

# INTERNATIONAL PLANT DIAGNOSTIC NETWORK

---

Sally A. Miller  
Department of Plant Pathology



# 2010/2011 Year 2 Activities

- Major Efforts

- Latin America/Caribbean
  - Agroexpertos; UF
- West Africa
  - IITA, UC-Davis, OSU
- East Africa
  - KARI, OSU
- South Asia
  - TNAU, OSU, VT, Penn State

- Assistance

- Central Asia
- Southeast Asia

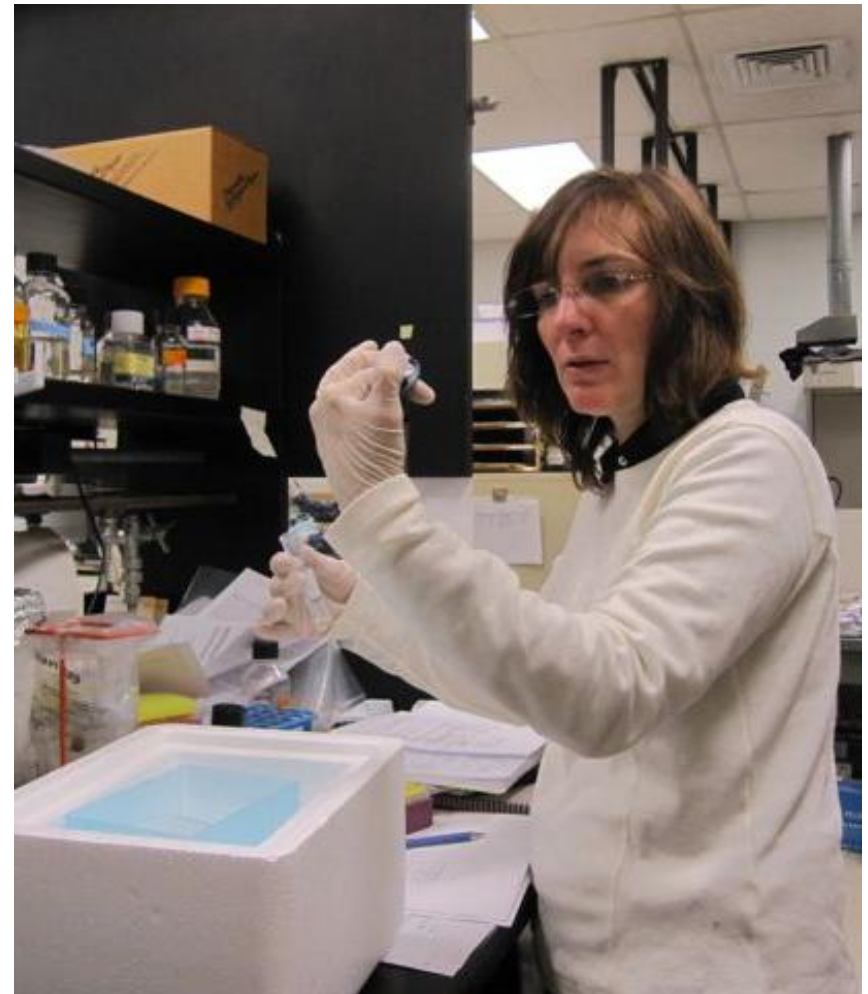


IPDN Leaders

Not pictured: Z. Kinyua (KARI),  
M. Ochwo-Ssemakula (Makerere Univ.),  
Carrie Lapaire Harmon (UF)

# Latin America/Caribbean

- IPDN labs/experts list updated
- 5-day training in advanced bacterial canker diagnosis – OSU
- 3-day short course (with USDA FAS, UF) on bacterial canker diagnosis
- DNA extraction training
- SOPs for Cmm, Rs, Cand. Liberibacter initiated
- Potato disease survey Guatemala
- IPDN DDIS-CIMS expertise database updated for LAC



