

New ARS-Developed Soybean Line Resists Key Nematode

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A new soybean line developed by ARS scientists incorporates genes for resistance to the most virulent soybean cyst nematode from three sources. Photo courtesy of NREL/DOE.

(PhysOrg.com) -- A new soybean line developed by Agricultural Research Service (ARS) scientists is good news for growers. The line, JTN-5109, is effective against the most virulent soybean cyst nematode, called LY1.

The [soybean](#) cyst nematode is a pervasive soybean pest worldwide. In the United States, the nematode is the most damaging soybean pest, causing an estimated yield loss of nearly 94 million bushels in 2007. Genetic

resistance has been the most effective means of controlling the pest.

Nearly all nematode-resistant soybean varieties currently available contain resistance genes from one of two sources—soybean lines “Peking” or Plant Introduction (PI) 88788. JTN-5109, however, has combined nematode resistance from three sources—“Peking,” PI 437654 and PI 567516C.

JTN-5109 is the latest soybean line developed by geneticist Prakash Arelli and his team at the ARS [Crop Genetics](#) Research Unit's satellite laboratory in Jackson, Tenn. The soybean was developed using a combination of traditional plant breeding and genetic marker-assisted selection. Arelli discussed the research at a meeting of the American Society of Agronomy and the Crop Science Society of America in November.

Nematode populations are genetically variable and have adapted to reproduce on resistant soybean cultivars over time. And in recent years, the LY1 nematode populations were found in Missouri, Illinois and Tennessee.

JTN-5109 provided yields of 26 bushels per acre in field studies conducted in 2008 at Jackson, Tenn., and Ames Plantation near Grand Junction, Tenn. That yield is not far below the 29 bushels per acre produced by 5601T, which is a commonly used cultivar, but one susceptible to LY1. The JTN-5109 line will be an excellent source material for breeding high-yielding soybeans with resistance to nematodes, especially for the LY1 [nematode](#) population.

Arelli collaborated with scientists at the University of Tennessee, Michigan State University, Iowa State University, and the University of Missouri, as well as the ARS Corn and Soybean Research Unit at Wooster, Ohio, on the project.

Provided by USDA Agricultural Research Service

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