



USAID
AMERIKANYŇ HALKYNYŇ
ADYNDAN

TÜRKMENISTAN

Annual Report

(October 2011- September 2012)



*AGRICULTURE
TECHNOLOGY PROGRAM
IN TURKMENISTAN*

Submitted October 2012

By: Weidemann Associates, Inc.

To: USAID/CAR

This publication is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Weidemann Associates, Inc. and do not necessarily reflect the views of USAID or the United States Government.

LIST OF ACRONYMS

AI	Artificial Insemination
COP	Chief of Party
DCOP	Deputy Chief of Party
EMMP	Environmental Mitigation & Monitoring Plan
GOT	Government of Turkmenistan
HH	Household
IPM	Integrated Pest Management
LN	Liquid Nitrogen
LOI	Letter of Invitation
M&E	Monitoring & Evaluation
MFA	Ministry of Foreign Affairs
MSDS	Material Safety Data Sheet
PMEP	Project Monitoring & Evaluation Plan
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government
TOT	Training of Trainers

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OVERVIEW OF ACCOMPLISHMENTS FOR YEAR 2

This report summarizes the work conducted by Weidemann Associates, Inc. in implementing the Agriculture Technology Program (AgTech) for Turkmenistan, during the period of October 2011 through September 2012. Building on the foundation set in the first year, the second year of project activities saw a flurry of developments that have led to generally better than expected results in horticulture & livestock production.

In the first quarter of Year 2, the AgTech Program celebrated the Grand Opening of the project's first AI Center in Mary. Other project activities included the more deliveries of AI Kits and bull semen for trainings, continued horticulture trainings, and the construction of the first greenhouse in the Serdar Etrap of the Balkan Velayat. The first calves of project-provided genetic material were born in December 2011.



The second quarter activities included the roll out of the project-trained technicians training new AI technicians in the velayats. With the assistance of a local agronomist, the project used soil tests to train the project's key greenhouse farmers learn how to analyze soil to improve fertility and plant growth. A fourth demonstration greenhouse was built, this time in Dashoguz. Improved analytical techniques learned in the seminars were applied across the country in participating greenhouses, and increases in production were seen by an average of 73% for the fall 2011-Spring 2012 seasons.

The third quarter shifted the focus more to livestock production, including the feed demonstration activity that involved five farmers in Ahal and Mary who for three months provided additional 2.5kg of feed per day enriched with vitamins and minerals to stimulate increased milk production. The trainings of AI technicians in the velayats concluding, giving the project a total of 55 trained AI technicians to date. The project also identified local partners and signed MoUs for the financial and technical support of creating AI Centers in Ahal and Dashoguz. Regarding horticulture, the project conducted an independent market study that illustrated the export readiness and opportunities for greenhouse farmers of tomatoes and cucumbers. Despite visa denials by the Government of Turkmenistan for an international expert to train farmers on pesticide usage and IPM, a local expert was identified and hired to share these best practices with famers in all velayats, making the produce safer for local consumption.

By the end of the fourth quarter, AgTech managed to meet or exceed PMEP targets in six of its nine indicators. Cumulatively, the project is on schedule to complete its deliverables with only the challenge of increasing milk production as a major challenge due to the nature of improving a livestock dairy herd's genetics. However, through improved feed, even the local herds are seeing 4-5L increases in daily output. When combined with the support from our private sector partner, Chevron, the project is increasing the capacity for veterinarians and farmers to transform the dairy industry in Turkmenistan and support the high local demand for its products. Year 3 seeks to focus less on training and more on the marketing practices and business development to ensure that as

best practices in agriculture are applied, growth continues at a steady pace to increase farmer incomes and provide adequate food security for the region.

The ceiling price on the contract has risen to \$3,432,280 with the addition of the \$150,000 Chevron gift in June, 2012. As of September 30, 2012 the project estimates that \$1,893,624.21 has been spent of the obligated funds of \$2,614,076.

