpose of purchasing the tractor.

The project selected two tractor suppliers on a competitive basis: Madadi Tursunzoda and Agrotekhservis. Both suppliers are official distributors of the tractor manufacturer MTZ Belarus. The project developed the grant selection criteria, an application form, a form for carrying out financial analysis and a step-by-step tractor grant process. A group of 13 agronomists was tasked with collecting grant applications. The project held a training session for the agronomists, where it introduced the new application forms and explained how to fill them out. The agronomists informed the grantees about the tractor grant program and helped the farmers complete the applications.

Out of 300 participants of the voucher program 121 participants expressed an interest in purchasing Belarus 80X, Belarus 82.1, Belarus 100X, mini-tractor Chery RK- 504 and a walk-behind mini tractor. Following the introductory sessions, two financial analysts employed by partner NGOs Parvozi Parastu and Mehrubon helped the project farmers with their loan applications, from filling out the application and doing loan analysis, to filling out the required paperwork. These analysts made site visits to 121 potential grantees to conduct financial analysis. As a result, one hundred farmers received tractor grants in Year 5. Thanks to the assistance of the financial analysis, the loan approval rate increased from 60 percent in Year 4 to an unprecedented 90 percent in Year 5 as demonstrated in Table 4 below.

Table 12. Bank Loans for Tractor Purchase

Years	Tractors available for distribution	Processed applications for tractors	Applications for bank loans	Bank loans approved	Tractors received	Loan approval ratio
2011-2012	100	26	26	13	13	50%
2012-2013	100	87	87	52	52	60%
2013-2014	100	129	110	100	100	90%

On March 14 and March 18, the project hosted two tractor distribution events in Qubodiyon district and the town of Qurgonteppa of Khatlon to celebrate the purchase of tractors by the farmers. The events were attended by the

Tajikistan Government officials, Deputy Chairman of Khatlon region, USAID representatives, two tractor suppliers, financial institutions, local district and Jamoat authorities and by the project farmers.

2.3.2 Greenhouse Production

Year 5 workplan did not include any activities related to greenhouse production.

Lessons Learned

Farmers use certified inputs and good agronomic practices when they see the benefits. Having seen the benefits of applying certified inputs and best agricultural practices, the farmers continue applying them long after the end of the voucher program. An August 2014 survey of farmers who participated in the voucher programs in 2011–2012 and 2012–2013, indicated that in the 2013–2014 growing season, out of the farmers who are familiar with best practices (in their respective crops), 97 percent used tree pruning, 56 percent used grafting, 100 percent transplanted tomatoes, and 55 percent transplanted onions. More than 70 percent farmers continued to use certified seeds, more than 73 percent farmers continued to use certified fertilizer and more than 85 percent farmers continued to use certified CPP.

The project has had challenges with identifying the right association partner for marketing and other member services. Many industry associations in Tajikistan are dependent on donor funding and initiative. Membership dues are symbolic or non-existent and direct services to members are donor driven. Future activities in Khatlon need to build on the project's work with AAT and IAPEAT and promote the development of these associations so that they serve the interests of their members. There is a strong interest among the current members of these associations in specific services such as laboratory, quality improvement, networking between Sughd and Khatlon partners, extension and marketing services.

Supporting farmers with their loan applications to formal financial institutions proved to be very effective in increasing farmers' access to credit. This increased the loan approval rate from 60 percent in Year 4 to the unprecedented 90 percent in Year 5. Financial officers of partner NGOs helped the project farmers with their loan applications, from filling out the application and doing loan analysis, to filling out the required paperwork.

Farmers are willing to and can pay for the agricultural extension and marketing services they value. In Year 5 the project's partner NGOs started charging for their extension services. The extension agents reported that farmers request and pay market prices for the services they value such as identification of pests/diseases and selection of appropriate pesticides; testing germination rates of farmers' seeds; and other such similar services. AAT also reported that the farmers are willing to pay and are paying for marketing services (i.e. helping them sell their produce at better prices).

Indicators

Table 13. Yield, Income and Gross Margin

		Yield - Ton/Ha				Income -USD				Gross margin (USD/Ha)	
Commodity	Gender	#4 - Change in Yield				#1 - Change in Income (Sales)				#5 - Gross Margin	
		Baseline	Actual	Value Change	% Change	Baseline	Actual	Value Change	Target 25%	Baseline	Actual
Early Onion	Male	35,5	42,3	6,7	19%	324 071	944 295	\$ 620 224	191,4%	\$ 1 661,6	\$ 8 446,7
	Female	39,0	44,8	5,8	15%	22 385	71 743	\$ 49 359	220,5%	\$ 1 332,4	\$ 8 459,3
Subtotal		35,8	42,4	6,7	19%	346 456	1 016 038	\$ 669 583	193,3%	\$ 1 638,6	\$ 8 447,2
Orchard	Male	1,1	1,3	0,1	11%	150 988	247 147	\$ 96 158	63,7%	\$ 215,5	\$ 451,6
	Female	0,9	0,9	0,0	5%	20 646	20 388	\$ (258)	-1,3%	\$ 350,8	\$ 6,7
Subtotal		1,1	1,2	0,1	10%	171 635	267 534	\$ 95 900	55,9%	\$ 229,4	\$ 403,2
Total	Male	13,3	16,6	3,2	24%	475 060	1 191 442	\$ 716 382	150,8%	\$ 675,6	\$ 3 175,2
	Female	10,8	11,9	1,1	11%	43 031	92 131	\$ 49 100	114,1%	\$ 519,3	\$ 1 999,0
Total		12,6	14,9	2,2	18%	518 090	1 283 573	\$ 765 482	147,8%	\$ 660,5	\$ 3 061,5

Table 14. Ag Loans and Investments

	#3 AgLoans		#7 Investments	
	Target	Actual	Target	Actual
Total	\$731,000	\$1,760,591	\$1,349,000	\$1,527,931
Farmers		\$942,138		\$1,010,922
Input Dealers		\$673,830		\$424,780
AgSME		\$144,622		\$92,228

Table 15. Incremental Sales

	# 2 Incremental Sales			
	Baseline	Actual	Increase	% Increase
Farm	\$ 518 090	\$ 1 283 573	\$ 765 482	148%
Input Dealer	\$ 11 064 845	\$ 11 561 326	\$ 496 481	4%
AgSME	\$ 1 414 505	\$ 1 499 112	\$ 84 607	6%
Total	\$ 12 997 440	\$ 14 344 011	\$ 1 346 571	10%

Table 16. Indicators 6, 8, 9

	Target	Actual
#6 Number of hectares under improved technologies	1000 ⁸	311
# 8 Number of farmers and others who have applied new technologies or management practices as a result of USG assistance	1000	843

⁸ Targets in this table were designed to be cumulative but the indicators were collected only from the current year participants

#9 Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations and community-based organizations (CBOs) that applied improved technologies or management practices as a result of USG assistance	10	35
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