RUST MANAGEMENT

The soybean checkoff is funding research to develop varieties resistant to rust and formulate ways to control the disease if it should enter the United States. This guide was developed by the soybean checkoff to help U.S. soybean farmers, extension agents and others properly diagnose and treat this disease.

In some countries where rust occurs, farmers experienced success controlling the disease with multiple applications of fungicides. Moisture is essential for spore germination, so irrigated soybean fields may have more rust. Irrigation should be kept at a minimum when rust is present. In some cases, increasing phosphorus levels has also been found to reduce occurrences of rust.

RUST CONTACT INFORMATION

For more information on soybean rust, see the online version of the *U.S. Soybean Diagnostic Guide* at *www.unitedsoybean.org* or visit the "pest detection" section of the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service's Plant Protection and Quarantine Web site at *www.aphis.usda.gov/ppq*.

If you think you may have rust in your soybean fields, contact your county extension agent or your local university plant disease diagnostic center. A listing of university diagnostic centers may be found under the "directories and rosters" section of the American Phytopathological Society Web site at *www.apsnet.org*.

All photos courtesy of the USDA Agricultural Research Service except as noted.

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SOYBEAN RUST

A Diagnostic Guide

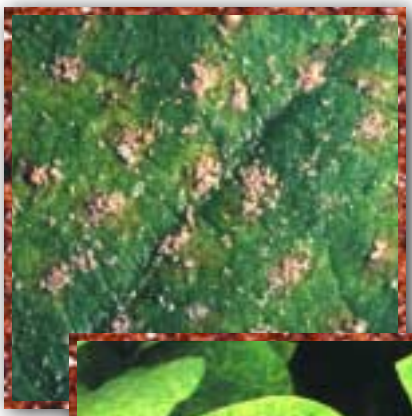
Developed by the Soybean Checkoff for U.S. Soybean Farmers

Our soybean checkoff.
Effective. Efficient. Farmer-Driven.

SOYBEAN RUST

Soybean rust is a disease caused by the fungus *Phakopsora pachyrhizi*. The disease causes lesions to appear on the plant that could lead to premature defoliation and decreased yields. Although soybean rust has not been found in the United States, the disease has been discovered in Africa and South America. The disease originated in the tropical and subtropical regions of Asia and Australia and has caused significant damage to soybean crops in those countries.

This disease could become a significant problem and cause major decreases in yields if it becomes widespread in the United States. Early diagnosis and treatment of the disease are critical.



The United Soybean Board and the soybean checkoff developed this guide, with expert input from plant pathologists, to help soybean farmers diagnose rust in their fields.

SYMPTOMS

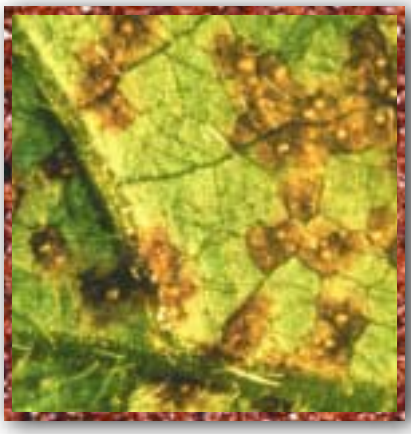


Photo courtesy of Joe F. Hennen, Ph.D., Botanical Research Institute

Early symptoms appear as small lesions on the leaves that become brown to reddish brown and may be confused with bacterial pustule. Under closer examination, tiny bumps within the lesion can be observed. The bumps are spore structures called uredia, which give the leaf a rusty look. Uredia are primarily found on the underside of the leaf, with fewer and smaller uredia forming on the top of the leaf.

Rust-infected leaves eventually turn yellow and fall off the plant. Premature defoliation and a reduction in the number of days to maturity will cause infected plants to have lower seed weight and fewer pods and seeds.

In areas heavily infected with rust, farmers walking through their fields have observed clouds of spores floating in the air. Masses of clear to yellow-brown microscopic urediospores are released from the uredia. They are transported by air currents to other soybean plants and could potentially be transported over long distances.

These are the primary symptoms to look for in your soybean fields. Different varieties may have slightly different reactions to the disease. Over 30 legume species may serve as a host to the rust pathogen, which needs living host cells to reproduce.