

Aster Yellows on Herbaceous Perennials

Introduction

Aster yellows is a systemic plant disease caused by a single-celled microorganisms known as phytoplasmas that can only survive and reproduce in living plant tissue. Once infected, there is no cure.

Symptoms

Symptoms vary depending upon the host. At first, leaves become chlorotic and new growth is yellowish-green. If herbaceous perennials are infected early in the season, plants become stunted, with shortened internodes. Unusual flower symptoms may develop such as greening of flower petals (“virescence”). Flower parts may revert to leaf forms (“phyllody”) which is especially seen in *Echinacea*. If plants are severely infected, they may also develop a bushy mass of leaves (“witches’ broom”) with no normal flower production.



Figures 1& 2: Aster yellows on *Echinacea*. Photos by C. Smith, UNH (on left) and G. Moorman, Penn State (on right).

Causal Agent and Host Range

Aster yellows is caused by a phytoplasma (*Candidatus phytoplasma asteris*), which is smaller than a bacterium and lacks a cell wall. It lives in the phloem of infected plants. Aster yellows has a broad host range of 200 species in 40 plant families including ornamentals, vegetables, and many weed hosts. Some herbaceous perennials susceptible to aster yellows include *Anemone*, *Aster*, *Bellis*, *Campanula*, *Centaurea*, *Chrysanthemum*, *Coreopsis*, *Delphinium*, *Echinacea*, *Eupatorium*, *Gaillardia*, *Limonium*, *Phlox*, *Rudbeckia*, *Salvia*, *Scabiosa* and *Veronica*.

Aster yellows is vectored by the aster leafhopper (*Macrostelus quadrilineatus*) and other leafhoppers. The phytoplasma needs to build up in the leafhoppers body for several weeks before the leafhoppers can vector this disease. It also may take several weeks before symptoms develop. Aster leafhoppers migrates into Connecticut from the southern states. Perennial weeds such as Queen Anne's lace, dandelion and horseweed may serve as reservoirs of aster yellows.



Figure 3: Adult aster leafhoppers have six black spots on their head and are yellowish-green wedge-shaped insects tapered at their rear. Photo by L. Pundt

Scouting

Regularly monitor susceptible crops for the presence of aster leafhoppers and signs of aster yellows. It may be more common in outdoor production yards. However, bare root perennials or vernalized liners grown outside before overwintering in the greenhouse may also be infected.

Management

- Once plants are infected with aster yellows, there is no cure. Promptly rogue and destroy infected plants.
- Manage weeds in and around production areas to prevent infection of alternative hosts and overwintering of aster yellows.
- Consider growing high value susceptible crops in screened greenhouse facilities.
- Use yellow sticky cards to monitor for leafhoppers.
- Keep leafhopper numbers low.

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References

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