IPM CRSP Trip Report

Country Visited: Guatemala

Dates of Travel: March 16-21, 2010

Travelers Names and Affiliations:
Sally Miller, OSU
Fen Beed and Ranajit Bandyopadhyay, IITA
Marco Arevalo and Isabel Arias, Agroexpertos
Subbarayalu Mohankumar and Gandhi Karthikeyan, TNAU
Margarita Palmieri, Universidad del Valle
Sue Tolin, VT
Bob Gilbertson, UC-Davis
Xiannong Xin, UF

Purpose of Trip: Meeting of the leadership of the IPM CRSP International Plant Diagnostic Network (IPDN), with cooperation of the Virus Global Theme project to review Phase I results and plan implementation of Phase II priorities.

Sites Visited: Meeting not associated with a regional site, although a member of the LAC Regional Program (Palmieri) was in attendance.

Description of Activities/Observations: The program for the meeting is attached. During the first day we reviewed the first phase of the IPDN (2006-2009), focusing on strengths and weaknesses of the programs in each of the three Phase I regions (West and East Africa, Central America). Dr. Z. Kinyua (Kenya Agricultural Research Institute; KARI) presented his summary of the East Africa IPDN program via Skype as he was not able to attend due to visa restrictions imposed on certain African countries. Dr. Kinyua described the activities (diagnostics for banana xanthomonas wilt, status of Standard Operating Procedures (SOPs) for four pathogens and one insect pest under development, and training programs conducted). Kinyua pointed out that certain operational challenges lowered the potential of the network: 1) limited information and communication technological capacity in most institutions; 2) limited number of personnel dedicated to diagnostics, and 3) a serious need to plan for sustainability.

Dr. Fen Beed described additional IPDN activities in East Africa, including collaboration with the East Africa Phytosanitary Information Committee (EAPIC; USDA APHIS). The program is also involved in pathogen surveillance activities funded by others. IITA in Kampala will soon publish new PCR primers for Xanthomonas campestris pv. musacearum identification (not funded by IPDN but can be used by the project). Fen also described work on virus surveys in which they are testing several sampling methods: FTA cards, PhytoPASS sticks, and LFDs without antibodies (FERA, UK). Results of these tests will be very helpful for future IPDN and Virus (IPVD – International Plant Virus Diseases program) global theme pathogen surveillance activities. Bob Gilbertson noted similar LFDs from Agdia (Indiana US) are also very effective for both RNA and DNA virus sampling and preservation.
Dr. Ranajit Bandyopadhyay, coordinator of the West Africa IPDN program, described the progress in that region. The hub lab responsibilities have passed from IITA Benin to IITA Ibadan, Nigeria due to de-emphasis of the Benin program within IITA. Noteworthy activities included 1) development and testing of new PCR assays to differentiate the Sigatoka pathogens on banana (funded by IITA but accessible to IPDN); 2) soybean rust monitoring; IITA will work with OSU and IPDN to map the pathogen throughout Africa (no IPDN funds but this activity will utilize and benefit the network; 3) a new Internet-based Diagnostic Portal (IDIA; led by Lava Kumar, IITA) will contain a bank of primers and antisera for viruses; gradually including fungal and bacterial pathogens – it will be important to link this to IPDN and IPVD; 4) IPDN instrumental in identifying new diseases in West Africa – mango malformation and a new disease of citrus; and 4) Capacity Surveys throughout IPDN - need to compile the data and publish. Information of this type has not been published for more than 20 years. Marco Arevalo agreed to take leadership on bringing the data together for these surveys. The group suggests working towards a publication such as a Feature Article in Plant Disease or Plant Health Progress.

Dr. Marco Arevalo described the strengths and needs of each of the Central American IPDN hub labs. There is a great need for training in bacterial disease diagnosis. The major bacterial diseases of concern at this time in vegetables in Guatemala and the region are bacterial wilt (*Ralstonia solanacearum*) and the *Candidatus Liberibacter* diseases in tomato, pepper and potato. Whitefly-transmitted begomoviruses are also a significant problem in vegetables. New races of the *Fusarium* wilt pathogen in melons are also of concern. The Inter-American Institute on Cooperation in Agriculture (IICA) has an animal and plant health task force that funds training; Marco will be in touch with them to discuss IPDN training capacity. The Central America IPDN site has maintained a very active training program for hub lab partners.