PMP TARGETS AND DEVIATIONS

Performance Indicator	Performance Indicator Definition	Year 2 Proposed	Year 2 Actual	Project Total
50% increase in HH income	<i>Horticulture HHs and farms increasing income by 50%</i>	500	316	316
	<i>Livestock HHs and farms increasing their income by 50%</i>	500	N/A	N/A
Rural HHs benefiting directly from USG Interventions	<i>Number of beneficiaries and training participants, disaggregated by gender and region</i>	1000	1072	1923
Farmers, processors and others who have adopted new technologies or management practices	<i>Number of beneficiaries and training participants using new technologies or practices as introduced by the project, disaggregated by gender and region</i>	500	1067	1467
Quantity of produce grown and/or sold	<i>Farmers, buyers or labs are using AI, improved feed, vet services, greenhouses, drip irrigation, grading, post-harvest packaging practices training</i>	Baseline + 70 %	Baseline + 73%	Baseline + 73%
Value of produce sold to local and international markets	<i>USD value of goods in livestock and horticulture sector disaggregated by product and velayat</i>	Baseline + 20%	Baseline + 36%	Baseline + 36%
Number of agriculture-related firms benefiting directly from USG supported interventions.	<i>Number of input providers and buyers strengthened to provide farmers with necessary inputs.</i>	50	50	71
Number of greenhouses constructed or improved	<i>Number greenhouses constructed and/or renovated in each velayat</i>	100	124	194
Land under improved technologies or management practices	<i>Indicates the number of ha under greenhouse or livestock project activities (existing and new land).</i>	500	4	8

A full description of the PMEP results by indicator is attached as an annex to this report. The project has done well to exceed or at least keep pace on most indicators with the exception of “50% increase in HH income” and “Land under improved technologies or management practices.” As the new calves mature, the project will follow them for information on their milking rate, but this may not be available until Year 4 as a cow typically delivers her first calf when she is about two years old.

The land tenure laws of Turkmenistan continue to restrict what the project can do to expand the amount of land under better technology and agricultural practices.

PROJECT ACTIVITIES AND OBJECTIVES

For each component, Year 2 activities were designed to contribute to the overall objective of increasing agricultural productivity by transferring technology and information to the local input providers, farmers, and households.

In the horticulture component, first year seminars on greenhouse construction, plant care and management were supplemented by trainings on soil testing, fertilizers and pesticide safe usage and application. The activities have spread to new areas of Turkmenistan, reaching a diverse group of farmers and geographic regions. Results have been generally strong, though each region has its own story to tell about facing and overcoming challenges. Overall, production is up 73% over the baseline figures and incomes are growing as prices continue to rise with a sustained domestic demand for cucumbers and tomatoes.

Livestock component activities have expanded from a centralized TOT in Year 1 to regional trainings that take place at the farm level, increasing the number of beneficiary farmers. The result is two-fold: Turkmenistan now has a corps of 55 trained AI technicians, and over 1,500 cows have been inseminated across the country with world class genetic material from Brown Swiss and Holstein sires. Recognizing that maximization of milk production is the ultimate project outcome, the project has looked closely at improving animal feed to support healthier, more productive herds. Looking forward, the project intends to continue to create, produce and disseminate multimedia of various subject matters to have a more accessible training and advertising tools to promote best practices and create widespread impact from activities that would otherwise only affect select farmers.

HORTICULTURE COMPONENT

Greenhouse Reconstruction

In the project's first year, 70 greenhouses were either built or renovated to the specifications highlighted in the project's seminars to create a more productive environment over the same small plot of land. This year an additional 124 greenhouses were built or improved to bring the project's cumulative total to 194. This is a key way that AgTech helps small holders maximize income with least cost investments. The affordability of these small changes has enabled farmers to reinvest in their business as many beneficiary farmers are now building subsequent greenhouses or expanding the size of their plots where possible.

Next Step:

Facilitate greenhouse extension activities that will strengthen the horticulture tomato and cucumber value chains by providing small holder farmers with superior agricultural inputs.

Next Step:

Heat detection training for veterinarians to provide superior breeding services and pregnancy detection using ultrasound equipment as a training tool.

AgTech leveraged USAID investments to build demonstration greenhouses in Balkan and Dashoguz to complete the objective of having a demonstration greenhouse in all five velayats. The demonstration greenhouse built in the Balkan is the first in that region of the country. Our Balkan partner, Mr. Regipbay Allayarov, had a modest yield in his first season, but the excitement and interest generated by project activities in the region has many neighbors looking for ways to invest in building a new greenhouse to grow their own produce. To date, at least another three farmers have built greenhouses in Balkan, each a statement of impact 100% attributable to USAID funding.

