

Evaluation of Soybean Varieties Resistant to Soybean Cyst Nematode in Southeast Iowa in 2005

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Introduction

Use of resistant soybean varieties is a very effective strategy for managing soybean cyst nematode (SCN), and numerous SCN-resistant soybean varieties are available for Iowa soybean growers. Each year, public and private SCN-resistant soybean varieties are evaluated in SCN-infested fields throughout Iowa by Iowa State University personnel. The research described in this report was performed to assess the agronomic performance of maturity group (MG) II and III SCN-resistant soybean varieties and to determine the effects of the varieties on SCN numbers or population densities. Results for all locations are available at www.isuscntrials.info.

Materials and Methods

Thirty-nine Roundup Ready[®] SCN-resistant soybean varieties were evaluated in an SCN-infested field on the ISU Southeast Research and Demonstration Farm near Crawfordsville, Iowa. Four SCN-susceptible varieties also were planted in the experiment. Plots were four 17-ft-long rows spaced 30 in. apart and were planted at a rate of 10 seeds/ft, with four replications per variety. Preplant herbicide and Roundup Ready[®] herbicide were applied for weed control. Plots were planted on May 2 and harvested on October 4.

Plant emergence (number of plants/ft) was assessed 30 days after planting. All plots were trimmed at the ends to a length of 14 ft on September 6. The maturity date of each variety also was noted. Maturity was recorded as the number of days after August 31 that a variety

was considered mature. A variety was considered mature when 95% of the pods had turned brown. Just prior to harvest, average plant height and lodging (1=all plants fully erect, 5=all plants flat) were assessed in each plot. The center two rows of each four-row plot were harvested with a plot combine. Total seed weight/plot and seed moisture were determined, and total plot seed weights were subsequently converted to bushels/acre. Varieties are listed in the report in order of ascending maturity date and then by descending order of yield.

At the beginning of the growing season, plots were sampled for the presence of SCN. Soil samples, consisting of ten 1-in.-diameter 6- to 8-in.-deep soil cores, were collected from the center 14 ft of the center two rows of each plot immediately after planting. SCN cysts were extracted from each soil sample, and SCN eggs were extracted from the cysts and counted. SCN egg population densities also were determined for each plot at the end of the growing season in an identical manner.

Because of the consistent relationship between higher soil pH and SCN population densities, all varieties also were field-tested for tolerance to iron deficiency chlorosis (IDC). Each variety was planted in a hill plot consisting of five seeds/hill, with two replications/variety, at two high-pH field locations. Locations were chosen by identifying IDC symptoms on soybeans growing in each field at the end of June. One field was located at the ISU Woodruff Farm near Ames (central Iowa) and the other was located on a grower's farm, also near Ames. Prior to planting the experimental varieties, the soybeans growing at each location were removed. The IDC evaluation plots near the Woodruff Farm were planted on June 22, and the plots on the grower's farm were planted on

June 21. Notes concerning IDC symptoms were taken at each location approximately four weeks after planting and again at five weeks after planting. Varieties were rated on a scale of 1 to 5, with a 1 indicating no symptoms of IDC present and a 5 indicating plant death due to IDC. The scores from each location then were averaged together and an overall rating was assigned to each variety.

One variety highly resistant to IDC and one variety highly susceptible to IDC also were included in the experiments as checks. The highly resistant variety scored an average of 1.2, and the highly susceptible variety scored an average of 3.2. The scores from these IDC field tests are listed in the location table in the report for reference.