

Evaluation of Soybean Varieties Resistant to Soybean Cyst Nematode in Southeast Iowa in 2002

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Introduction

The 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 and noninfested fields throughout Iowa by Iowa State University personnel. The research described in this report was performed to assess the agronomic performance of maturity groups (MG) II and III SCN-resistant soybean varieties and to determine the effects of the varieties on SCN population densities.

Materials and Methods

One conventional non-Roundup Ready[®] and 34 Roundup Ready[®], SCN-resistant soybean varieties were evaluated in a noninfested field at the Iowa State University Southeast Research and Demonstration Farm and in an SCN-infested (HG Type 0, Race 3) field adjacent to the research farm, both near Crawfordsville, Iowa. Three Roundup Ready[®], SCN-susceptible varieties also were planted in the experiments. Plots were four 17-foot-long rows spaced 30 inches apart and were planted at a rate of 10 seeds/foot, with four replications per variety. Preplant herbicide and Roundup[®] herbicide were applied to each location. The conventional variety was covered when Roundup[®] was applied.

Plant stand (number of plants/foot) was assessed in each plot 35 to 40 days after planting. The maturity date of each variety also was noted. 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. Total seed weight per plot and seed moisture were determined, and total plot seed weights subsequently were converted to bushels/acre.

At the beginning of the growing season, plots in the infested field were sampled for the presence of SCN. Soil samples, consisting of ten 1-inch-diameter, 6- to 8-inch-deep soil cores, were collected from the center 14 feet of the center two rows of each plot either immediately after or within a week of 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 at the infested field in an identical manner.

Results and Discussion

The results of the experiments described in this report were consistent and dramatic. The data convincingly illustrate the benefits of using SCN-resistant soybean varieties for management of this important soybean pest. Throughout the experiments, most of the soybean varieties with SCN resistance had greater yields than susceptible varieties in the field infested with SCN. In the noninfested field, the average yields of the resistant varieties evaluated were within a few bushels/acre of the susceptible varieties evaluated. Additionally, end-of-season SCN population densities were significantly greater in plots where susceptible varieties were grown relative to plots planted with resistant varieties. Clearly, SCN-resistant soybean varieties provide immediate and long-term benefits when used for management of SCN.