



# REPORT

**David Wright, Ph.D.**  
Plant Health Initiative Coordinator

## New gene broadens soybeans' resistance to Phytophthora

**A** new gene has been discovered that may make the soybean resistant to Phytophthora for another ten to twenty years.

Until now, soybean producers and plant breeders have been relying primarily on the Rps1k and Rps1c genes to limit the amount of yield lost to this disease.

“However, over the last 10 years the Phytophthora have begun to adapt to these genes,” says Anne Dorrance, an Ohio State University plant pathologist and one of the researchers who discovered the gene. “As a result, soybean producers across the Midwest have noted a progressive decline in the ability to control Phytophthora even with varieties containing these resistance genes.”

Researchers plan to try to extend the effective life of this new gene by combining it with other genes, thereby broadening its range of Phytophthora race control. Over seventy different races of Phytophthora have been detected thus far.

Dorrance believes the discovery of this new gene is a “major find” in the war against Phytophthora root rot.

“It is the first major advancement against Phytophthora in twenty years,” Dorrance says. “The new gene has been named Rps8. With the discovery of the new gene, farmers will hopefully never realize the losses that occurred in the 70’s and 50’s when we would see fields with huge wipe outs,” says Dorrance.

Phytophthora damping off and root rot has been shown to reduce yield of unprotected varieties in excess of 50 percent in individual fields.

Phytophthora root and stem rot is a major problem in poorly drained soils high in clay content. Heavy rains saturate the soil producing areas of standing water, which provides the perfect environment for the disease to infect plant roots. The pathogen grows in the roots and into the plant stem, eventually killing the plant.

Finding the elusive Rps8 gene was not an easy task. The researchers screened over 1,000 wild soybean

germplasm lines as well as traditional varieties from North and South Korea, all stored at the USDA soybean germplasm bank in Urbana, Ill.

The soybean checkoff played a key role in this discovery. The research to locate the gene was partially funded by the Ohio Soybean Council. The USDA soybean germplasm bank is partially funded by the Illinois Soybean Checkoff Board and the Iowa Soybean Promotion Board.

The gene, isolated from a traditional South Korean soybean variety, is currently being tested against Phytophthora isolates from across the Midwest to verify its effectiveness. Once verified, it will be licensed to all seed companies to be incorporated into elite germplasm. And since it will likely be incorporated utilizing traditional breeding methods, varieties will be considered non-GMO, eliminating export concerns.



**Heavy rains saturate the soil producing areas of standing water, which provides the perfect environment for the disease to infect plant roots. The pathogen grows in the roots and into the plant stem, eventually killing the plant.**