Dr. Sue Tolin presented the goals of the IPVD and the group discussed ways in which the IPDN and IPVD can work together and with the regional IPM CRSP programs. The IPVD has come up with virus diagnostic improvements including a method to remove virus protein or nucleic acid from membranes, allowing quick in-field sampling. The group has also developed, optimized and utilized advanced diagnostic resources, mainly working in Guatemala (Dr. Palmieri’s lab) and Zamorano University (Honduras). This project also conducted a survey of virus diagnostic capacity (in collaboration with IPDN). In the discussion that followed, development of group-specific virus diagnostic assays was suggested as a priority.

During the second day we continued the discussion on Phase I accomplishments and moved into Phase II priorities. Dr. Xiannon Xin described the capabilities of the Distance Diagnostic Identification System-Clinic Information System (DDIS-CIMS) developed by UF for IPDN. There are now 22 labs in the system and 48 registered users. DDIS training has been conducted at all of the IPDN training programs in each region. At this point adoption (sample submission) is not strong – encouraging sample submission will be a priority in Phase II. Internet connectivity is a problem in Africa – Xin removed flash and made some other modifications. UF was asked to prepare an importable spreadsheet that could be used as a database in lieu of the web portal where internet connections are slow. A digital media library, GIS capability and mapping will be incorporated in Phase II. The group discussed system security, which is described in the “User Confidentiality Policy” within IPDN DDIS. Samples may be Private or Public; in the former, only the submitter and the receiver know the origin of the sample. Country information can be blocked on referred samples. It is recognized that sample identification can be a complex issue that may limit adoption of DDIS.
Drs. Mohankumar and Karthikeyan, co-coordinators of IPDN South Asia, introduced the new regional site (Tamil Nadu state, India; Nepal; Bangladesh). TNAU will be the hub system in South Asia. Capacity for pest and disease diagnostics is excellent, in terms of facilities, equipment and personnel, although some areas of expertise, such as bacteriology, are lacking. TNAU launched eAgriculture, a toll-free line for farmers to call for advice. IPDN can contribute to this program. Dr. Mohankumar is the first entomologist to have a significant leadership role in IPDN. One of the first priorities will be to conduct a baseline survey of diagnostic capacity in this region. TNAU will establish a vegetable pest diagnostic lab as well as a digital library of vegetable pests. Other goals are to catalogue vegetable pests in South Asia, identify and recruit subject matter experts, develop SOPs suitable for South Asia, as well as diagnostic keys and protocols. Nematodes are a very serious problem in Tamil Nadu state, and there are 30 nematologists in the state who can be tapped for training and diagnostics. There are five plant clinic centers in Tamil Nadu + one in an Extension center (Agriculture Science Centers). A main focus is to train people in these centers.

The IPDN in this region will also be involved in projects to identify new pests/invasive pests, report pest outbreaks, develop pest surveillance systems, and identify variation in pest populations. Key areas of focus for the South Asia RP include virus-vector interactions (Tospo, Begomo, Poty), fungal-nematode complexes in vegetables, population biology in sucking pests and fruit flies in vegetable ecosystems. An identified need in South Asia is training in bacteriology. Mohan will lead development of a mealybug SOP in collaboration with Dr. Muniappan.

Dr. Sue Tolin led a discussion on IPVD and IPDN collaboration. IPVD can provide information on viruses in crop/region, develop diagnostic tests and reagents, write SOPs for general and specific diagnostic tests, advise whether certain tests should be done in hub labs, and assist in capacity building and training – what is needed and possible? IPDN can work with IPVD to provide information and IT support, assess capabilities of labs, conduct training workshops, provide linkages with diagnostic labs and conduct verification and validation activities for virus diagnostic assays.

During the remainder of the meeting, the group engaged in discussions to plan how to most effectively conduct the Workplan activities. This provided the opportunity for all leaders to begin on the same page and to leave the meeting with a good understanding of what needs to be done and how best to do it. Final meeting activities were tours of vegetable growing areas in the Antigua area. A scheduled meeting with the USAID mission on March 19 was canceled by the Mission.

