

# *Microscopic Clues Analyzed to Defend Against Rust*

Dr. Zhi-Yuan Chen and his colleagues in the LSU AgCenter are looking for clues about Asian soybean rust and its lifecycle, and they are taking the work to a microscopic level.

The hope is that learning more about the survival of rust spores over winter, how the disease infects the leaves of soybean plants and how those plants defend themselves against the disease ultimately will lead to better ways of controlling Asian soybean rust and its potentially devastating consequences to soybean crops.

This work is just part of a much larger effort devoted to monitoring the disease and its progress in the state, developing recommendations on controlling it with fungicides, searching for potentially resistant soybean germplasm, working on economic decision aids to help farmers assess whether fungicide applications will be cost-effective and investigating various cultural practices to see if they can help to control the disease.

“Based on our study, we believe that soybean rust spores can survive

typical Louisiana winter conditions and cause a new cycle of infection in the next growing season,” Chen, a plant pathologist, said of the results so far. “We also have compared soybean leaf protein changes before and after rust infection using state-of-the-art proteomic techniques in an effort to understand how the soybean plant defends itself against rust infection at the molecular level.”

Researchers working on the project have identified several proteins that are induced upon rust infection

“These proteins have been sequenced to determine their identity,” Chen explained. “One of these proteins is a pathogenesis-related protein 10, which has been shown to enhance resistance to scald disease in barley and blast disease in rice.

“We are trying to clone the gene from the soybean plant and develop ways to increase its protein level in soybeans to enhance disease resistance.” Tom Merrill