

IPM Innovation Lab Trip Report

Country Visited: Vietnam

Dates of Travel: 2/28-3/7/2017

Travelers Names and Affiliations: R Muniappan, Director, IPM Innovation Lab

Purpose of Trip: To review progress of the Exportable Fruit Crops IPM project in Vietnam

Sites Visited: Ho Chi Minh City, SOFRI, and Cai Be-Tien Giang Province

Description of Activities/Observations:

February 28th: Left Blacksburg at 6.00 am.

March 1st: Reached Ho Chi Minh City at 9.30 pm.

March 2nd: Naidu Rayapati joined me at the hotel. We left the hotel in Ho Chi Min City at 8.30 am and reached My Tho hotel near SOFRI by 11.00 am. At 1.30 pm, Naidu and I met with Dr. Nguyen Van Hoa, Mr. Nguyen Thanh Hieu, Dr. Tran Thi My Hanh, Mr. Mai Van Tri, and Dr. Le Quoc Dien. We reviewed literature on longan witches' broom syndrome in Southeast Asia and research work carried out in SOFRI.

March 3rd. Naidu, Hanh and I visited longan orchards at Cai Be-Tien Giang province. The farmer of the first orchard we visited planted a variety that was introduced from Thailand, pruned all witches' broom infested shoots, and sprayed with pesticides. As a result, his orchard was clean and healthy. Only a few witches' broom incidences were noted.

The second orchard owner did not take care of his orchard, which was planted with a witches' broom susceptible local variety. All trees were badly affected by witches' broom. Some shoots from last year's growth showed witches broom symptoms however new growth did not.

From this field visit it became obvious for us that witches' broom syndrome was not caused by virus or phytoplasma but due to eriophyid mites. If it was due to virus or phytoplasma, the new growth in the infected branches should show symptoms. Additionally earlier laboratory testing at University of California at Davis and Washington State University did not find virus or phytoplasma in the samples of longan received from Vietnam.

March 4th: Naidu and I met with the SOFRI and collaborators of the project from Vietnam and reviewed the work carried out on longan, lychee, mango, and dragon fruit. It was brought to our attention that anthracnose, canker of dragon fruit, and fruit borer of lychee are the major problems in the Vietnam project. Even though the Plant Protection Research Institute has published a research paper on diagnosis of longan witches' broom in 2016, the representative from that institute did not mention about it during the discussions on the causative organism of that disease. It was also mentioned that stink bugs are no longer a problem on lychee in Vietnam.

March 5th: Sunday.

March 6th: 8.30 am. Naidu, Hanh, Tuan, and I visited fields in SOFRI and collected scale insects on papaya trees. Later I sorted out insects collected in the field at the Entomology laboratory.

10.00 am: Naidu and I briefed Dr. Hoa and his staff on our findings. We are confident that witches' broom is caused by the eriophyid mite, *Eriophyes dimocarpis* and we also suspect there is another eriophyid mite on longan in Vietnam which is not causing this syndrome. We recommended conducting Cytochrome Oxidase 1 analysis of the mites to verify existence of two species of mites on longan in Vietnam.

1.0 pm: Dr. Hoa, Dr. Hieu and I traveled to Ho Chi Minh City and met with Stephan Berlingutte of USAID and Gerald Smith of USDA FAS at the U.S. Consulate at 3.00 pm.

March 7th. I left Ho Chi Minh City at 7.30 am and reached Blacksburg by mid night.

List of Contacts Made:

Name	Title/Organization	Contact Info (address, phone, email)
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Longan demonstration farm