CHALLENGES:

- The project has hit a critical mass in the number of new greenhouses being built around the etraps (counties) where the demonstration greenhouses are located in respective velayats
- Weaker than normal harvests in late 2011 led to a delay for many farmers in making upgrades to their structures
- No materials are readily available near the Balkan demonstration greenhouse, which makes building new greenhouses there more complex logistically

SUCCESES:

- Greenhouse designs that include higher roofs have effectively increased production without additional environmental impact
- First greenhouse in Serdar Etrap in Balkan constructed with cost-share agreement that included 40% share from USAID.

Horticulture Training & Seminars

The Horticulture training sessions focused on two critical areas of greenhouse management: soil preparation and plant protection. The project training sessions were designed to provide access to technological practices that lead to increased yields. Many farmers have been surprised by the preparations they need to take to make their soil most fertile for plant growth, and the question & answer format of the project seminars have allowed beneficiary farmers to get tailored advice for their specific cases. More detailed accounts of these project activities are listed below.

“Before we used the soil tests, we were guessing in our fertilizer applications. Now we have a much clearer picture for how much nitrogen, phosphorus and potassium is needed to balance the soil for optimal plant growth.”

-Garyagdy Ashyrov, Ahal Greenhouse Farmer

The Program’s objective for the horticulture component trainings is to deliver knowledge and introduce new technology and practices through the newly trained farmers in their respective velayats. The strategy is for the farmers to take what they learn and share this information within their community to generate a wider impact than what farmer-to-farmer training can provide by itself. Year 2 began with soil testing seminars using a local consultant, Ms. Oguljamal Bazarova, to train the lead farmers in each velayat. Upon this initial training, the project-procured soil testing kits were left with each demonstration greenhouse for local farmers to access for analysis of their soil.



The project had also planned trainings on pesticide safe usage as a follow up to the completion of the country’s first PERSUAP in Year 1. Mr. Alan

Schroeder was identified to deliver these trainings, but was denied entry to the country for unknown reasons. However, Mr. Schroeder was still able to provide technical advice to the project and materials for training, which were used by the project in conducting these trainings in Q3 with local pesticide specialist Mr. Mergenguly Hezretkulov. These seminars were highly regarded by participants who felt the need to understand how to better protect their crops, and IPM was introduced to provide alternatives to traditional chemical applications. Toxicity of several commonly used pesticides was evaluated and the list of GOT approved pesticides was distributed to ensure that all participating farmers apply pesticides safely in line with government regulations.

By connecting with ABEM Trading Co. and its Turkmen representative, Mr. Marco de Wolf, the project overcame the challenge of not being able to bring in an international specialist to support the trainings and seminars. Mr. de Wolf joined our local team during spring seminars in Ahal, Mary and Lebap from March through May to explain how seed selection can impact plant yield and growth. Though ABEM is licensed for selling only certain seeds, the project was able to bring at least a slice of the international market upstream to the farmer. Mr. de Wolf left several samples of tomato and cucumbers, of which most all grew well in all regions he visited. It is positive experiences like this that have the AgTech project planning a study tour in Year 3 for Turkmen seed providers to become licensed distributors for international brands that best suit the local greenhouse soil conditions.

CHALLENGES:

- Local authorities have closed down seminars in Q3 due to weak communications between the project, the MFA, and the local authorities, thus suspending all seminars until Q1 of Year 3 once a newly approved training schedule is in place and shared with authorities.
- Drip Irrigation seminars planned for Q4 have been put on hold until USAID receives further authorization from the MFA or other GOT representative
- The processes of licensing and registration of input providers (e.g., seed, fertilizer, pesticides) limits the ability of the project to fully develop the value chain

SUCCESES:

- Increase in supplies of varieties of international seeds for cucumbers and tomatoes, which have shown better production in most cases
- Leveraging locally available international support from private sector businesses and stakeholders who have a vested interest in the growth and success of greenhouse farmers
- 73% increase in production and a 36% increase in income among participating farmers

Export Market and Trade Capacity Study

In attempt to better understand the export potential of Turkmenistan, the AgTech project commissioned a study on the Export Market and Trade Capacity for Turkmen horticulture. The project contracted with the MCT Agency, a local organization that specializes on market research, to conduct the study and develop an independent analysis on the country's potential for exporting fresh tomatoes and cucumbers to neighboring markets. The study was designed to look inward at Turkmenistan's readiness to export. Also, internal transport of goods to local borders was studied to identify bottlenecks and opportunities to increase efficiency in getting goods from farmer to retail buyer.

