Plant Biosecurity Issues and Technologies
(3.0 credits)

Normally Offered: Spring every year. By Dr. Rong Di

Pre-requisites and other registration restrictions:

Format: One 80-minute lecture plus 3-hour laboratory

Description:
This course is designed to introduce you the plant health policies and regulations safeguarding agriculture and environmental resources, the interrelationship between risk assessment, risk management and risk communication for plant pests, and plant pest management and eradication measures. Biosecurity technologies for plant pest monitoring and detection including surveillance, bioinformatics, Lucid keys, ELISA (Enzyme-Linked Immunosorbent Assay), PCR (Polymerase Chain Reaction) and real-time PCR will be introduced accompanied by laboratory exercises. This course is designed to be a part of the Rutgers Plant Biosecurity Certificate Program in partnership with USDA APHIS-PPQ (US Department of Agriculture, Animal and Plant Health Inspection Service-Plant Protection and Quarantine).

Learning Goals:
• To learn the USDA plant health policies and regulations safeguarding agriculture and environmental resources
• To understand the interrelationship between risk assessment, risk management and risk communication for plant pests (including both plant pathogenic microorganisms and insects), and plant pest management and eradication measures
• To learn the current technologies used in plant pest identification
• To appreciate the importance of agriculture and environment safeguarding measures

Measures of Assessment:
• Participation in lectures, field trips and lab exercises
• Homework evaluations
• Midterm and final exams
Course Website:
Sakai

Topics:
- Introduction to plant protection and quarantine
- Legislative framework and standards
- Safeguarding and Trade: before border
- Safeguarding and Trade: at the border
- Safeguarding and Trade: post-border
- Case study 1: pathogens
- Case study 2: insects, Asian Longhorned Beetle
- Case study 3: more on insects and snails
- Case study 4: invasive weeds
- Risk analysis
- Risk assessment
- Risk management, risk communication
- Survey theory and methods, CAPS
- Information technology
- Diagnostic technologies: PCR and real-time PCR
- Diagnostic technologies: Lucid keys
- Diagnostic technologies: SPR
- Diagnostic technologies: ELISA
- Pest management and eradication measures
- Biological control
- Global biosecurity issues

Required and Recommended Course materials:
No textbook is required for this course. Lecture and lab presentations and other reading materials (USDA information pamphlets and publications) accompanying lectures or labs will be posted on course Sakai site. Students will be encouraged to read more from other sources, e.g., the websites.

Policies for Exams, Assignments, Attendance, and Grading
Midterm exam 35%
Final exam 35%
Homeworks 20%
Participation 10%

Grading scale:
A 90-100, B+ 86-89, B 80-85, C+ 76-79, C 70-75, D 60-69, F below 60

Other Information:
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