Potato Leafhopper Resistant Alfalfa Varieties Show Their Stuff

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Potato leafhopper (PLH) populations have been increasing the past few weeks and many alfalfa fields across the state now showing signs of PLH injury including: yellowing of leaf tips (known as *hopperburn),* stunting, reduced biomass, and decreased leaf protein concentration.

Potato leafhopper is a migratory insect, and source populations develop in the Gulf Coast and southeastern states. Factors affecting the arrival time and development rate of PLH in the northeastern USA include weather patterns, temperature, and host plant species availability. Drought stress conditions can further add to PLH impacts. In NY, PLH damage on alfalfa can be expected annually. However, severity of infestations is variable across years and counties. Conditions this season have been quite favorable for PLH populations and their potential to pose significant economic risk to alfalfa.

The prevalence of PLH injured fields provides a perfect opportunity to discuss the value of PLH resistant alfalfa varieties. PLH resistant alfalfa varieties first became commercially available in 1997 and their resistance to PLH has gotten progressively better with each subsequent generation. PLH resistance has been bred into varieties using conventional breeding techniques. The mechanisms of PLH resistance are complex and may involve physical entrapment, antibiosis, non-preference, and tolerance. The glandular hairs appear to be a critical factor for each of these resistance mechanisms. The advantage of PLH resistant varieties is the reduction of PLH impacts – yellowing, stunting, effects on nutritional value of the forage and a reduced need for insecticide applications.

A side by side comparison PLH resistant vs susceptible alfalfa trial was highlighted as part of last week's Cornell Sponsored Seed Growers Field Day in Ithaca. This event provided the opportunity to view a replicated field trial with 4 PLH resistant and 7 susceptible alfalfa varieties. For comparison, "Vernal" and "Oneida VR", were included as 2 non-PLH resistant industry standards. Two of the featured PLH resistant varieties are Cornell experimental varieties in development. A photo of the plots reveals the advantage of PLH resistance – greener and taller alfalfa. This trial was planted May 10, 2010 and does not receive an insecticide. Sampling damaged vs healthy appearing alfalfa in one replication of the experiment this week determined:

Avg. Susceptible: 3.4 PLH adults / 62.6 PLH nymphs, 7" tall (7 entries)
Avg. Resistant: 1.25 PLH adults / 0.75 PLH nymphs, 15.25 " tall (4 entries)

As can be seen in the pictures (Page 3) recent advances in the development of PLH resistant alfalfa have made the planting of resistant alfalfa a viable alternative to insecticides for the management of leafhoppers. Planting the newest generation of PLH resistant alfalfa hybrids is strongly suggested for the management of PLH in both clear alfalfa seedings and in stands mixed with grass species. Please refer to the alfalfa variety tables available on the Cornell Forage Project web site: (http://plbrgen.cals.cornell.edu/cals/pbg/programs/departmental/forage/) and in the Cornell Guide for Integrated Field Crop Management (www.fieldcrops.org) to evaluate the different available PLH resistant alfalfa varieties.

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Potato leafhopper (PLH) susceptible vs PLH resistant alfalfa varieties in Cornell's Forage Trials in Ithaca, NY 7/11/12

Reference:
http://nysipm.cornell.edu/fieldcrops/tag/pestrpt/default.asp