AFGHANISTAN AGRICULTURAL EXTENSION PROJECT - II (AAEP II)

Training Report:
Pest Management Training in Herat, Afghanistan

The USAID funded Afghanistan Agricultural Extension Project-II (AAEP-II) is designed to support individual and institutional capacity building in the Afghan Ministry of Agriculture, Irrigation and Livestock (MAIL) to enable the agency to deliver effective, efficient educational programs to individuals in Afghanistan’s agricultural sector to improve production agriculture and crop storage. AAEP II also helps link DAILs to growers associations, NGOs, and other entities supporting Afghan agriculture.

AAEP II programmatic efforts focus on training DAIL extension staff and other key audiences improved production methods, more effective administration, and various teaching or technology transfer technologies (such as teaching farms, farmer field schools) that can be utilized to teach and/or demonstrate improved framing, storage, and other technologies in five core provinces (Balkh, Herat, Kabul, Nangarhar, and Kunduz). Purdue leads AAEP II efforts in Herat Province. UC Davis, Washington State University, Texas A&M, and University of Maryland lead AAEP II efforts in the other targeted provinces. AAEP II also provides small grants for lead farmers to replicate good practices on their farms that other farmers can learn from. The model farms give farmers an on-the-ground example of good practices and access to trainers.

Purdue has a focus on building capacity in postharvest storage with hermetic storage technology, and teaching Afghans to utilize integrated pest management practices. Purdue faculty are working directly with Herat DAIL employees to teach them storage and pest management concepts so they will be able to teach other extension staff the techniques.
Overview:
The production of fruit and vegetable crops are an important means of support for many Afghans and a critical portion of the daily diet for all Afghans. Yet many Afghans lack knowledge about modern methods of agricultural production in general and pest management methods in particular. Further, those Afghans whose job it is to advice farmers about pest management lack fundamental knowledge about this subject. For this reason, a training was conducted in Herat in October of 2015.

Training Objective:
The purpose of the training was to:
* Present information on weed management to extension specialists, university professors and students. This training included a discussion of the principals and a demonstration of solarization, a low-tech pest management technique.
* A discussion at the DAIL on a comparison between a nutrient deficiencies and disease symptoms.
* A hands-on training on laboratory instruments at the DAIL plant protection laboratory.

Workshop Activities:
_Urdukhan Research Farm_- There were about 25 participants in the training. The subjects of the presentations for Oct 11 were weeds, specifically camelthorn, broomrape and dodder. The presentations focused on identification, biology and management of these pests. Questions during this portion of the training included subjects such as the biology of weed seeds, safety of feeding weeds to cattle and herbicides that might be used to control weeds.

In the afternoon, the training moved outside where the technique of solarization was demonstrated in plots prepared by AAEP staff. This technique offers an opportunity to use the energy of the sun to sufficiently heat the soil to kill weed seeds and pathogens. Soil thermometers were given out to participants so that they could demonstrate the technique in their own districts. The only other material necessary for solarization, the plastic ground cover, is
easily obtained in Afghanistan as a drop cloth for painting. The DAIL director visited the training in the afternoon and watched the demonstration. A local TV crew filmed the demonstration, which included a question and answer segment between the director and Dan.

**DAIL plant protection building**—The morning presentation, conducted in the DAIL plant protection building, was about plant nutrition and specifically about the role of micronutrients. A handout, which Mohammad Rauf translated, included information about each micronutrient and whether each is mobile in the plant or not. One of the focuses of the presentation was the difference between disease symptoms and micronutrient deficiencies.

Questions in this portion of the training included details about the chemistry of the elements and the application of nutrient deficiencies in various crops.

In the afternoon, the presentation focused on vegetable diseases and management. Crops that were discussed included cucumber, zucchini, watermelon tomato and broccoli. Questions during this portion of the presentation included the safety of produce treated with pesticides, symptomology of nematode diseases and details about management of white rust of brassica crops.

**DAIL plant protection laboratory**—A hands on training was conducted at the DAIL plant protection laboratory. Two of the exercises conducted during this training were: measuring soil pH and the observation of spider mites under the microscope. These demonstrations were carried out with the PP staff in the Herat laboratory.

**Herat University**—Although the original understanding of the training at Herat University was that an informal meeting had been planned, shortly before the meeting was to take place, Professor Masoumi requested specific subjects be covered. A portion of the PowerPoint from Oct 12 could be used, but the rest had to be constructed rather quickly and Mohammad did not have a chance to translate the slides.
When the AAEP staff got to Herat University, they were shown to a classroom of students with several professors present. There were 30 students and 4 professors. Several of the students had been to Purdue to visit. Dan presented and Mohammad translated. Questions included requests for information on tree diseases, management of damping-off diseases and details of how irrigation water might lead to disease spread.

After the lecture had concluded, Dan was shown the FFS greenhouse at Herat University. Dan discussed the growth and disease management of the cucumbers grown in the greenhouse. One of the subjects that came up was temperature management. When the subject of a high/low thermometer was mentioned, it was clear that this was a new concept. High/low thermometers have now been delivered to Herat University to be demonstrated in the greenhouses for temperature management.

**Workshop Outcomes:**

As a result of participating in the trainings, Afghans learned,

* Identification and management of three weed species that had been identified as important by the participants. Management methods were discussed and in particular, the technique of solarization. The latter technique was demonstrated at the Urdukhan Farm in such a way that the participants would be able to teach the technique to their clientele. Participants were also taught how to use a soil thermometer and given one to take home.

* Participants learned about the symptoms of minor nutrient deficiencies that may affect fruit and vegetables and how to tell the difference between nutrient deficiencies and disease symptoms. Participants also were given a translated handout to take home for teaching purposes.

* A select group of participants learned hands-on techniques at the plant protection DAIL laboratory. These techniques included soil pH measurement and the use of a compound microscope to view spider mites.
* At Herat University, students and faculty were able to attend and ask question at a lecture about disease diagnosis and management. After the lecture, students and faculty went to a university greenhouse where pest management of cucumbers was demonstrated.

* Participants in the DAIL training received all the teaching materials on a CD for further use.

A pre and posttest was given before and after the Sunday and Monday training. Five questions were chosen to represent both days of training. These scores of 1 through 5 were totaled up for all test takers. Among the 16 individuals who took both the pre and posttest, the total pretest scores were 39 and the total posttest scores were 64. This represents 61 percent increase in knowledge after the training was complete.

**Next Steps:**

Next steps: Participants will now be able to:

* Describe weed identification and management with their clients. This includes demonstration of the technique of solarization.
* Teach the difference between nutrient deficiency and disease symptoms.
* Herat University students and faculty learned about diagnosis and pest management and will be able to use the new concepts on greenhouse grown vegetables as demonstrated in the training.