

## Soybean Rust Update for Organic Farmers–June 27, 2005

The Organic Management of Asian Soybean Rust (OMASR) project, coordinated by Iowa State University, has been established to identify and test best management practices for control of Asian Soybean Rust (*Phakopsora pachyrhizi*) (ASR) in organic production and to determine how areas infected with soybean rust in South America and Africa are dealing with ASR in organic systems (see description of ASR in <http://www.plantpath.iastate.edu/soybeanrust/>). Asian soybean rust, which arrived in the U.S. in 2004, has the potential to be the single most important impediment to economical organic production in the U.S., with the economic impact of ASR in organic systems ranging from \$30 to \$120 million in yield loss, in the event of its arrival in organic soybean areas.

The spread of ASR this 2005 season has, fortunately, been less than estimated from original computer models. As of June 26, 2005, soybean rust has not moved beyond Georgia and Florida, but experts warn that July and August storms and hurricanes have the potential to bring ASR spores into the Midwest before the end of the season. The tradeoff between dry weather (that does not support spore dispersal and pathogen growth) and adequate yields continues to be on everyone's mind, as some eastern organic soybean areas enter their third week without rain.

Research plots established at the University of Florida Quincy Research Station (where ASR was discovered in October 2004 in senescing soybeans) remain free of the disease at this time. Organic treatments that will be tested in these plots include National Organic Program (NOP)-compliant fungicides, such as copper sulfate and hydrogen peroxide, and biological controls, including *Bacillus pumilis* (Ballad™) and other microbial products. System effects for management of soybean rust, including extended crop rotations and windbreaks (to mitigate spore dispersal) will also be investigated once ASR moves into organic growing areas.

In addition to our research plots in Florida, several organic farmers in Iowa, Michigan and Pennsylvania are testing a commercial formulation of *Bacillus pumilis* (Ballad™, AgraQuest, Inc., Davis, CA). These trials will be used to test control of ASR if the disease arrives this year, but also for other minor soybean diseases, such as *Cercospora*. The mode of action of this natural bacterial product consists of several mechanisms, including setting up a competitive field against harmful fungi on the leaf surface. **To date, we have no data on ASR control with any organic product in the U.S.**, and until our trials are completed, we are not recommending any one control treatment over another. AgraQuest data from South Africa show a reduction of ASR with Ballad™ from an initial infection rate of 46.3% down to 43.8%. In another study in South Africa, ASR levels were reduced from 0.0075% to 0.0025% with Ballad™. Whether we will see this level of control in U.S. plots, and whether this level of reduction warrants the expense of spraying materials, will be determined through our research.

Crop insurance should cover organic farms in the event of ASR arriving in your field this year, if you are using “good farming practices” by following normal certified organic practices, including crop rotation and weed management (i.e., doing everything to bring the crop to harvest). Information is contained on the USDA-Risk Management Agency

(RMA) website: <http://www.rma.usda.gov/news/managers/2005/pdf/mgr-05-010.pdf>. You should be enrolled with an agency that is covered by Federal crop insurance. If you intend to spray any material on your soybean crop, you must notify your certifier and include information on the product in your organic farm plan. You should also connect with your certification agent or Extension agent familiar with organic practices and review procedures to identify and report any suspicious leaves and the program you will follow should ASR arrive in your area. ISU has established a First Detector system, where individuals, including members of the Organic Ag Program, have been trained to identify ASR. As required of all certified organic producers, the log you keep of all your practices for your organic certification may also be used in the event of any insurance claim.

We have received support for studying various organic tools through the USDA-CSREES office, and logistical support from the USDA Office of Pest Management. The Organic Trade Association has also requested of the soyfoods industry support for the OMASR project. Through this project, we will create a strong national network for ASR monitoring and delivering best management practices for managing ASR in organic systems. We will post various updates and also provide updates on insect pests affecting organic soybean fields this year. To date, bean leaf beetles (BLB), which vector the bean pod mottle virus (causing staining and a downgrading of organic food soybeans to feed quality) have been seen in some organic fields this year. The beetles are currently entering their first generation in Iowa, the over-wintering population causing some damage to green beans and earlier-planted soybeans in May and early June. The prediction in Iowa is that BLB will be more of a problem than last year, but not as problematic as the beetles were in 2003. Organic bean leaf beetle control tactics research was not conclusive after four years of ISU trials, suggesting that BLB management will include planting soybean varieties that can be sold as feed beans, where seed staining is not an issue (see webpage <http://extension.agron.iastate.edu/organicag/rr.html> (under Neely-Kinyon Farm and “Soybean Staining Experiments”).

As for soybean aphid, a pest that can cause yield loss if populations become excessive, these pests have also been seen this year in Iowa, but it is too early to tell if any treatments are warranted. In trials conducted through the Iowa State University Organic Ag Program, several NOP-compliant insecticides were effective in managing soybean aphid, particularly neem-based products. Despite the dislike for Multicolored Asian Lady Beetles, a nuisance in homes and on bearing fruit crops, these beneficial insects, along with other predatory lady beetles, consume vast quantities of soybean aphids. Spraying any insecticide (organic or conventional) may have a detrimental effect on beneficial insect populations, although the effect will be more damaging with conventional sprays.

As practiced by all organic farmers, monitor your fields daily and report any suspicious leaves or insects. “Working with Nature” is the motto of organic farming, so ecologically-based strategies will be developed to allow organic farming to prosper and grow.