

Pest and Disease Diagnostics for International Trade and Food Security An International Short Course

The Ohio State University
Ohio Agricultural Research and Development Center (OARDC)
Departments of Plant Pathology and Entomology
1680 Madison Avenue
Wooster, Ohio 44691-4096
September 1-12, 2014

September 30 Saturday		Participants arrive in Cleveland, Ohio Stay in Sheraton Hotel - Cleveland airport
September 31 Sunday	Noon	Transfer to Wooster – Hampton Inn
September 1 Monday	8:45 am	Pick-up at Hampton Inn
	9:00-9:30 am	Registration
	9:30-9:45 am	Introduction - <i>Dr. Sally Miller, Dr. Luis Cañas</i>
	9:45-10:15 am	Welcome to The Ohio State University - OARDC - <i>Dr. Laurence Madden, Associate Chair, Department of Plant Pathology</i>
	10:15 – 11:00 am	Pre-Test - <i>Dr. Luis Cañas</i>
	10:45 am – noon	Distance Diagnosis through Digital Imaging (Part I) - <i>Dr. Luis Cañas</i>
	Noon - 1:30 pm	LUNCH
	1:30 - 2:30 pm	Diagnosing Plant Diseases Caused by Viruses - <i>Dr. Peg Redinbaugh</i>
	2:30 – 5:00 pm	Virology Lab 1 - <i>Dr. Peg Redinbaugh, Dr. Sridhar Jarugula, Dr. Fulya Baysal-Gurel</i> - Maize inoculations - Virus diagnostics using immunostrips

September 2 Tuesday	9:00 – 10:00 am	Diagnosis of diseases caused by fungi and fungal-like pathogens - <i>Dr. Anne Dorrance</i>
	10:00 am – noon	Hands-on diagnosis of fungi and oomycetes – laboratory - <i>Dr. Anne Dorrance, Dr. Fulya Baysal-Gurel, Mr. Nagendra Subedi</i> Microscopy Moist chambers Culturing; non-selective and selective media Immunofluorescence Assay (Phakopsora) Immunoassays (Phytophthora)
	Noon – 1:30 pm	LUNCH
	1:30 – 5:00 pm	Fungi and oomycetes laboratory (continued)
September 3 Wednesday	9:00 – 10:00 am	Diagnosis of diseases caused by bacteria and phytoplasmas - <i>Dr. Sally Miller</i>
	10:00 am – 12:30 pm	Bacteriology laboratory – hands-on - <i>Dr. Sally Miller, Dr. Fulya Baysal-Gurel, Mr. Xing Ma, Mr. Nagendra Subedi</i> Symptoms of bacterial diseases Colony morphology Microscopy – bacterial streaming Hypersensitive Reaction (HRB); soft rot assay Gram Reaction (KOH test); oxidase test;
	12:30 pm – 2:00 pm	LUNCH
	2:00 – 5:00 pm	Bacteriology laboratory (continued) Biochemical tests Isolating and culturing bacterial pathogens Case study: <i>Ralstonia solanacearum</i> - <i>Mr. Nagendra Subedi</i>
September 4 Thursday	9:00 – 10:15 am	Diagnosis of plant diseases by PCR - <i>Dr. Fulya Baysal-Gurel</i>

	10:15 am - noon	Mites of agricultural importance - <i>Dr. Cal Welbourn</i> (Polycom lecture)
	Noon – 1:30 pm	LUNCH
	1:30 – 3:30 pm	PCR for insect pest diagnostics - <i>Dr. Andy Michel</i>
	3:30 – 5:00 pm	PCR laboratory - <i>Dr. Fulya Naysal-Gurel, N. Subedi, X. Ma</i> DNA extraction (whole cell, CTAB, kit) Set up appropriate PCR reactions for collected samples, pure cultures, and known samples
September 5 Friday	9:00 am - noon	Real Time PCR - <i>Mr. Nagendra Subedi</i>
		PCR laboratory (cont.)
	Noon – 1:30 pm	LUNCH
	1:30 – 5:00 pm	PCR laboratory (cont.)
September 6 Saturday		Free day
September 7 Sunday		Free day
September 8 Monday	All day	Field trip to Ohio Department of Agriculture, Reynoldsburg, OH and The Ohio State University C. Wayne Ellett Plant and Pest Diagnostic Clinic, Columbus, OH; Ms. Nancy Taylor
	8:15 am	Departure from Wooster
	10:00 am	Arrival in Reynoldsburg
	10:00 -10:45 am	Introductions and tour of facility - <i>Ms. Nancy Taylor</i>
	10:45 – 11:30 am	Role of ODA in safeguarding Ohio agriculture - <i>Dan Kenny, State Plant Regulatory Officer and Assistant Chief, Plant Health Division</i>

