Soybean varieties that are resistant to the soybean cyst nematode (SCN) are a critical management tool. Hundreds of such resistant varieties are available. The varieties can vary greatly in agronomic performance and also in the amount of SCN control they provide. Resistance to SCN in soybean is conferred by several genes (Concibido et al. 2004) and is affected by the number of copies of a repeated, multi-gene segment (Cook et al. 2012). Not all SCN-resistant soybean varieties contain the same number or combination of resistance genes.

The agronomic performance of soybean varieties must be evaluated in field environments over the course of growing seasons. Similarly, the nematode control provided by SCN-resistant soybean varieties must be evaluated in experiments conducted in SCN-infested fields as well. The SCN control observed in greenhouse and field experiments are not closely related (Fig. 1).

**Objective:**
Because of the reasons stated above, the overall objective of the Iowa State University (ISU) SCN-resistant Soybean Variety Trial Program is to assess and compare the agronomic performance and SCN control provided by resistant soybean varieties in SCN-infested fields throughout Iowa.

**Experimental details:**
- 9 locations organized into 3 districts - northern, central, and southern Iowa (Fig. 2)
- 4 replicate 4-row plots per variety per experiment
- plots 17 feet long (center 2 rows x 14 feet harvested)
- Roundup Ready® and non-Roundup Ready® varieties (conventional and with other herbicide resistance)
- public and private varieties
- selected widely grown SCN-susceptible varieties also included

**Data collected:**
- plant stand 35-40 days after planting
- maturity date, plant height and lodging at harvest
- grain yield
- SCN egg population densities at planting and harvest
- HG type of SCN population in the field

Results:
Yields and changes in SCN population densities vary from year to year because of the strong influence of temperature and soil moisture on the plant and on the nematode. However, in general, almost all SCN-resistant soybean varieties produce greater yields and allow less SCN reproduction than susceptible varieties at every location every year (Fig. 3).

Despite the consistent trends mentioned above, it is not uncommon for top-yielding SCN-resistant soybean varieties with similar top yields to allow different amounts of SCN reproduction (Fig. 4). And allowing SCN population densities to build up will seriously affect future soybean yields.

**Conclusions:**
- SCN-resistant soybean varieties almost always yield greater than SCN-susceptible varieties in fields infested with SCN.
- SCN reproduction is suppressed and SCN population densities usually do not increase when SCN-resistant soybean varieties are grown.
- Not all SCN-resistant varieties are equal in yield or SCN control.
- Both high yield and control of SCN reproduction are needed for long-term profitable soybean production in SCN-infested fields.

**Benefits to soybean farmers:**
- The ISU SCN-resistant Soybean Variety Trial Program provides comprehensive information about the yield and SCN control from SCN-resistant soybean varieties that are available to Iowa soybean farmers.
- Selection of resistant varieties that offer both high yield and effective SCN control in the field is necessary for sustained profitable soybean production in the future.
- The information from these experiments likely will become increasingly important as SCN populations in Iowa develop ability to reproduce on resistant varieties and also when commercial soybean varieties with new sources of SCN resistance become available.

**Literature cited:**
