

IPM CRSP Trip Report

Country Visited: Tajikistan
Dates of Travel: 4 June – 13 June 2011

Travelers Names and Affiliations:

Dr. Megan Kennelly, Kansas State University, Dept of Plant Pathology

Travel companions: Karim Maredia, George Bird, Walter Pett, Linda Racioppi, and Zahra Jamal from Michigan State University; Frank Zalom, UC-Davis; Naidu Rayapati, Washington State University; Muniappan Rangaswamy, Virginia Tech; Mustapha El-Bouhssini, ICARDA.

Purpose of Trip:

(1) To conduct plant diagnostic workshop to provide training to various individuals from government, university, and other institutions from Tajikistan, Uzbekistan, and Kyrgyzstan; (2) To provide plant diagnostic and IPM training to students at Tajik National University; (3) To further develop IPM packages for wheat, potato, and tomato in conjunction with Central Asian colleagues; (4) To visit field research/demo sites associated with IPM research.

Sites Visited: Dushanbe, Hissor, Muminabad

Description of Activities/Observations:

June 6, 2011: Planning Meeting and Sample Collections

I attended the group planning meeting with the travel companions listed above along with Dr. Nurali Saidov (Tajikistan research fellow), Dr. Barno Tashpulatova (Uzbekistan research fellow), Dr. Murat Aitmatov (Kyrgyzstan research fellow), and Dr. Ravsa Mavlyanova (AVRDC). Dr. Muni provided some insight into the overall goals of the IPM CRSP and each team provided some updates on their activities.

We visited several field sites to collect insect and disease samples for the Diagnostic Workshop. Crops included wheat, potato, tomato, onion, herbs (including coriander, an herb identified in Phase I as a good attractant for beneficials). It was a dry year, so diseases were not abundant but we did collect some yellow rust and smut from wheat. George Bird collected soil for nematode extractions. We all helped the entomologists collect insects including coccinellids, Russian wheat aphid, cereal leaf beetle (a focus of the research), bees, and other specimens. We had the opportunity to speak with the (male) farmers at one of the sites. Women were also working in the fields but they kept their distance.

June 7-8-9, Diagnostic workshop, at Tajik National University

I participated in the IPM CRSP Diagnostic Workshop, a main focus of the visit and a connection to the Global Theme of Diagnostics as well as Virology. We all worked collaboratively in April and May to develop a plan. The foundational sketch of the workshop was based on IPDN's previous trainings in other countries.

We prepared a list of questions several weeks in advance to better understand their backgrounds and training needs:

1. What is your name and current title/position?
2. What are your expectations for this diagnostic workshop? What do you hope to learn?
3. How will you use this training in the future?
4. Please describe the diagnostic facilities that are available to you at your institution (laboratory facilities, microscopes, ELISA materials, autoclave, laminar flow hood, PCR machine, other supplies, equipment, etc):
5. Do you have any prior diagnostic training in plant pathogenic fungi? If so, please describe briefly:
6. Do you have any prior diagnostic training in plant pathogenic bacteria? If so, please describe briefly.

7. Do you have any prior diagnostic training in plant pathogenic nematodes?
If so, please describe briefly:
8. Do you have any prior diagnostic training in plant pathogenic viruses? If so, please describe briefly:
9. Do you have any prior diagnostic training in entomology? If so, please describe briefly:
10. Do you have any prior diagnostic training about bacterial/fungal/nematode community structure in relation to soil quality, nutrient mineralization and plant pest risk reduction?

Most of the answers indicated very little prior training, ie, much need for training.