Despite challenges in collecting information, the MCT Agency determined that there is still significant domestic demand for tomatoes and cucumbers, leaving the export market as a niche for 5-10% of Turkmen farmers who are prepared to make the linkages necessary to cross internal and international borders to get produce from the farm to foreign countries. Exporting farmers are mostly using truck transport. The lack of knowledge of markets in neighboring countries, the underdeveloped distribution channels, and general corruption along the transit routes discourages many from pursuing an otherwise profitable endeavor.

CHALLENGES:

- People are unwilling to divulge their personal information regarding product sales
- Customs officials are unwilling to speak about cross-border horticulture trade, making it hard to define the impact of corruption on exporting

SUCSESSES:

- Greater research on the local demand for horticulture products, which appears high enough to support continued growth in domestic production for cucumbers and tomatoes
- Greater understanding on the internal constraints between regions of Turkmenistan that restrict farmers from exporting their produce to regional and international buyers

LIVESTOCK COMPONENT

AI Centers and Technology Transfer

Year 2 kicked off with the Grand Opening of the first AI Center, located in Mary. The AI Center is a one-stop shop for livestock development needs, including formal training and education, equipment for conducting AI services, and laboratory equipment that can aid in the analysis of the success of attempted inseminations. A computer is available for the area AI practitioners to build their own database of clients and keep livestock records to prevent health defects that could result from interbreeding blood lines.

On November 30, 2011, over 40 people attended the Grand Opening of the Mary AI Center, including USAID personnel, AgTech project staff, the lead AI Trainer, Ms. Katya Chichnayeva, the first generation of trained AI technicians, and a few other farmers and local stakeholders. Mr. Ovezgeldy Artykov, the Senior Editor of the Agricultural Journal *Tazę Oba* addressed the reception and wrote a 2-page article including the work of the AgTech project in the following monthly edition of the journal. Continuing to build on this relationship remains a cornerstone to the public outreach efforts of the project.

After challenges in identifying private farmers willing to co-invest in supporting new AI Centers, the project has identified partners for the Ahal and Dashoguz AI Centers, with whom MoUs have been signed. The renovation work for the Ahal AI Center at Nepes Karaev's farm was completed in September 2012 and the Grand Openings for both centers is scheduled for November 2012.

CHALLENGES:

- The untimely incarceration of the financier of the Mary AI Center until May 2012 when he was released on a condition of amnesty discouraged other entrepreneurs from investing in the livestock industry.
- Import restrictions on certain veterinary goods, including some pharmaceuticals, has put a tremendous strain on farmers to keep their animals' health up to date and has limited the project's ability to promote private sector development through support for input providers.
- Lack of permission for foreign consultants to visit the Dashoguz region has made planning and preparations for an AI Center there a more challenging process compared to other regions in the country.

SUCSESSES:

- Lessons learned in using a more urban location for an AI Center has led to the selection of an on-the-farm location for the Ahal AI Center.
- Marketing materials with contact information for AI specialists and a grassroots effort of awareness of the health of the new calves is slowly increasing demand for more AI services.

AI Trainings in the velayats

In Year 1 of the AgTech Project, 12 veterinarians completed the AI TOT. For Year 2, the 12 newly trained technicians were expected to train about 4-5 veterinarians each in their respective velayats in AI techniques. In reality, 10 AI trainers participated who trained a total of 44 new technicians across the country. Following the procurement of an additional 2250 doses of bull semen (70% Brown Swiss and 30% Holstein), each AI trainer was given his allocation of genetic material, a 10L Dewar flask, and an AI kit to equip them with the proper tools needed to widen the impact of this activity. As a part of the ongoing effort to build sustainable activities in livestock development, the project encouraged each farmer to charge a certain amount for each insemination, thus building equity from which they can invest in their operations. Following their trainings, the last of which concluded in August, each new technician has been awarded an AI kits and the trainers have co-shared \$300 each for 100 doses of semen from the next procurement.

