

# Soybean Breeding Program Builds Safety Net

*Improved pest-resistant cultivars continue to reap rewards.*



Researcher Silvia Cianzio is part of a team at ISU developing new soybean varieties that are resistant to diseases.

Photo: Iowa State University

**B**reeding resistance to disease and insect pests into soybeans is essential to keeping the crop economically competitive in Iowa, says Curt Sindergard, Iowa Soybean Association president, Rolfe, Iowa.

“Without improved varieties with pest resistance bred into them, it makes growing soybeans less productive and more expensive for farmers,” says Sindergard.

Soybean breeders are doing well to develop new, pest-resistant varieties as the need arises, says Jim Legvold of Vincent in Webster County, Iowa, who is a United Soybean Board (USB) director. “The problem is our environment is increasingly becoming more hostile to growing soybeans,” Legvold points out. “In addition to soybean cyst nematodes (SCN) and aphids, we now have sudden death syndrome (SDS) and Asian soybean rust (ASR) to worry about.

On the other hand, resistant varieties are becoming more readily available to the growers now because the soybean checkoff has invested in soybean breeding research to com-

bat these pests and diseases with assistance from researchers like Silvia Cianzio at Iowa State University (ISU).”

New pest-resistant cultivars will soon be available to growers, confirms Cianzio, an ISU plant breeder. Many, such as soybeans with SDS-resistance, also promise to provide a yield boost, she adds.

“We are going to release one cultivar in 2008 following the previous release of a germplasm line with SDS resistance at the end of 2007,” says Cianzio, who emphasizes that she does her work as part of a team of ISU researchers. “We feel our material has value both in its resistance to SDS and in terms of its yield potential.”

Growers typically benefit sooner if researchers release a new cultivar for public use compared to the release of a new germplasm line, says Cianzio. “A germplasm line generally doesn’t yield well enough yet to be planted commercially; it still needs another round of breeding to increase yields enough to be commercially suitable,” she explains. “However, the private sector can take these lines and boost the yields with their own germplasm.”

Brown stem rot is another disease that is becoming more prominent in Iowa and one ISU soybean breeders are prepared to battle. “Last fall we began releasing a high-yielding cultivar that has been widely proven to be resistant to brown stem rot in different environments where soils have been known to be infected with the fungus,” says Cianzio.

Advancements in developing varieties resistant to iron deficiency chlorosis (IDC) are also moving forward quickly. “We recently released two germplasm lines with a marker, and those have been provided to companies in the private sector to develop further,” she says. “So our IDC resistant lines are already being used.”

Soybean rust-resistant varieties for Iowa are also on their way, she reports. “We are taking very late maturity groups (groups 8, 9 and 10) from subtropical areas and moving ASR resistance into earlier soybean lines of adequate maturities for Iowa,” explains Cianzio. “ISU is able to do this type of research because we have facilities in both Iowa and Puerto Rico.”

Little could be done in plant pathology and soybean breeding without a network of support, says Cianzio. “ISA, the North Central Soybean Research Program (NCSRP) and USB have all contributed funding in different areas,” she says.

Soybean checkoff dollars provide a large component of what’s going on in soybean breeding development at ISU, agrees Sindergard. “Without checkoff dollars to fund the public research and development work like we have at ISU,” he says, “this work would just not occur.”