June 7: Pest Diagnostics Training Workshop “Pest Problems and Diagnostic Techniques”

Welcoming remark and Overview of Workshop

Professor Saidov N.S. Rector of Tajik National University; Dr. Muniappan R.N. Director of Global IPM CRSP, Virginia Tech; Dr. Karim Maredia, Director of Central Asia IPM CRSP Project, MSU

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| 11:00-12:30 | Option 1: Basic Lecture: Basic Plant Pathology
(Dr. Megan Kennelly, Kansas State University)
Option 2: Lecture: Basic Entomology
(Dr. Walter Pett, Michigan State University) |
| 15:00 -16:15 | Diagnosing diseases caused by nematodes Dr. George Bird |
| 16:30 – 17:00 | IPDN, and Presentation by delegation from Kyrgyzstan. |

Wednesday, June 08, 2011

8:30-9:20 **Lecture: Diagnosis of Fungal and bacterial pathogens**
(using wheat, potato, and tomato as examples). Dr. Megan
Kennelly

9:20-10:45 **Lecture: Diagnosis of Viruses.** *Dr. Naidu*

11:15-12:00 **Lecture: Sunn Pest IPM.** *Dr. Mustapha El Bouhssini*

13:30-16:30 **Hands-on laboratory exercises, demonstrations**

Break participants into 4 groups and rotate, with short break in between as needed.

1. Microscopy and culture techniques for fungi and bacteria. - *Megan Kennelly*

2. Serology and other techniques for viruses (some techniques can also be applied to bacteria). *Dr. Naidu, Washington State. Assisted by Barno and Frank*

3. Microscopic ID of nematodes. *Dr. George Bird,*

4. Arthropod ID: pests and beneficials. *Dr. Mustapha, Dr. Pett, Dr. Nurali*

Thursday, June 09, 2011

8:00 – 13:00 Visits to IPM CRSP Research and Demonstration sites to Wheat and Tomato crops in Hissor district. Site assessments/Field diagnostics; Use of field notes and digital photos; Sampling for nematodes, root and foliar pathogens; Use of insect sweep nets; Beneficial insects

June 10: Collaborations with University of Central Asia (UCA) and lecture at Tajik National University (TNU)

This session was led by Chad Dear, coordinator of the Mountain Societies Research Center of UCA. The goals were:

- To improve UCA's mechanisms for research
- To define some focus areas for research
- To discuss the broader scope and meaning of research
- To clarify potential roles for UCA and partner institutions (such as the five US research universities represented in our CRSP team at the meeting: Michigan State, Kansas State, UC-Davis, Virginia Tech, Washington State).

Some potential collaborative research themes that we identified are:

- Role of native flowering plants in biological control and other ecosystem services
- Seed development
- Crop management in home-garden plots

Afternoon:

Dr. Naidu presented a lecture about virology to students and instructors at TNU. Then, we held a group meeting where the wheat, potato, and tomato teams discussed their 2011-2012 work plans.

June 11, Visit to Farm in Muminabad

The farm site included bean, potato, and tomato. There were wheat fields a short distance away and Mustapha report a high incidence of Russian wheat aphid. The women farmers at the site also pointed out a large "apothecary" of medicinal plants.

The women indicated that they are interested in agricultural training if it is close to their villages. They are very busy taking care of children, home, and cooking, along with farm work. They all have male relatives working in Russia, leaving them with additional tasks. They don't have time to travel, and it is not in their culture to travel far from home. They also indicated that they would pay for crop information by cell phone. It was not clear, though, how much access the women have to cell phones or whether the men would be handling the phone calls.

There were definitely virus symptoms in many plants. I think there is a major lack of awareness of viral diseases. Virus-free seed will be critical.

June 12: Group Meeting

Dr. Racioppi and Dr. Jamal provided some excellent information to the IPM team about issues related to the impact and uptake of IPM practices and packages.

- 50-60% of food production comes from household gardens which are managed primarily by women. We may consider how some IPM concepts can and can't be scaled down to these small-scale household plots.
- There may be differences in how men and women think about or use pesticides.
- There are no gender specialists in Tajikistan to collaborate with.
- Funding is lacking for the gender component of this overall Central Asia IPM project.

Four key issues were identified:

1. Some of the challenging aspects of the Tajik economy are even more challenging for women farmers (details of the tax code, etc).
2. Education is deteriorating. Literacy is decreasing.
3. Human health issues such as medical care and clean drinking water are lacking.
4. Women are concerned about the emergence of some conservative social and religious influences.