	11:30 am– 12:30	The diagnostic clinic and distance diagnosis through digital imaging (lab) - <i>Ms. Nancy Taylor</i>
	12:30-4:00 pm	LUNCH and return to Wooster
September 9 Tuesday	9:00 – 10:00 am	Virology laboratory 2 (Room 203) Symptoms of virus disease
	10:00 am – noon	Virology laboratory 2 (Teaching Lab) Set up Tissue Blot Immunoassay Electron microcopy for virus diagnostics - <i>Dr. Lucy Stewart/Dr. Tea Meulia, Dr. Fiorella Cisneros Carter, Dr. Sridhar Jarugula, Ms. Kristen Willie</i>
	Noon – 1:30 pm	LUNCH
	1:30 – 5:00 pm	Virology laboratory 2 (continued)
September 10 Wednesday	9:00 – 10:00 am	Diagnosis of diseases caused by nematodes - <i>Ms. Ellie Walsh, Dr. Chris Taylor</i>
	10:00 am – noon	Nematology laboratory - <i>Mr. Tim Frey</i>
	Noon – 1:30 pm	LUNCH
	1:30 – 3:30 pm	Case study: insect group Hemiptera: Homoptera - <i>Dr. Luis Cañas</i>
	3:30 – 5:00 pm	Case study: Mycotoxins in cereals - <i>Dr. Pierce Paul</i>
September 11 Thursday	9:00 – 10:15 am	Insect pests of tropical flowers: developing a clean stock program - <i>Dr. C. Sadof</i> (Polycom lecture)
	10:15 am – noon	Insect diagnostics lab – general insect characteristics (Orders), web tools and key characteristics needed for remote identification – hands-on - <i>Dr. Luis Cañas</i>
	Noon – 1:00 pm	LUNCH at Chipotles
	1:00 – 5:00 pm	Green Circle Grower field trip

September 12 Friday	9:00 – 10:30 pm	Case study: insect group Lepidoptera: Pyralidae and Noctuidae, group (lab) - <i>Dr. Luis Cañas, Ms. Nuris Acosta</i>
	10:30 – Noon	Case study: insect group Thysanoptera: Thripidae and Diptera: Tephritidae, Agromyzidae, group (lab) - <i>Dr. Luis Cañas, Ms. Nuris Acosta</i>
	Noon – 1:00 pm	LUNCH
	1:00 – 1:30 pm	Post-test
	1:30 – 2:00 pm	Closing and awarding of certificates - <i>Dr. Steven Slack, Director, OARDC, and Associate Vice-President, The Ohio State University</i>
	2:00 pm	Departure for Sheraton Hotel-Cleveland Airport
September 13 Saturday		Departure from CLE

RESOURCE PERSONS

Dr. Sally Miller, OSU Department of Plant Pathology
Dr. Luis Cañas, OSU Department of Entomology
Ms. Nuris Acosta, OSU Department of Entomology
Dr. Pierce Paul, OSU Department of Plant Pathology
Dr. Anne Dorrance, OSU Department of Plant Pathology
Dr. Tea Meulia, OSU Molecular and Cellular Imaging Center
Dr. Margaret (Peg) Redinbaugh, USDA ARS and OSU Department of Plant Pathology
Dr. Lucy Stewart, USDA ARS and OSU Department of Plant Pathology
Dr. Chris Taylor, OSU Department of Plant Pathology
Dr. Fulya Baysal-Gurel, OSU Department of Plant Pathology
Dr. Andy Michel, OSU Department of Entomology
Dr. Sridhar Jarugula, USDA ARS and OSU Department of Plant Pathology
Dr. Fiorella Cisneros Carter, USDA ARS and OSU Department of Plant Pathology
Ms. Kristen Willie, USDA ARS and OSU Department of Plant Pathology
Mr. Nagendra Subedi, OSU Department of Plant Pathology
Mr. Xing Ma, OSU Department of Plant Pathology
Ms. Ellie Walsh, OSU Department of Plant Pathology
Mr. Timothy Frey, OSU Department of Plant Pathology
Dr. Cliff Sadof, Purdue University, Department of Entomology
Dr. Cal Welbourn, Florida Department of Agriculture & Consumer Services, Division of Plant Industry