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# 2009 International Annual Meetings

## Footprints in the Landscape: Sustainability through Plant and Soil Sciences

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### Investigate Nature of Resistance and Breed Sugarbeet for Resistance to Sugarbeet Cyst Nematode.

Monday, November 2, 2009

Convention Center, Exhibit Hall BC, Second Floor

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The sugarbeet cyst nematode (SBCN) (*Heterodera schachtii* Schmidt) is a serious pest of sugarbeet (*Beta vulgaris* L.) throughout the United States and world. Until recently, efforts to develop host plant resistance or immunity in sugarbeet focused on transferring resistance to sugarbeet from a terminal translocation on chromosome IX from *B. procumbens* (section *Procumbentes* of *Beta*). *B. procumbens* is outside the primary gene pool of sugarbeet. Starting in the 1990's, screening of the USDA-ARS National Plant Germplasm System's (NPGS) *Beta* collection has uncovered a number of accessions with tolerance to the SBCN, which provide enough protection to make sugarbeet production economically viable. At least one tolerant source has been released in commercial germplasm. More sources are being evaluated in the greenhouse. Crosses have been made between sugarbeet and seven potential sources of SBCN resistance identified through screening the genetic resources in the NPGS *Beta* collection. Twenty-five F<sub>2</sub> populations from six crosses were screened in the greenhouse to identify families suitable for genetic analyses and to advance breeding material for germplasm development. Seventeen additional sources identified by screening the *Beta* collection were retested. Some of the F<sub>2</sub> populations have a wide range of performance when challenged by SBCN with some individuals doing as well as the mean of commercial resistant control. Individuals (approximately 98 to 150 per population) from six of these F<sub>2</sub> populations are being selfed to produce F<sub>3</sub> families to confirm resistance. The populations will be mapped to better understand the inheritance of resistance, identify selectable markers linked to the resistance, and increase seed from the resistant families to produce SCBN resistant germplasm.

See more of: [Characterization and Evaluation of Plant Genetic Resources: II](#)



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