The Entomology/Plant Pathology team needs to keep all of this in mind as we think about our work.

Small working groups - Training Activities Conducted –

Below please find data on participation by gender of each of the activities of the IPM CRSP Team for the week of June 6 – 12. *Numbers courtesy Linda Racioppi*

Program type (workshop, seminar, field day, short course, etc.)	Date	Audience	Number of Participants		Training Provider (US university, host country institution, etc.)	Training Objective
			Men	Women		
IPM Planning Meeting	June 6	17	12	5	MSU, ICARDA, Kansas State, UC Davis	To discuss current and future IPM direction and activities.
IPM CRSP Plenary	June 7	113	77	36	Plenary	To introduce goals of the workshop
Introduction to the Workshop: Discussion	June 7	40	30	10	Lecture by Dr. Bird	To introduce goals of the workshop
Lecture: Basic Plant Pathology	June 7	45	23	22	Lecture by Dr. Kennelly	Introductory plant pathology lecture for IPM workshop participants and TNU students, to provide baseline knowledge for rest of training.
Lecture: Basic Entomology (Entomology 101)	June	31	19	12	Lecture by Dr. Pett	Same as above, for entomology
Diagnosing diseases caused by nematodes	June 7	54	37	17	Lecture by Dr. Bird	<i>See session title</i>
Diagnosis of fungal and bacterial pathogens	June 8	27	12	15	Lecture by Dr. Kennelly	<i>See session title</i>
Fungi and Bacteria	June 8	77	32	45	Lecture by Dr. Kennelly	<i>See session title</i>

Diagnosis of Viruses	June 8	77	32	45	Lecture by Dr. Rayapati	<i>See session title</i>
View and discuss arthropod specimens	June 8	42	26	16	Lecture by Dr. El-Bouhssini	Hands-on training for insect biology, ecology, identification
Bacteria and Fungi Lab I*: 1. Microscopy and culture techniques for fungi and bacteria.	June 8	23	8	15	Dr. Kennelly	Hands-on training for fungal/bacterial biology, ecology, identification
Insects Lab II*	June 8	17	10	7	Drs.El-Bouhssini and Pett	Hands-on training for insect biology, ecology, identification
Virus Lab III*: Serology and other techniques for viruses	June 8	16	6	10	Dr. Rayapati	Hands-on training for virus biology, ecology, identification
Nematodes Lab IV*: Microscopic ID of nematodes	June 8	19	10	9	Dr. Bird	Hands-on training for nematode biology, ecology, identification
Field visit -- Hissor	June 9	38	22	16		Demonstrate IPM principles and plant diagnostics in the field,
Virus Lecture - - TNU	June 10	67	27	40	Dr. Rayapati	Open lecture on virus biology, ecology, etc
Meeting with UCA	June 10	28	18	10		Discussions on future collaborations with Mountain Societies Research Center

IPM Packages Roundtable	June 10	14	9	5		Development and refinement of IPM packages for all 3 crops (wheat, potato, tomato)
Field visit -- Muminabad	June 11	12	10	2		Visit diversified crop farm, meet women farmers
Cross-cutting themes roundtable	June 12	8	5	3	Presenters: Drs. Jamal, Racioppi and Rayapati	Discuss overarching themes of gender, economic development, etc.

Suggestions:

- It would have been beneficial to go through the week's plan as a team on our first day, to clarify any confusion about the schedule.
- Acquiring functional microscopes is a challenge. Be sure to allocate sufficient time to set up labs for demos.

List of Contacts Made:

Name	Title/Organization	Contact Info (address, phone, email)
All participants in IPM workshop	Karim Maredia has a list of their names and affiliations and contact info	
Mark Penner	Global Partners (agriculture NGO based in Rasht Valley)	mpenr@fastmail.net
Matt Curtis	Global Partners (agriculture NGO based in Rasht Valley)	n/a
All participants at UCA forum	I think Karim has their names and info	

Three TNU ecology students work on a wheat disease sample:

