

Department of Plant Pathology & Crop Physiology Profile



Report to Stakeholders

October 2010

About the LSU AgCenter

The LSU AgCenter is dedicated to providing innovative research, information and education to improve people's lives. Working in a unique statewide network of parish extension offices, research stations and academic departments, the LSU AgCenter helps Louisiana citizens make the best use of natural resources, protect the environment, enhance agricultural enterprises and develop human and community resources.



Academic/Research/Extension Highlights

— The phytobacteriology laboratory discovered novel components that regulate the virulence of the bacterial pathogen *Burkholderia glumae*, the cause of bacterial panicle blight of rice in Louisiana. Functional mechanisms of these regulatory components are being studied to provide new ways of controlling this and other bacterial diseases.



— A public and private-sector partnership to produce healthy seedcane through tissue culture has greatly reduced the incidence and impact of ratoon stunting and other diseases in sugarcane.

— The nematode advisory service processes 1,000 to 6,000 nematode samples from producers, homeowners and consultants each year. This information enables them to make sound management decisions regarding nematicide applications, thereby reducing the economic losses caused by these plant pathogens.



— Symptoms of soybean rust may not be observed for several weeks after the plant is initially infected by the pathogen. Based on this information along with environmental data indicating the optimum time for infection, the disease is readily controlled when fungicides are applied before rust symptoms are observed.



— The cause of drying-induced death of smooth cordgrass seed is being studied to enhance marsh seed commerce and plant conservation. A unique system of comparative physiology has been developed with drying-tolerant gulf cordgrass that identified metabolic stress as a common feature of seed drying, rather than the cause of seed death. Current studies have found differences in protein processing that are correlated with seed death. This information will help to identify the incorrectly processed proteins so smooth cordgrass seed can be dried and saved.

Department of Plant Pathology & Crop Physiology Office

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Office Hours:

8 a.m.-4:30 p.m.
Monday-Friday

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Academic Focus:

Addresses questions and concerns involving plant diseases, the microorganisms that cause them, physical and environmental stresses, and their management.

Research Focus:

Addresses basic and applied plant pathology and crop physiology in the following areas: bacteriology, mycology, nematology, virology, seed physiology and molecular biology.

Extension Focus:

Responsible for providing educational programs, service and outreach activities for the residents of Louisiana, including producers, homeowners and crop consultants.

Significance of Programs

- The Plant Diagnostic Center provides disease, insect and weed identification services for county agents, producers, homeowners and consultants, enabling them to make sound management decisions regarding plant diseases and pests.
- The sweet potato pathology program provides a core stock of virus-tested sweet potato varieties that are used in the foundation seed program to provide Louisiana farmers with the healthiest-possible planting material.
- Nematode Advisory Service protects Louisiana's thriving horticultural industry by monitoring for potential problems with plant-parasitic nematodes.
- The mycology program is discovering and describing new species of rust pathogens important to Louisiana producers and developing molecular and morphological methods for their detection, identification and control.

Future Plans

Research on the genetic mapping of rice disease-resistance genes for bacterial panicle blight and sheath blight of rice using molecular markers is underway. Information obtained from this study will be useful in developing new rice varieties with resistance to these major rice diseases in Louisiana.

Research supported by the U.S. Department of Agriculture's Specialty Crops Research initiative is aimed at developing methods to prevent infection of sweet potatoes with viruses in farmers' seed programs and to determine the cause and means of control of a complex of end rots that develop while sweet potatoes are in storage.

Technology and predictive models are being evaluated to determine when latent soybean rust infections occur in order to optimize fungicide efficacy. Similar studies are under way with *Cercospora* leaf blight of soybean.

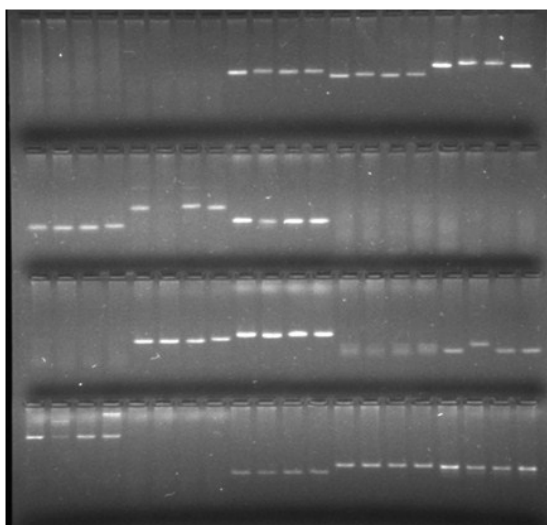
Training extension field faculty to increase their self-reliance relative to plant disease identification and management will be conducted.

Novel methods of disease management and information dissemination will be developed and implemented.



Department of Plant Pathology & Crop Physiology Facts

- 16 faculty and 27 graduate students.
- The department has been very successful in securing grants from state and federal agencies and private industry.
- Research and extension programs address plant disease and physical and environmental stress problems through fundamental and applied approaches.



LSU AgCenter Departments and Schools

Maximizing the potential for the state's agricultural industries and improving the quality of life for all Louisiana citizens are the major initiatives of the LSU AgCenter.

To achieve its mission of serving the people of Louisiana and providing them with the latest research-based information on a vast variety of topics, the LSU AgCenter operates 11 academic departments/schools in Baton Rouge in conjunction with the LSU College of Agriculture. In addition, four other specialized departments also contribute to the mission. These 15 units are an integral part of the LSU AgCenter's research and outreach activities.

Faculty members in the LSU AgCenter's on-campus units are involved in a variety of efforts, including research, classroom teaching and extension education. They cover topics ranging from agricultural economics to human ecology and from entomology to experimental statistics.

The LSU AgCenter has the most successful record of commercialization of intellectual property in the LSU System. Since 2000, nine new companies have been started based on licensed technology from LSU AgCenter. The income is distributed among the LSU System, the inventors and more research.



For the latest research-based information on just about anything, visit our website: LSUAgCenter.com

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Louisiana State University Agricultural Center: William B. Richardson, Chancellor. Louisiana Agricultural Experiment Station: David Boethel, Vice Chancellor and Director. Louisiana Cooperative Extension Service: Paul D. Coreil, Vice Chancellor and Director. The LSU AgCenter provides equal opportunities in programs and employment.