



Q: Should Missouri's soybean farmers be worried about soybean rust? What should I do if I suspect my soybean fields are infected with rust?

A: All US soybean farmers should be worried about soybean rust. Although soybean rust has not been identified in any of the 48 contiguous US states, Dr. Laura Sweets (University of Missouri plant pathologist) believes that it is nearly inevitable that soybean rust will strike US soybean production. When it happens, yield losses up to 50% or more can be expected. Southern and transition states such as Missouri could be among the earliest and hardest hit in the US.

Soybean rust is caused by the fungal species *Phakopsora pachyrhizi*. There is a second, less virulent species, also associated with soybean rust (*Phakopsora meibomiaae*). Unfortunately, the aggressive fungal species, *Phakopsora pachyrhizi*, has quickly spread through many soybean-growing countries including Zimbabwe in Africa, Japan in Asia, and Brazil in South America. It has been identified in Puerto Rico and Hawaii.

Definitive identification must be done by experts in the laboratory, but Missouri farmers should be vigilant for indications of soybean rust infection. Dr. Sweets says that initial symptoms are small lesions on leaves that become brown to reddish brown in color. These lesions tend to be angular and bordered by leaf veins. The lesions contain tiny bumps that are spore structures called uredinia. These uredinia give the leaf the typical "rusty" look and are found mostly, but not exclusively, on the underside of the leaf. The uredinia will erupt with masses of clear to yellow-brown microscopic urediniospores. Yield loss is caused by decrease capacity for photosynthesis because of diseased leaves and early leaf fall.

The symptoms of soybean rust can be confused with other soybean diseases including bacterial pustule, bacterial blight, and Septoria leaf spot. Contact your local extension office, Dr. Laura Sweets, or the University of Missouri Plant Diagnostic Clinic for help in distinguishing among these diseases.

Soybean rust spores are very small and easily transported by air currents. This is the primary method by which soybean rust is spread from plant to plant and from field to field. Transport by wind can occur over long distances, so spores arriving from South America or the Caribbean Islands is a likely method of introduction into the US. Soybean rust is not seed borne, but leaf trash in imported soybean grain could be a source of inoculum.

The USDA, working with many stakeholders including soybean commodity groups, have formulated a plan to delay introduction of rust into the US and to management it once it is introduced. Because soybean rust has many crop and weed hosts, eradication and quarantine will not be possible once the disease is introduced. Some hosts including kudzu, yellow sweetclover, cowpea, and kidney bean are common throughout the USA. Unfortunately, few US soybean varieties have any resistance to soybean rust. Breeding programs have been initiated, but resistant varieties will not be available for at least five

years. Several fungicides are labeled for use on soybean for rust. However, chemical control is expensive and only moderately effective.

If you believe that your soybean plants exhibit possible symptoms of soybean rust, please contact your local extension office or the University of Missouri Plant Diagnostic Clinic, immediately. These offices will follow USDA specified procedures for soybean rust identification and can provide you with the latest recommendations for disease management.

The seriousness of this disease should not be underestimated. Yield loss and management costs could make soybean unprofitable in many parts of the USA. The disease threat may not be imminent, but soybean growers should remain vigilant and report suspected disease indications. Cooperation among farmers, the University of Missouri, and state and federal agencies will help to lessen the impact on Missouri farmers. For more information please see the USDA/Aphis web site at:
http://www.aphis.usda.gov/ppq/ep/soybean_rust/