Expanding the Impact of NPDN Diagnostic Training in Colombia

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Abstract

As part of the Farmer-to-Farmer project, sponsored by USAID, Vega Alliance, and Purdue University, a diagnostic training was conducted in Villavicencio Meta, Colombia. This is an important tropical fruit-producing region mainly cultivated by small to medium size producers. Weather, especially temperature and relative humidity, is conducive to disease outbreaks that may result in yield reduction higher than in other tropical fruit production areas in Colombia. During a field trip to nearby farms and research plots participants learned the importance of good sample collection practices for quality diagnosis. Daily curriculum and hands-on activities were delivered to twelve participants from different institutions in Colombia. The participants and institutions had various degrees of diagnostic duties. Some institutions are planning to expand their services while others are working to improve their diagnostic protocols and procedures. The more advanced laboratory followed the ISO90001 for quality assurance. The outreach from specialists in the university and agricultural research institutions in the Llanos area is difficult due to the lack of a formal extension service. However, efforts were discussed to develop online resources to support sustainable tropical fruit production, including encouraging growers to submit samples for accurate diagnosis that can lead to a better-informed decision on their farms.

Introduction

The Ariari region is located near the eastern range of the Andes within the Department of Meta. This region provides 13% of the fruit for the country, and other agricultural products that go to the central market in Bogota (Colombia's capital). Ariari contains the region's most fertile soils and is predominantly comprised of small and medium producers. Common fruit crops grown include papaya, cocoa, citrus, guava, avocado, plantain, coffee, passion fruit, rice and oil palm.
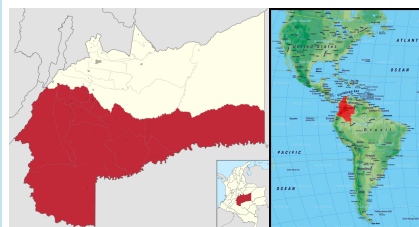
In red, the region known as "Ariari" in the Department of Meta, Colombia.

Diseases such as anthracnose have destroyed crops like passion fruit while other problems are misdiagnosed due to the lack of a formal diagnostic clinic focused on fruit diseases. Another challenge is the distance between the universities and the growers, and the lack of extension systems or any online platform to connect with producers.

As part of the Farmer-to-Farmer program sponsored by USAID, Vega Alliance, and Purdue University, a diagnostic training was conducted from October 11 to 23, 2015 at the facilities of Universidad de los Llanos (Unillanos). Workshop objectives:
i) Increase the knowledge of plant pathology and plant disease diagnostic skills.
ii) Introduce best practices for lab management, sample collection, sample information gathering and communicating results, and
iii) Facilitate a discussion on the development of future diagnostic resources such as smartphone apps and extension materials.

Activities

Visited grower farms to collect samples of diseased plants for the hands-on portion of the workshop.
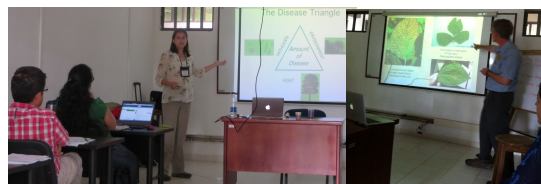
Developed and presented curriculum relevant to the objectives of the workshop.

Inspected diseased plant specimens in the Unillanos laboratory. Demonstrated common diagnostic techniques (including moist chamber incubations, tape mounts and microscope preparations, plant tissue isolations on various media, baiting, tissue floating, thin sections and serology using ImmunoStrip® tests). Identified the presence of Root-knot nematode and a fungal dieback/canker as contributing to decline of guava. Also identified an algal leaf disease on this crop.

Visited Fedearroz (Colombian rice growers association) phytosanitary and molecular biology laboratory. This team of diagnosticians and their facilities are ISO90001 certified for quality assurance.
We also visited the research facilities of Corpoica (the Colombian corporation for agricultural research).

Lessons, improvements, and impacts

Positive feedback from participants indicated that both the lecture series and the laboratory experiences were helpful to their understanding of plant disease diagnosis. Students were most engaged in the hands-on laboratory experiences and seemed to especially appreciate the demonstrations of techniques used to examine samples and the chance to immediately try them out.
Participants were also receptive to online diagnostic resources presented.
We believe the participants who routinely work in laboratory settings will be most impacted and will continue to use the new skills acquired.

Recommendations for participants and institutions

We suggested improving the existing plant diagnostic library at the University by the addition of several new books each year until most critical resources are acquired.
Continue to take advantage of any training opportunities available for diagnostics training in-country, online and abroad. We suggested that Unillanos invite volunteers who have extension expertise to assist with building a general extension program. CABI Plantwise (www.plantwise.org) may be an additional resource for building plant diagnostic resources and extension efforts.