### Training Activities Conducted

<table>
<thead>
<tr>
<th>Program type (workshop, seminar, field day, short course, etc.)</th>
<th>Date</th>
<th>Audience</th>
<th>Number of Participants</th>
<th>Training Provider (US university, host country institution, etc.)</th>
<th>Training Objective</th>
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<tbody>
<tr>
<td>Planning Meeting</td>
<td>March 17-21, 2010</td>
<td>Plant pathologists and entomologists</td>
<td>7</td>
<td>4</td>
<td>-</td>
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International Plant Diagnostic Network
Progress and Planning Meeting
Antigua, Guatemala
March 16-21, 2010

Tuesday  March 16
Participants arrival in Guatemala City and transport to Antigua

Wednesday  March 17

9:00 AM  Welcome and Introductions
Dr. Marco Arevalo, Agroexpertos, Coordinator of IPDN Central America Site and Local Arrangements Coordinator

9:15 AM  Overview of Meeting – Goals and Expected Outcomes
Overview of IPM CRSP Diagnostics Global Theme – Phase I
Dr. Sally Miller, Ohio State University, IPM CRSP IPDN Global Theme Project Director

9:45 AM  Review of IPDN Phase I Activities in East Africa
(Dr. Zachary Kinyua)*, Kenya Agricultural Research Institute

10:30 AM  Coffee Break

11:00 AM  Associated IITA Diagnostics Activities in East Africa
Dr. Fen Beed, IITA

11:45 AM  Review of IPDN Phase I Activities in West Africa
Dr. Ranajit Bandyopadhyay, IITA, Coordinator of IPDN West Africa Site

12:30 PM  Review of IPDN Phase I Activities in Central America
Dr. Marco Arevalo
1:15 PM Lunch

2:45 PM DDIS in the IPDN – Progress and Plans for Phase II
Dr. Jiannong Xin, University of Florida

3:30 PM Overview of IPM CRSP Virus Global Theme – Phase I
Dr. Sue Tolin, Virginia Tech, IPM CRSP Virus Global Theme Project
Director

4:15 PM Discussion of Phase I Progress and Outcomes
What were our greatest successes?
What are the areas in which we can improve?
How can we improve?
How can we connect with other projects, programs, etc.

6:00 PM Adjourn

Thursday
March 18

9:00 AM IPM CRSP IPDN Phase II – Overview of Objectives and Commitments – 5 Year Plan
Dr. Sally Miller

9:45 AM IPM CRSP Virus Disease Network (IPVD) Global Theme – Plans for Phase II
Dr. Sue Tolin and Dr. Margarita Palmieri, Universidad de Valle (UVG)

10:30 AM Coffee Break

11:00 AM Current Capacity for Plant Diagnostics and Virus Research in South Asia
Dr. Gandhi Karthikeyan and Dr. S. Mohankumar, Tamil Nadu Agricultural University

12:00 Noon Regional Program Goals – What are the general goals and priorities of the regional programs and how can the IPDN and IPVD Global Theme Programs Best support them?
South Asia – Sally Miller
South/Central America and Caribbean – Margarita Palmieri
East Africa – Sally Miller
West Africa – Bob Gilbertson
Central and Southeast Asia -

1:30 PM Lunch
3:00 PM  

**Small and Large Group Discussions**

**Discussion Issues**

DDIS** – Is it working? What can be done to improve it? How can we encourage greater participation by IPDN members and experts worldwide?

How can we expand the IPDN Network within the target countries?

  Links to other projects, networks and government initiatives
  plus donors such as USDA/APHIS etc..

What are the crop priorities? Should IPDN be crop-focused?

Research/Technology Development – what are the priorities? How can we work with the regional programs and IPVD for diagnostic assay and protocol prioritization and development?

Diagnostic Capacity Assessment – review survey (Sally will bring copies)

  – how can we improve it? Data and analysis needs. Is there an outlet for publication?

Reporting New Diseases/Survey: how will we accomplish this in each of the six RPs?

Standard Operating Procedures: What are the priorities? How far will we take them beyond the initial documents?

Training – Review project training objectives and develop a plan for Phase II. How can we best integrate with objectives of RPs and IPVD?

  Workshops
  Webinars
  Train-the-Trainers

Technology Transfer – Review tech transfer objectives and determine how to work seamlessly with RPs to transfer IPM recommendations via the IPDN.

Sustainability – develop a sustainability plan for IPDN after 2014

6:00 PM  
Adjourn

Friday  
March 19

(Departure - Sue Tolin and Jiannong Xin)

9:00 – 10:00AM  
De-briefing, USAID Mission, Guatemala City

10:00 AM-1:30 PM  
Field trip to local crop production areas and informal discussion
1:30 – 3:00 PM  Lunch

3:00 – 5:00 PM  Continue Discussion Topics

Saturday
March 20  Tour of points of interest
         Departure  - Ranajit

Sunday
March 21  Departure

* Dr. Kinyua will not be able to attend. We will connect with him via Skype.