The first calf from USAID-funded bull semen procured through ABS was born on Dec.16 in the Ahal velayat. The owner, Ms. Durdiyeva, exclaimed, "We clearly see how great our new calf is. He is bigger, eating more, and quickly growing."

Combined, the AI trainings over the first two years of the project have resulted in over 1500 inseminated cows. The first calf was a male Holstein, born on Dec. 16, 2011 to the Durdiyev family in Ahal, and 206 have been born as of Sept. 30, 2012. It is a challenge for the project's AI



technicians to track farmers in distant areas who have means of communication, but of those that are known 70% of inseminations have been successful. This success rate is acceptable for their corresponding level of experience, but there are few people who can determine pregnancy in cows in the country. Even the best in the country still struggle to identify pregnancies through palpation, and of those who can, they can only positively identify bovine pregnancies after 80-90 days. In the first quarter of Year 3,

international technical assistance funded by the Chevron gift funds will help improve their skills to the international best practice of identifying pregnancies at about 40-45 days after insemination.

CHALLENGES:

- The foremost challenge is input supply, and for enterprising individuals obtaining a license to import bull semen is an extremely difficult and often impossible process.
- Farm-level understanding of the AI process and breeds is weak, which has left many farmers reluctant to try a new way of inseminating their cattle.
- Tracking the success rate of inseminations for small holders is a challenge for M&E due to the distance between farms. The project will use AI Centers in each velayat to improve record keeping and update the status of project-funded inseminated cattle.

SUCSESSES:

- Every region in Turkmenistan now has trained AI service providers, equipped and available for fee-based services to inseminate dairy cattle with better genetic lineages.
- 100% of those who started their training completed it and received USAID-funded AI Kits to start their own practice. Each trainee was certified as qualified by demonstrating their skills in person on the farm to the project’s master AI trainer.

Feed Demonstration Activity



The project worked with five farms in the Ahal and Mary velayats to conduct a feed demonstration over an 80-day period from April through June. In March, the project spent a couple of weeks to create a mixed feed ration made of milled barley, cottonseed meal, chalk (calcium supplement), and a locally available vitamin & mineral supplement called Jivina. Over 20 tons was produced for this activity and mixed by hand to ensure proper rationing. By using locally available products and local partners, the project’s goal was to not only demonstrate the widely held belief that an improved feed will increase dairy production

among local cows, but also that such a feed can be created in Turkmenistan locally with available resources.

Participating Farmers and Number of Heads in the Feed Trials

Farm Name	# of Milking Cows	Baseline milk/day (L)	Increased milk/day (L)	% Increase in Milk Production
Nepes Karayev	40	380 L/day	496 L/day	30.5%
Reyimbay Yoldashev	10	35 L/day	88 L/day	151.4%
Sha Yoly	20	392 L/day	445 L/day	13.5%
Bayram Meredov	20	173 L/day	237 L/day	37.0%
Hally Italmazov	10	52 L/day	98 L/day	88.5%
TOTAL	100	1,032 L/day	1,364 L/day	32.2%

Within a day or two of feeding their cows an extra 2.5kg of the project-funded feed, all farmers noticed increases in their herd's daily milk production, averaging 3-5L more than normal as a result of the use of the more nutritious feed.

The project is using the feed demonstration activity as an opportunity to advertise to local farmers the effect good nutrition and animal care can have on their herd's milk productivity. A short 10 minute documentary was made from about three and a half hours of video footage shot over the three-month period. As a follow up to this activity, the project has identified key investors in the livestock sector who are interested in AI development and feed production, like Mr. Ashimuradov who went to Turkey with the project to examine Turkish animal feed production lines. Currently all Turkmen feed mills produce animal feeds for chicken, sheep and animals other than cattle.

CHALLENGES:

- Large farms with more modern feed practices and resources to grow their own forage saw less impressive results. For example, Sha Yoly's herd increased milk production from an average output of 19.6L per day to 22.3L per day.
- Hot, dry weather in June significantly dropped the productivity of cows at all farms observed.
- Proving that investments in a feed mill will create a profitable, sustainable business in Turkmenistan.

