

Ohio State Develops Test For Fighting White Mold

WOOSTER, Ohio — Sclerotinia stem rot may be the No. 2 soybean disease in Ohio, but that might not be the case for too long.

Plant pathologists at Ohio State University have developed a laboratory procedure to identify varieties that do a good job of withstanding the disease. Plant breeders will be able to use that information to develop varieties that give farmers a fighting chance in controlling sclerotinia.

Ohio farmers would welcome the development of tolerant varieties because they incur \$26 million in annual losses to sclerotinia, more commonly known as white mold. The disease is second to phytophthora root rot in cutting soybean yields.

A senior researcher at Ohio State University's Ohio Agricultural Research and Development Center in Wooster, Art Olah, said the test is a two-week procedure that infects plants in order to determine their reactions to the disease. A researcher implants an infected wheat seed in a 10-day-old soybean cotyledon, and then puts it in a chamber that produces 100 percent humidity.

The chamber's environment replicates the incubation process that occurs in farmers' fields, Olah said. Cold, humid nights during the plant's flowering stage are the best conditions for spreading the disease, he said.

After 24 hours, the scientist removes the plants from the chamber to see the effects of the disease. Less-tolerant plants turn brown, wither up and die, while tolerant ones remain healthy.

Although the test fills some gaps in knowledge, it doesn't answer everything scientists want to know, Olah said. For example, it does not identify which varieties still get good yields in spite of infection. To study that, scientists would have to get yield data from field trials.

However, field research can have setbacks that don't get the answers that easily, Olah said. Scientists are at the mercy of the weather for sclerotinia to appear.

"If the weather conditions are not right for the disease, there would be no disease problem in the field," Olah said. "Then we wouldn't know if the plants were resistant," he said.

Identification of varieties' tolerances will be a good tool for plant breeders when they try to develop new seed lines. Two university-plant breeders, Steve St. Martin and Ron Fioritto are doing exactly that, thanks to the lab test data. It generally takes about three to five years for breeders to come up with varieties that do a good job against sclerotinia, Olah said.

Olah said he has already subjected more than 60 soybean varieties to the test. In addition, the research center is using the test on 7,000 Chinese soybean varieties from the U.S. Department of Agriculture's Plant Introduction Center. Cooperating Midwestern universities will use the data to identify promising varieties to test in the field.

"Who knows? We might find a variety totally resistant in this material," Olah said.

Sclerotinia outbreaks are not widespread across the state even

in severe years. The disease appears in a spotty fashion in individual fields. What makes it tough to control is that there are no resistant varieties, and chemical treatments are too expensive to be economical.

Furthermore, modern cultural practices that otherwise increase yields also create conditions ripe for a sclerotinia outbreak, Olah said. For example, farmers have been reducing soybean row widths in the past decades so plant foliage will cover rows quicker for better weed control. However, those conditions also create a humid greenhouse effect that helps spread the disease, he said.

Olah said the ongoing research with other Midwestern universities is looking at the relationship of sclerotinia infection to row widths, no-till practices, rotational practices and levels of crop residues left on field surfaces.

"We know it is a lot more complicated than we originally thought," Olah said. "Our whole goal is to get away from chemicals to control it. If we can find cultural practices and varieties that are resistant, that'll be great."

Sclerotinia appears as a white, cotton-like substance on the soybean stem. The fungi overwinter in black, protective bodies called sclerotia. During the high humidity

of the growing season, germinating sclerotia emit spores, which can cause infection if the plant is flowering. Spores feed on the petals, and that sets the infection process in motion.

Olah said scientists aren't sure why some varieties seem to be more tolerant of sclerotinia than others. However, several factors can promote its spread. Weakened stems may cause the plant to fall over and infect nearby rows. Or, sclerotia may become mixed with

seed that farmers hold for the next year's planting. In the latter case, farmers should make sure they only plant clean seed.

Three soybean industry organizations helped to fund this project. They are the Ohio Soybean Council, Ohio Seed Improvement Association and the North Central Soybean Research Program. The project received funds collected from farmers through the soybean checkoff program.

Tibbs To Serve Area 14

DENVER, Colo. — Bob Tibbs, Havre de Grace, Md., was recently elected to serve as a member of the 1997-1998 American-International Charolais Association (AICA) board of directors.

Tibbs will represent AICA Area 14, which includes the states of Connecticut, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

The seating of the AICA board of directors took place during the National Annual Membership Meeting held in Denver, Colo. Members of the Charolais board of directors will serve their term assisting in making decisions relating to the operation of AICA,



Bob Tibbs

providing advice and counsel to officers and other board members, and performing such duties as may be assigned by decision of the board.

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