Soy6-2011 - SCN Resistance Sources
Continue to Work Their Magic!

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SCN Resistance Sources Continue to Work Their Magic!

Purpose:

Soybean cyst nematode (SCN) was first detected in Ontario near Chatham (Dover Center) in 1988 and since then SCN resistant varieties in conjunction with crop rotation with non-host crops and scouting has been the cornerstone of SCN management. Recent reports from the US Midwest suggest that SCN populations are changing and resistance genes, particularly PI 88788, has begun to breakdown.

The research objectives of this international multi-year project are to:

1) Reduce losses and improve soybean cyst nematode (SCN) management in Ontario and the North Central US states.

2) Demonstrate the effects of different SCN resistance sources on SCN field populations in a single cropping season.

3) Produce extension materials summarizing the results of this effort across all collaborating states and Ontario.

Methods:

1) Two large scale demonstration strip trials were established in Ontario grower fields near Highgate (Chatham-Kent) and Harrow (Essex County) in fields with known SCN infestations. Replicated strip plots of 250 ft in length were established with a minimum of four replications at each site. Each location had a minimum of five soybean varieties with similar yield potential which included at least one SCN-susceptible variety as well as varieties with SCN resistance from PI 88788 and PI 548402 (a.k.a. 'Peking'). These sources were used since unfortunately PI 437654 (CystX) derived varieties were not available for Ontario in 2011. These are the most commonly used sources of resistance to SCN in the Northern soybean production areas.

2) Soil cores were collected at planting and at harvest from each strip plot at both locations in each year of the study. Because of the size of the strip plots, multiple cores needed to be collected to represent the SCN population density as best as possible. The individual plots were divided into 25 ft length sections, and 10 samples per section were collected and bulked for SCN egg density counts. A total of 640 SCN soil samples were collected from each of the four locations over the two years (spring (320) and harvest (320)) in order to determine reproduction of SCN, egg densities from each plot.

Results and Summary:

The SCN resistant varieties out yielded the susceptible varieties at both locations (Figure 1 and 2) in 2011 as expected with the greatest yield difference occurring in Highgate. These results emphasize the importance and effectiveness SCN varieties have when used even under low SCN pressure. As expected the greatest increase in SCN population densities occurred when a susceptible variety was used while in general a reduction in SCN populations were observed for both the PI88788 and Peking sources of resistance. Overall both PI 88788 and Peking sources of resistance are performing

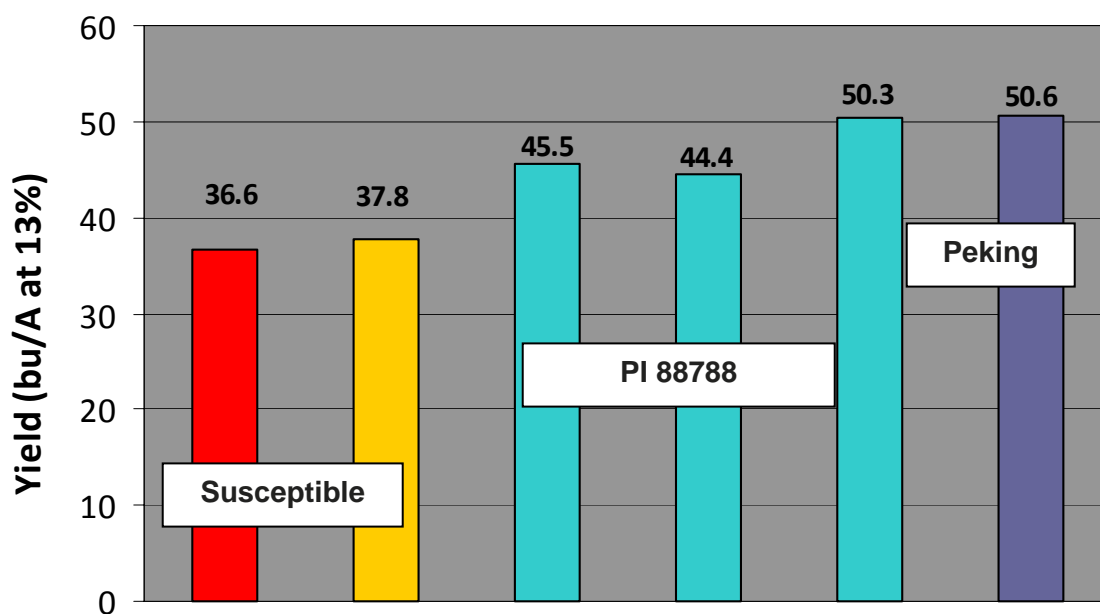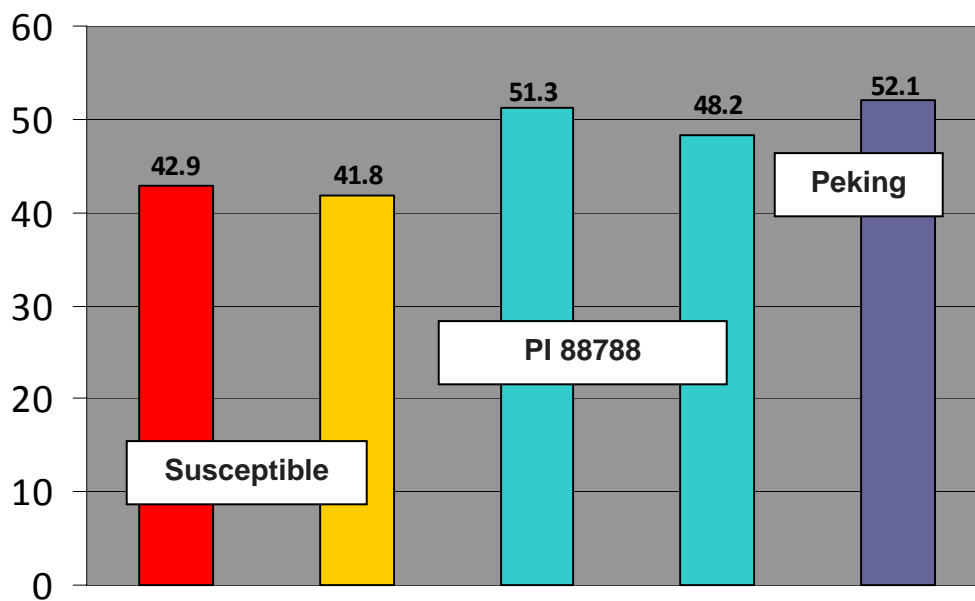**Figure 1 – SCN Resistance Sources Demo Trial – Highgate 2011**

Yield (bu/A at 13%)

Susceptible: 36.6, 37.8
PI 88788: 45.5, 44.4, 50.3
Peking: 50.6

Figure 2 – SCN Resistance Sources Demo Trial – Harrow 2011

Susceptible: 42.9, 41.8
PI 88788: 51.3, 48.2
Peking: 52.1

well in Ontario and although SCN populations are adapting these resistance genes are still working.

Next Steps:

This multi-year project will continue in 2012 and is part of international partnership with the north-central U.S. The information generated from this project is being merged with the US data to help generate a consistent management strategy for SCN. SCN population and HG Type results were not complete at this time but updates on the influence of soybean genetics on SCN populations and HG type will be presented later.

The aim is to minimize and educate not only soybean producers but the soybean industry and advisors about this very destructive soybean disease. Participation allows access to research, resources, communication materials, etc which would otherwise be cost prohibitive if done alone. By coordinating efforts this will help deliver a consistent message on SCN and its management across Northern soybean production areas.

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