

IPM CRSP Trip Report

Country Visited: Indonesia

Dates of Travel: 5 November 2011 to 16 November 2011

Travelers Names and Affiliations: Dr. Naidu A. Rayapati, Washington State University, USA

Purpose of Trip: To evaluate activities of the IPM CRSP funded global theme project “International Plant Virus Disease Network (IPVDN)” at Bogor Agricultural University and visit farmers’ fields to monitor virus diseases in key vegetables.

Sites Visited: Bogor

November 5th to 7th: Travel from Prosser, WA, to Bogor, Indonesia.

November 7th: I met with Dr. Sanath Reddy and Ms. Marika Olson of the USAID mission, Jakarta, along with Dr. R. Muniappan (Director of IPM CRSP) and Dr. Aunu Rauf (Indonesia Country Coordinator for IPM CRSP). Dr. Muniappan briefed about IPM CRSP activities in Indonesia. I explained the purpose of my visit to Indonesia and our recent progress on research related to management of virus diseases, especially low-input tactics such as rouging for the management of peanut bud necrosis virus disease in tomato in India. We reached Bogor and, after lunch, visited Bogor Botanic Gardens. Dr. Muniappan observed Asian cycad scale infestation on cycad plants and collected samples for identification of scale insects and parasitoids. He is convinced that this scale insect is a new introduction to Indonesia and could potentially threaten native cycads in the country. In the evening, Dr. Muniappan and I met with virology faculty members, Dr. Sri Hendrastuti Hidayat (Asti) and Dr. Tri Asmira Damayanti (Tri), in the Department of Plant Protection, Faculty of Agriculture, Bogor Agricultural University (BAU), Darmaga Campus, Bogor, and discussed about the current status of virus diseases in vegetables in Indonesia.

November 8th: Dr. Aunu Rauf, Dr. Muniappan and I travelled to Puncak, which is around 30 KM Southeast of Bogor, to visit vegetable fields and IPM trials. Due to intermittent rains (sometimes heavy), I visited only a few farmers’ fields growing chilli peppers and tomatoes. Symptoms ranging from mild mosaic to bright chlorosis were observed in chilli peppers. In tomatoes, necrotic streaks on stems, necrosis of petioles and leaves, and pink coloration of leaves were observed. Representative samples from symptomatic plants of chilli peppers and tomatoes were collected, brought to the hotel and pressed onto FTA Classic cards for virus testing.

November 9th: I visited vegetable fields around Bogor area along with Dr. R. Muniappan, Dr. Rauf Aunu and Dr. Tri Asmira Damayanti. We visited several fields of chilli peppers, egg plants, sweet potato, cucurbits, papaya and cassava. I observed mild mosaic and bright chlorosis symptoms in chilli peppers, mild mosaic symptoms in egg plants, ring spots and pink coloration of leaves in sweet potatoes and mosaic symptoms in cucumbers. I collected representative samples, brought to the hotel and pressed onto FTA Classic cards for virus testing. Drs. Muniappan and Rauf observed mealybugs in several papaya and cassava fields and collected samples for identification of mealybugs and their parasitoids. It's pleasing to note that no virus-like symptoms were observed in cassava and papaya.

November 10th: I visited BAU and spent the whole day with Dr. Sri Hendrastuti Hidayat and Dr. Tri Asmira Damayanti. In the morning, I gave a presentation on "Diagnosis of Plant Viruses" for graduate and undergraduate students (30 female and 8 male) in the department. The presentation was followed by discussions about general aspects of plant viruses and their diseases, diagnosis and management. Subsequently, I discussed about IPM CRSP collaborative research on virus diseases in vegetables with Dr. Sri Hendrastuti Hidayat and Dr. Tri Asmira Damayanti and completed processing of samples collected from farmers' fields during my visits on 8th and 9th and pressed onto FTA cards for virus identification.

November 11th: I visited BAU and gave an invited presentation in the morning on "Research on grapevine leafroll disease at Washington State University" for students and faculty (35 female and 10 male). Later, I visited the virology lab and met with Dr. Sri Hendrastuti Hidayat and Dr. Tri Asmira Damayanti to plan for my field visits. In the afternoon, Dr. Muniappan, Dr. Rauf and I met with Dr Erman Rustiadi, Dean of College of Agriculture and briefed about IPM CRSP activities in Indonesia. Dr. Muniappan impressed Dr. Rustiadi the need for immediate action to control Asian cycad scale in order to save the endemic cycads in Indonesia.

November 12th: At the request of Drs. Aunu Rauf, Sri Hendrastuti Hidayat and Tri Asmira Damayanti, I spent the whole day in the Virology lab in the Department of Plant Protection, BAU, to demonstrate various steps of virus diagnosis to MS and BS students (9 female and 1 male). I demonstrated spotting of samples on nitrocellulose membranes (NCM) and FTA cards, and conducted tissue blot immunoassay (TBIA) and RT-PCR. I demonstrated these methods step-by-step in participation with students for the detection of cucumber mosaic virus. I also encouraged them to practice sample processing, blotting of samples on NCM and FTA cards and setting up TBIA and RT-PCR for the detection of other viruses. Students actively participated in discussions on various aspects of TBIA and RT-PCR detection of viruses. Students were excited to observe final results.

