

Evaluation of Soybean Varieties Resistant to Soybean Cyst Nematode in Southeast Iowa in 2001

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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 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

Twenty 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 (race 14) 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.

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 were assessed in each plot (1 = all plants fully erect, 5 = all plants flat). Total seed weight and seed moisture per plot 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 (10 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. At the end of the growing season, in an identical manner, SCN egg population densities also were determined for each plot in the infested field.

Summary

The results of the experiments described in this report were consistent and dramatic. The data convincingly illustrate the benefits of utilizing SCN-resistant soybean varieties for management of this important soybean pest. Throughout the experiments, in the field infested with SCN, most of the soybean varieties with SCN resistance had greater yields than susceptible varieties, although some resistant varieties had greater yields than others. In the noninfested field, the average yields of the evaluated resistant varieties were within a few bushels/acre of the susceptible varieties evaluated. Furthermore, several SCN-resistant varieties actually had greater yields than the best-yielding susceptible varieties in the noninfested field. 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 longterm benefits when used for management of SCN.