SUCSESSES:

- Reyimbay Yoldashev increased his herd's milk production by over 150% thanks in part to the improved feed and in part to extra instruction regarding hydration of his cows.
- For farms milking their cows by hand, the use of the improved feed increased the cows' appetites, and as they ate for longer time periods, the milk hands were able to collect more milk per session with the new feed.

Business-to-Business Tour to Turkey

Although it was not a part of the original work plan, as time passed in Year 2 it became increasingly clearer that there was a need to connect the Turkmen input providers and livestock investors (e.g., importers of AI supplies, importers of animal pharmaceuticals, investors in animal feed and supplements, etc.) with the international suppliers and professionals that could support project activities. Based on the cultural ties of the two countries, the decision was made to send a group to Turkey.

Next Step:

Using a best value business plan competition, support investment in the development of a pilot feed mill that will provide a more balanced feed to farmers at a price that the market can support.

Next Step:

AI technicians will apply for import licenses and begin to run self-sufficient operations to deliver AI services to their local farming communities on a fee-for-service basis

The USAID Agriculture Technology Program in Turkmenistan sent a delegation of Turkmen enterprising veterinarians to meet with the Turkish company Ege Vet, the official distributor for U.S.-based firm World Wide Sires in Turkey from August 27 - August 29, 2012. In addition to the project staff, the Turkmen participants included Mr. Batyr Begliyev from Mary, Husain Yagshymyratov from Dashoguz, and Mr. Hojamurad Ashimuradov from Ahal. This trip included touring Ege Vet's facilities, including the Bull Stud where progeny-tested bulls are kept for semen collection. The group also toured a feed production mill that was built over 30 years ago. This was helpful to Mr. Ashimuradov, one of the participants, who is looking into the possibility of building his own feed production business in the Ahal region. He explained, "While I am interested in making my beef cattle more profitable, I understand that better feed will increase their value. In the long run, being able to produce my own feed and selling the excess feed produced will not only benefit my farm, but also improve the meat and dairy industry throughout the country."



CHALLENGES:

- The import of bull semen is still a challenge due to lingering issues regarding the ability for businessmen to obtain import licenses for veterinary medicines, products and supplies.
- Many farmers have weak access to computers and Internet access to build and/or sustain their international relationships with suppliers, thus input providers will remain a key component of the value chain for Turkmen livestock development.

SUCCESES:

- The project has shared contact information with other livestock professionals, farmers and the trained AI practitioners to facilitate increased supply of equipment and bull semen as needed.
- In pooling \$300 from each AI trainer to buy more bull semen, the project has shown that there is capacity for the livestock industry to make investments when pooled together.

PROGRAM DEVELOPMENT AND SUPPLIMENTARY ACTIVITIES

Equipment Procurement

A number of important procurements were made in Year 2 to support the activities of the AgTech Project. On the horticulture side, five soil test kits were bought – one for each velayat – that contain 200 tests each and the instructions translated into Turkmen for practical use on at the farm-level. These acted as starter kits for the trainers in each velayat, and it is the expectation of the project that these trainers will purchase their own kits in the future to provide such extension services on an ongoing basis. AI kits were procured for the 44 new trainees in 2012. 20 portable Dewar flasks (11L each) and five larger stationary Dewar flasks (50L each) with pumps, which will be distributed among the current and new AI Centers being developed by the project. Additionally, the project began the procurement for the Chevron-funded LN generator, discussed separately in the Chevron funding section of the report (p. 17).

Mastitis Test Kits

One potential cause for low milk production is a common inflammatory disease called mastitis, resulting often from a bacterial infection that affects the ability of the cow to properly secrete milk from her teats. To make sure that feed was not wasted on unproductive cows, the project used California Mastitis Tests (CMTs) to test the somatic cell count of the cow's milk. Project staff instructed the farmers on the use of the equipment and shared with them how this estimate can be useful in managing their dairy herd to minimize unnecessary losses due to low milk production in sick cows that may be showing little to no symptoms.

