

SOYBEAN CYST NEMATODE-RESISTANT VARIETIES: Q&A WITH MICHIGAN STATE'S GEORGE BIRD

Soybean cyst nematode (SCN) is a devastating and yield-limiting pest of the soybean worldwide. Syngenta, as a pioneer in controlling this pathogen, offers the SCN Education Series to help educate growers and retailers on the best practices for controlling damage and increasing soybean yields. Clariva[®] Complete Beans seed treatment, a combination of separately registered products from Syngenta, consists of naturally occurring soil bacteria with a unique, direct mode of action on nematodes, delivering immediate and long-lasting protection of plant root systems resulting in significant yield benefits.

One of the key tactics in fighting soybean cyst nematode (SCN) is using resistant soybean varieties. The three genetic sources of resistance that currently are available commercially are PI88788, PI548402 (Peking) and PI437654 (CystX or Hartwig).

What advantages do cultivars that include these sources of resistance offer? What's next when it comes to SCN resistant varieties? Here are some thoughts from Michigan State University nematologist and soil health biologist George Bird.

Q: How do resistant varieties work?

Bird: Current SCN resistant varieties prevent/interfere with nematode reproduction. Cultivars with a PI548402 source of resistance prevent the formation of nurse cells, and the females do not have a source of the nutrients essential for reproduction. Cultivars with a PI88788 source of resistance provide poor nutrition for the female, resulting in smaller females and fewer eggs, compared to a susceptible. Cultivars with both sources/mechanisms of resistance are not currently available.

Q: Do these sources of resistance affect yields?

Bird: When SCN resistant cultivars are used in SCN infested soil, soybean yields are greater than those of susceptible cultivars.

There are, however, some cultivars that are tolerant to SCN. This phenomenon is not well-understood.



Photo credit: United Soybean Board/the Soybean Checkoff

In other cases, there may be cultivars that have nondocumented resistance in regards to their genetics.

Q: How can growers evaluate and determine the best varieties to grow for any given year? What resources are available to help them make this determination?

Bird: The best growers are also the best researchers in regards to their specific enterprises. On-farm field trials are essential for determining the best cultivars for use the following year. All fields associated with a given farming enterprise need to be monitored in regards to soybean yield and SCN population densities over a period of five to 10 years. This is an important aspect of selecting the proper cultivar for future use.

Q: What has research on cultivar blends shown?

Bird: Yesterday, I looked at 96 soybean plots, all of different soybean sources of resistance and seed treatment combinations. In this particular location, it's a nematode type that's very aggressive. To get high yields, we had to go with something with a PI548402 as a source of resistance. This was very clear there.

In recent years, there are not enough cultivars with PI548402 resistance for growers who need it. For about 15 years, I have included blends in trials, and they've always done very well. Diversity is usually a good thing.

PI548402 with a PI88788, in addition to the ecological advantages, is a way to extend the benefits of the PI548402. If you go back five or seven years, many of the large seed companies were blending. If you look at the sources of resistance, they were marketing varieties as blends. That was a genetic blend, whereas I'm talking about just physically mixing the seeds.

Q: Are there long-term considerations when it comes to selecting the variety a grower will grow?

Bird: Yield, crop quality, profit, SCN population density and SCN type are major considerations.

Seed treatments are now more important than ever.

Soybean cyst nematodes (SCN) are becoming better at adapting to resistant genetics. Consistently achieving an optimum yield in today's environment may require the added lethal firepower of a nematicide seed treatment like Clariva[®] Complete Beans.

The extra protection you get with Clariva Complete Beans helps to deter the problem of SCN adapting to resistant genetics, which allows for more vigorous soybean root systems, better nutrient and moisture uptake, and increased plant resilience. A plant protected from soybean cyst nematodes is a stronger plant, and is much less susceptible to soilborne disease pathogens, such as sudden death syndrome (SDS).

While other seed treatments also claim to be effective against soybean cyst nematodes (SCN), Clariva Complete Beans seed treatment, a combination of separately registered products, is the only seed treatment proven to kill them all season long. The power of Clariva Complete Beans comes from a tough nematicide paired with the unbeaten insect and disease protection of CruiserMaxx[®] Beans with Vibrance[®] seed treatment, a combination of separately registered products.