

# PLANT DISEASE AND INSECT ADVISORY



Entomology and Plant Pathology  
Oklahoma State University  
127 Noble Research Center  
Stillwater, OK 74078



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## Soybean Rust Update John Damicone, Extension Plant Pathologist



As most readers are aware by now, soybean rust was identified in the continental U.S. for the first time last week. The disease was found on some late-maturing soybeans (group 7) in research plots near Baton Rouge, Louisiana by the LSU soybean pathologist. The samples were confirmed by USDA experts to be the more damaging Asian type, caused by *Phakopsora pachyrhizi*. USDA assessment teams arrived quickly last week to assess the infestation. Of the 1 million acres of soybeans grown in LA, only about 60,000 acres were yet to be harvested at the time of the finding and these are in the late stages of maturation.

Therefore, the disease poses little threat to the 2004 crop. However, due to the wet and warm weather in coastal LA and much of the Mid-South, volunteer soybeans in harvested fields are thriving. There currently is concern about infestation of a larger area. The most recent report from USDA indicates that Asian soybean rust has since been confirmed in 3 parishes in LA and 1 county in Mississippi. The report did not indicate whether or not rust was found in native Kudzu, an alternate host for soybean rust.

In my estimation, it is premature to assume that rust will be a problem or even present in the US in 2005. However, the recent finding certainly increases the odds. Like most rust species, soybean rust is an obligate parasite that must survive on green, living plants. The big question now is whether or not the Asian rust fungus will overwinter in the Gulf South, or will a killing freeze destroy its overwintering hosts? Another premature assumption is that once established, soybean rust will be a yearly problem. Asian rust is a perennial problem in the tropics where overwintering is not limited. However, in China, which has been exposed to rust for many years, it's occurrence and damage is sporadic. This is a result of China's continental climate which limits rust overwintering. My best guess is that in Oklahoma, rust will eventually become a problem once every few years. We will be relying on windborne spores from outside the state to initiate epidemics. Much will depend on its time of arrival and local weather conditions as to severity in a given year. However, rust is very damaging and yields can be reduced by 50% or more when it hits early and weather favors its development.

The conformation of rust in the continental US has triggered the emergency exemption (Section 18) process for several fungicides that can now be used on soybeans to control rust in Oklahoma and other states that petitioned EPA for their use through March 2007. These include

propiconazole (Tilt, Propimax, and Bumper), tebuconazole (Folicur), and myclobutanil (Laredo). Participating states have also requested approval of pyraclostrobin (Headline), but it has not yet been approved for use on soybeans. In briefly reviewing efficacy trials from Africa and South America, all of the approved fungicides are effective. In trials where rust is severe, generally at least 2 applications, made during the reproductive (R) stages, are required for good control. Obviously, fungicide usage on soybeans will significantly increase the costs of production. Roughly, growers will be looking at \$10 to \$15/acre plus application costs per application. We along with many other states are in the early planning process in the development of a response strategy and recommendations for soybean production in 2005. We will keep you informed.\

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## **Wheat Disease Update**

### **Bob Hunger, Extension Wheat Pathologist**

During the two weeks since my last update, reports and samples have continued to come in to both the Diagnostic Lab and to me. These reports and samples have represented a combination of foliar and root diseases.

**Foliar diseases:** Samples and reports of foliar diseases have been abundant, and have included **wheat leaf rust, tan spot, septoria, and spot blotch**. Often two or more of these diseases are present on the same leaf. As we get into later November and temperatures drop down below freezing, these infected leaves will die and the fields (or spots in the fields) will not look so yellow. The key is to look at the youngest two or three leaves, which should be healthy and green. Even if the older leaves are dead and/or dying from foliar diseases, infections by those diseases should not be present on the youngest 2 or 3 leaves. As cold (especially freezing) temperatures and time do away with the infected leaves, the fields should appear to green-up because the youngest leaves are healthy. Grazing also significantly helps remove infected leaves and thereby also reduces the inoculum. As I mentioned in the last update, the real problem with fall infections of leaf rust (and to some extent with other foliar diseases), is that if favorable weather conditions through the winter allow the pathogens that cause these diseases to overwinter, than these disease loci (=hotspots) can serve to “kick-start” the infections in the spring.

**Root diseases:** As mentioned in the last update, many fields have shown symptoms of root problems. During the last 14 days the most notable of these was in a field located north of Stillwater. In this field (planted about September 10), dead seedlings both within and across rows were present in small to large patches. Washing and closely examining these seedlings in the lab revealed that many of the tillers were rotting within ½ inch or so of the soil surface (**Fig 1**). Initially I thought this may be the result of the fungus Pythium but isolations all grew out to be the fungus Fusarium (**Fig 2**). Hence, I believe that Fusarium is the problem in this field, and I suspect this field will have many empty spots in it next spring (**Fig 3**). Not much can be done now. Replanting is a possibility and was done in this field. Seed treatments may have been helpful, but all of the seed treatments I know of are labeled for “suppression” or “partial control” rather than for “control” of root rots (see, OSU Extension Agents’ Handbook of Insect, Plant Disease, and Weed Control, OCES publication E-832 for specifics). Further, there are many fungi such as Rhizoctonia, Cochliobolus, and Pythium that also can cause this same type of symptom, i.e., death of seedlings. Also keep in mind that the cool and wet weather we have been having (and are suppose to continue to have for the next week or so) also can contribute to yellowing of wheat plants interference with nutrient uptake and utilization.



**Figure 1.** Seedling tillers rotted at base due to *Fusarium*. Compare rotted tillers to healthy seedling (second from right).



**Figure 2.** Spores of the fungus *Fusarium* isolated from rotted seedling tillers.



**Figure 3.** Poor stand resulting from seedling root rot.

**Virus diseases:** Unfortunately, it appears as though there will be problems with the High Plains Virus (HPV) and Wheat Streak Mosaic Virus (WSMV) again in the 2004-2005 wheat crops in Oklahoma and surrounding states. We have had several samples and calls regarding symptoms of these diseases from producers in Oklahoma. Surrounding states (especially the Texas panhandle) also have seen these viruses already this fall. For example, Dr. Karl Steddom (Texas Agricultural Experiment Station in Amarillo, TX) reported that so far this fall (as of Nov 4) 37 samples have tested positive for HPV with eight of these 37 also testing positive for WSMV. To see this level of infection in the fall causes me to believe it is very likely more will appear next spring. Currently we can test for WSMV but not HPV. Testing for HPV is available in Dr. Steddom's lab, but for specifics I would contact him before sending samples. He can be reached at: Dr. Karl Steddom, Texas Agricultural Experiment Station, 6500 Amarillo Blvd West, Amarillo, TX 79106, Phone (806) 677-5650, Fax (806) 677-5644

For more information on WSMV and HPV from the O.S.U. home site, go to 1.

For more information on WSMV and HPV from the Texas A&M site, go to 2.

1. <http://www.entopl.okstate.edu/ddd/hosts/wheat.htm> and select wheat streak mosaic virus and/or high plains virus.

2. [http://publications.tamu.edu/cgi-bin/mime.cgi?name=-40190&mime\\_type=application%2Fpdf](http://publications.tamu.edu/cgi-bin/mime.cgi?name=-40190&mime_type=application%2Fpdf)

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Dr. Richard Grantham  
Director, Plant Disease and Insect Diagnostic Laboratory

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