Pomegranate Development Program

In the first two quarters of Year 2, the project explored the idea of providing technical assistance to pomegranate farmers in the Balkan region. After identifying a local partner and 140 hectares of land that needed improved pumps for better irrigation, a plan was made to use grant funding to support the investments. Unfortunately, due to the land ownership laws and grant registration in Turkmenistan, the grantee would technically have been the GOT, not the farmers leasing the land. Although the project and USAID both still consider this a worthy activity, the challenge of finding a mechanism to deliver assistance and monitoring the use of that funding could not justify spending the money for this proposed activity.

U.S.-Turkmen Business Expo 2012

On May 3-5, 2012, Turkmenistan hosted the 2nd Annual US-Turkmen Business Expo. The USAID Agriculture Technology Program took the opportunity to exhibit the materials and activities of the AgTech project in its own booth next to the USAID and US Embassy Public Diplomacy booths. This was an excellent outreach opportunity and allowed government officials, local and international businesses, and the general public to gain awareness of the work that USAID conducts in the agricultural industry in Turkmenistan. The project's key personnel gave brief radio interviews with Turkmen radio explaining how the project promotes development and supports Turkmen farmers to increase production in the horticulture and livestock sectors of the economy.



SUCCESS STORIES

Case Study: Greenhouse Management Seminars Lead to Increased Crop Yields

First Person: Cucumber Production on the Rise

First Person: Artificial Insemination Services Lead to Healthier Livestock

Photo & Caption: Raising a Calf Today for Stronger Farms Tomorrow

Snapshot: Knowledge Sharing Leads to Gains in Production and Income

COMPLIANCE WITH SECTION “IMPLEMENTATION PRINCIPLES AND KEY ISSUES”

Anti-Corruption

Because of the many layers of bureaucracy in Turkmenistan, the AgTech project works side by side many private sector farmers and agricultural input providers to help guide them through the processes of licensing, product registration and importing goods for sale. For example, despite the freeze on new licenses, with project support Mr. Batyr Beglieyev of Mary was one of the few businessmen whose import license remained valid to purchase bull semen over the past year. This has allowed the project’s livestock development activities to continue despite a less than optimal policy environment in the country.

Capacity Building of Local Staff and Sustainability

Capacity Building was a major cornerstone of the project’s strategy as leadership was planned to become fully local with the transition from an expatriate COP to a local COP. Additionally, almost all short-term technical assistance has used local talent when available. In particular, the AI TOT has now created a group of talent spread across the country that can professionally provide livestock development assistance in their localities. Also, using former Turkmen government employees as consultants has helped bridge the gap between US-led development initiatives and Turkmen culturally acceptable practices.

Environmental Compliance Requirements

Turkmenistan’s very first Pesticide Evaluation Review and Safe Use Action Plan (PERSUAP) was completed early in Year 2. The ER Checklists have been developed for the horticulture and livestock component activities as required by the MEO. These tools have been incorporated into activities such as the pesticide trainings in the velayats where lists of approved pesticides are distributed and safety equipment is demonstrated in use. MSDSs were completed for chemicals contained in each approved pesticides, as well the EMMP with appropriate indicators was completed in Q3 of Year 2.

Food Security

To address some food security issues in the Balkan region, mostly related to inflated prices at the local markets for fresh fruits and vegetables, the project built a demonstration greenhouse in December 2011. The first harvest was this past spring in 2012, and three other people have since built greenhouses to produce more local tomatoes and cucumbers. While a small start, with other interventions to support small holder horticulture and strategies on timing the market, the region may finally feel some relief from inflationary effects of seasonal price shocks in the market. Meanwhile, in livestock, the feed demonstration gave a real life example of how investments in animal feed can increase milk yields. A larger milk supply will help Turkmen farmers and dairy producers make more dairy products available, giving rural populations who have less income to spend an opportunity to address the nutritional need of their families.

Gender and Youth

In the first year of the project, the staff was able to include 23% female participation in the horticulture



seminars. However, in the second year, as interest increased for information on soil testing and pesticide treatments, more men began to attend seminars. Although the AgTech project made an honest attempt to bring more women into the seminars, attendance was still dominated mostly by male farmers. On the livestock side, the story was also dominated by the strong male role in Turkmen farming society, particularly among veterinarians. Yet the project was able to train its first female AI practitioner in Lebap, Ms. Kumush Jajiyeva of the Farm Union Azatlyk. One other success was that about one third of the AI participants in the velayat trainings conducted in year 2 were between the ages of 16-30, suggesting that the project is building skills not only for the present, but the future of livestock development in Turkmenistan as well.

