Evaluation of Soybean Varieties Resistant to Soybean Cyst Nematode in Northern 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, Iowa State University personnel evaluate public and private SCN-resistant soybean varieties in SCN-infested fields throughout Iowa. The research described in this report was performed to assess the agronomic performance of maturity group (MG) I and II SCN-resistant soybean varieties and to determine the effects of the varieties on SCN population densities.

Materials and Methods

Fifteen conventional (non-Roundup Ready®) and 32 Roundup Ready®, SCN-resistant soybean varieties were evaluated in an SCN-infested field (HG Type 2.5.7, Race 5) at the Iowa State University Northern Research and Demonstration Farm, Kanawha, Iowa. Six conventional and four 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/variety. Preplant herbicide was applied to the field. Conventional postemergent herbicides were applied to the conventional varieties and Roundup® herbicide was applied to the Roundup Ready® varieties.

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/plot and seed moisture were determined, and total plot seed weights subsequently were converted to bushels/acre.

At the beginning of the growing season, all plots 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 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 greater numbers of SCN are found as soil pH increases, all varieties also were field tested for tolerance to iron deficiency chlorosis (IDC). Each variety was planted in hill plots consisting of five seeds/hill with two replications/variety, in two fields with a history of iron chlorosis, near Ames. Notes were taken five weeks after planting and 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.

Summary

The results (Tables 1 and 2) from the experiments at the northern location were influenced by a wetter-than-normal growing season. The results illustrate the unpredictability of the pest, and demonstrate how, in certain growing conditions, the pest can continue to survive without apparent yield loss. However, SCN can be devastating to soybean production in an average or dryer than normal growing season.