# West Africa

- Survey of diseases and insect pests of tomato, potato, cabbage, onion
  - Begomoviruses, CMV – tomato
  - Bacterial spot – tomato
  - Bacterial wilt – northern Senegal
    - Worked with ISRA to identify disease; first report in progress
- Fully characterized mango malformation disease in Senegal – Lamine Senghor (DPV) worked with IITA to complete Koch's postulates and conduct molecular tests to confirm *Fusarium* species identity; first report in progress
- Disease surveillance in Nigeria – assistance via DDIS-CIMS
- Worked with University of Ghana to identify the causal agent of Taro blight – *Phytophthora colocasiae* – first report of disease in Ghana in progress



# West Africa

- Diagnostics Workshop
  - University of Ghana Legon Biotechnology Centre, June 20-24, 2011
    - Mali (4); Senegal (4); Ghana (10); Sierra Leone (1); Nigeria (2)
- Diagnosis of Diseases and Pests of Tomato
  - Intensive
  - Hands-on – excellent laboratory facilities
    - ELISA
    - PCR
    - Classical techniques



# West Africa

- Long-term Training
  - Mohameth Kane – Univ. Dakar:UC Davis sandwich M.S. bacteriology + diagnostics training



# East Africa

- Integration workshop:  
IPDN, IPVDN, EA RP  
December 2010, Nairobi
  - Prioritized diseases of EA  
program crops
    - Tomato – viruses, RKN,  
bacterial wilt
    - Passion fruit – woodiness  
viruses, brown spot, dieback  
complex
    - Onion – purple blotch, neck  
rot, downy mildew, viruses
    - Hot pepper – viruses,  
Phytophthora blight



# East Africa

- Diagnostic Tools
  - SOPS for priority diseases and pests
    - Virus SOPs coordinated with IPVVDN
  - Pictorial guides
  - Fact sheets w/ IPM recommendations
  - Adapted semiselective medium for *Ralstonia solanacearum* detection in soil and water for Kenya and Uganda
  - Tested immunostrips for bacterial spot of tomato



- Surveys
  - Virus diseases of tomato in Uganda – AFSI
  - Tomato, passion fruit viruses – Kenya
  - Diagnostic capacity in EA



# East Africa

- Long-term Training
  - Warren Arinaitwe – MUK:OSU sandwich M.S. (virology) + 3 months in OSU Vegetable Pathology Lab (AFSI)



# South Asia

- Surveys

- Diagnostic capacity
  - Three national labs, 23 professionals (India)
  - Developed expert lists for DDIS-CIMS database
- Mealybugs in and around vegetable ecosystems in India
  - Molecular phylogenetics in progress
- Priority vegetable disease and pest surveys initiated in Bangladesh

- Diagnostic tools and guides

- Standardized virus molecular and serological assays
  - 55 plant samples received/collected from different regions of India were diagnosed for specific virus
- Pictorial guide for brinjal and tomato crop pest diagnosis in progress
- SOP for PBNV (tospovirus) in tomato initiated

# South Asia

- Diagnostic Tools and Guides
  - Nepal – Diagnosis and management of major vegetable diseases

## A guideline for Major vegetable Diseases of Nepal and Their Management

### TOMATO

#### A. Late blight (*Phytophthora infestans*)

**Symptoms:** Dark brown, water soaked patches appear on the leaves and stems (Figure 1). White fungal growth can be seen under the leaf during moist conditions (Figure 2). Infected fruits develop brown lesions that cover most part of the fruits (Figure 3).



Figure 1(Potato)



Figure 2(Potato)



Figure 3

**Management:**

# South Asia

- Short-term training

- > 8 training programs in India in diagnostics and IPM

- Agro dealers
- Scientists
- Farmers

- Plant Health Clinics in Nepal

- Long-term training

- Craig Johnson, Ph.D. student, OSU
- Nagendra Subedi, Ph.D. student, OSU (beginning September 2011)