SUMMARY OF STAFFING MATTERS

On October 23, 2011, following the resignation of Mr. Jeffrey Lamont from the COP position at the conclusion of Year 1, Mr. Charles Yesolitis entered the post as COP for the duration of Year 2. The project office has been fully staffed since its first year with no changes to long term local personnel. On May 28, 2012, the project welcomed its new Deputy Chief of Party (DCOP), Mr. Farhat Orunov. The addition of Mr. Orunov came as part of a planned transition from an expatriate COP in years 1-2 to a local COP in years 3-4. Over the summer, Mr. Orunov worked closely with Mr. Yesolitis on all aspects of project management to help build internal management capacity and prepare for the transition, which was expected to take place in October 2012. However, due to challenges in obtaining an extended visa, Mr. Yesolitis left Turkmenistan and the post prematurely at the end of August 2012. Mr. Orunov has since taken over as the project's COP, at first acting in such capacity until he was officially approved for the position on October 12, 2012.

CHEVRON FUNDED ACTIVITIES

On June 22, 2012, the USAID Agriculture Technology Program in Turkmenistan received gift funding from Chevron in the amount of \$150,000, which was added to the ceiling price of the contract and obligated for project activities as previously designed and agreed upon by Chevron and USAID. As of Sept. 30, 2012, the project has spent \$114,296.17 with the remaining amount adding up to \$35,703.83.



LN Generator

The Chevron funding's primary activity in Year 2 was the procurement of a LN generator, and all direct and indirect costs accrued reflect this procurement.

Recognizing the need for maintaining the cold chain for cryogenically-frozen bovine semen, which the Project uses for livestock development activities, Chevron funds have been used to buy a LN generator from the US-based manufacturer Kelvin International Corporation. As a result of this purchase made in Q4 of project Year 2, all the AI Centers built and yet to be established will have access to a consistent supply of LN to keep safe all imported product for genetic improvement of Turkmenistan's livestock herd. The direct beneficiaries include the AI service providers who require their straws of bull semen to remain frozen until the time of use for insemination at the farm. Indirect beneficiaries include all the farms whose cattle receive AI services to increase the quality of their cattle breeds.

Specifically, the project procured the NL280 400 VAC, 50 Hz 3-phase nitrogen generator and liquefier. This model is water and/or air cooled, producing up to 40L/day, enabling the machine to work in an environment as hot as 50 degrees Celsius. In addition to the add-ons of the chiller and the refrigerated drier, a spare parts package was sent with the machine as well for quick and easy maintenance over the next 5 years. Plans are in place for training on the use of the LN generator in Q1 of Year 3 by those authorized by the GOT to produce and/or disseminate LN to project trained AI practitioners.



Heat Detection Seminar

The remaining \$35,703.83 of the gift funds provided by Chevron will be spent on a consultancy with a veterinarian from Veterinarians Without Borders to provide two weeks of training on heat detection for bovine livestock. This introductory training for veterinarians and farmers in Ahal and Mary will increase the awareness of veterinarians of the reproductive issues concerning the development of a better breed in Turkmenistan. As a part of this training, USAID will be co-funding the procurement of an ultrasound machine that will be used as a training tool initially, and then left with the project for continued use in the project AI Centers and elsewhere as needed to aid farmers and AI technicians in breeding services. The result of this will be a reduction of accidental fetal abortions and an increase in heat detection efficiency, maximizing the productivity of cows and ideally speeding up the process of improving the genetic potential of Turkmenistan's dairy herd. The project anticipates that all Chevron funding will have been used by the end of Q1 in project Year 3 (i.e., by the end of the 2012 calendar year).

M&E Targets and Results for Chevron Funding

Indicator		Year 2	Year 3	Year 4
Number of direct and indirect beneficiaries (disaggregated by women/men and adults/youth under 18);		55 total		
		54 male		
		1 female		
		55 adults		
		0 youth		
Number of partners leveraged		1		
Dollar amount of funds leveraged through partnership	Initial USAID Contribution	\$0		
	Chevron Contribution	\$114,296.17		
Amount of in-kind contribution leveraged through partnership		\$0		