



Integrated Pest Management  
Collaborative Research Support Program

Global Theme – Regional Diagnostic  
Laboratories

## Diagnosing Plant Diseases Benefits Farmers in Developing Countries

**Establishment of the regional plant disease diagnostic clinic networks empowers rural individuals by giving communities their own capability to accurately diagnose plant diseases.**



Photo: [www.usaid.gov](http://www.usaid.gov)

Many women and children in Africa work in fields. Being able to grow healthy crops is key to maintaining a healthy diet and improved standard of living.

Plant diseases cause significant economic losses throughout the world, but their effects are felt most severely in developing regions where the majority of families obtain their livelihood from farming. Potentially devastating diseases commonly faced by farmers in these regions include:

- late blight of potato and tomato
- bacterial wilt of tomato, potato and eggplant (brinjal)
- wheat stem rust
- insect-transmitted virus diseases

Plant diseases must be correctly identified to allow farmers to put in place effective integrated management strategies. However, plant disease diagnosis is a knowledge-driven process and often requires specialized training. Further, symptoms of the disease may not be adequate for accurate diagnosis, and laboratory testing may be needed.

As farmers in developing regions seek to enter export markets to increase family income, additional pressures are placed upon them to meet quality standards and phytosanitary (plant health) requirements. Both pre- and post-harvest diseases can pre-empt these attempts to market produce internationally. In addition, importing countries are concerned about the introduction of new pathogens that may greatly harm domestic agriculture.

In many developing regions, plant disease diagnostic capacity is poorly developed to nonexistent. Building capacity for plant disease diagnostics not only directly benefits farmers, but it also helps to reduce the risk of accidental introduction of new pathogens into the United States *and other countries*.

In order to address both local needs for timely and accurate plant disease diagnosis and international phytosanitary requirements, capacity for plant pathogen diagnostics in developing regions must be significantly improved. Currently, neither infrastructure nor human capital is adequate to meet the needs. **This project addresses these issues in three critical regions: West Africa, East Africa and Central America/Caribbean.** Our project is closely linked to IPM CRSP regional programs and other Global Theme programs in selected countries by sharing resources and scientists and by developing joint research programs.

## Specific Objectives

1. Create regional systems with the technical capacity to diagnose plant diseases in three participating regions, beginning with “hub” laboratories in one country per region, progressing to “spoke” laboratories in nearby countries within the region.
2. Develop a communication and data networking system that details pathogen distribution, diagnosis and IPM options and links target countries to each other and to experts in the U.S. and elsewhere.
3. Develop and carry out comprehensive training programs to increase diagnostic capacity within host country institutions for phytosanitary and IPM applications.
4. Develop/adapt biotechnology-based diagnostic tests and protocols to meet the needs of regional IPM CRSP programs, USAID Missions and/or other donors.

## Cooperators

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