November 12th to 13th: I visited South and North Bandung areas along with Dr. Tri Asmira Damayanti and her three technical staff and monitored tomato, chilli peppers and potato fields for virus diseases. Tomato plants showing a variety of symptoms (stunting, necrosis on stems and petioles, leaf curling and purple coloration of veins on lower surface of leaves) were observed. Testing some of these samples for tomato spotted wilt virus and impatiens necrotic spot virus using immunostrips from Agdia Inc. gave negative results. In some potato fields, plants showing chlorotic spots and stunting were observed. These samples tested positive for potato virus Y using virus-specific immunostrips from Agrida, Inc. We also visited the Indonesian Vegetable Research Institute (IVEGRI) and met with Ir. Neni Gunaeni and Ir. Asih Kartasih, who are dealing, respectively, with viruses and tissue culture aspects of potatoes. We visited virology and tissue culture labs to learn on-going activities in producing virus-free potatoes. There is a critical need for capacity building in virus research and ramping up production of virus-free potato seed at IVEGRI. Subsequently, we visited IVEGRI research farm with Ir. Gunaeni and monitored tomato, chilli pepper, potato and shallot for virus symptoms. I collected representative samples from symptomatic plants for spotting onto FTA cards. We returned to Bogor in the evening.

November 14th: In the morning, I visited the virology lab, met with Dr. Sri Hendrastuti Hidayat and Dr. Tri Asmira Damayanti and discussed annual work plan and other issues related to the IPVDN project and collaboration with Southeast Asia Regional project. I also discussed about future activities on virus diseases with Dr. Aunu Rauf. In the afternoon on my way to the airport, I visited with Dr. Satya Nugroho at the Research Center for Biotechnology of the Indonesian Institute of Sciences (LIPI, Lembaga Ilmu Pengetahuan Indonesia) at Cibinong in Bogor. His group is working on rice molecular biology and genetic transformation, focusing on crop improvement against biotic and abiotic stresses. Dr. Nugroho showed different facilities available at LIPI and indicated that they are further improving facilities and expertise to conduct advanced research on rice. Dr. Witjaksono, Head of LIPI, and Dr. Nugroho mentioned that LIPI is planning to expand research programs to other commodities important to Indonesia. I discussed about potential opportunities for collaborative research on virus diseases between IPM CRSP, LIPI and BAU. I reached Jakarta airport by 7:30PM.

November 15th to 16th: Travel from Jakarta to Prosser, WA.

Training Activities Conducted

Program type	Date	Audience	Number of Participants		Training Provider	Training Objective
			Men	Women		
Seminar	11-10-2011	Graduate and undergraduate students, faculty	8	30	WSU, BAU	To provide current knowledge on diagnosis of plant viruses
Seminar	11-11-2011	Graduate students, undergraduate students and faculty	10	35	WSU	To provide an overview of IPM CRSP project on viruses and current research on grapevine virus diseases conducted by Dr. Rayapati at WSU
Workshop	11-12-2011	Graduate and undergraduate students	1	9	WSU, BAU	To provide hands-on experiences on diagnosis of viruses by TBIA and RT-PCR

Suggestions, Recommendations, and/or Follow-up Items:

This was my first visit to Indonesia and provided an opportunity to assess current status of research and capacity building in virology at Bogor Agricultural University (BAU). Dr. Sri Hendrastuti Hidayat and Dr. Tri Asmira Damayanti (faculty members with expertise in virology in the Department of Crop Protection) are conducting research, teaching and training of undergraduate and graduate (Masters level) students in various aspects of virus diseases. Dr. Aunu Rauf is complementing virology research with his entomology expertise on vectors of virus diseases. Continued support and guidance to their efforts during the next three years of the project and strengthening linkages between global and regional projects will advance IPM CRSP activities on virus diseases and their management in high value vegetable crops in Indonesia.

Some disease symptoms observed in tomato and chilli peppers appears to be distinct from those observed in other countries. It is important to precisely document the identity of viruses associated with these symptoms using virological and molecular techniques. In this context, strengthening research capacity on virus diseases and their epidemiological properties at BAU will advance IPM CRSP programs implementing crop improvement strategies against viral diseases in Indonesia. IPM CRSP scientists should

continue to play a vital role in fostering research and capacity building, and establishing a strong virology program at BAU for research, extension and teaching.

Developing linkages between BAU and LIPI would benefit IPM CRSP programs for institutional capacity building, and to conduct research, education and extension in critical areas related to crop protection and improvement in high value vegetable crops.

List of Contacts Made:

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