

## Aster yellows phytoplasma infecting *Catharanthus roseus*



Symptoms of aster yellows on annual vinca (*Catharanthus roseus*) include virescence (colored tissue develops chloroplasts and become green), witches' broom (proliferation of flower shoots), phyllody (floral parts turn into leafy structures) and chlorosis (yellowing).

Phytoplasmas are mainly spread by insects in the families Cicadellidae (leafhoppers), Fulgoridae (planthoppers), and Psyllidae (psyllids), which feed on the phloem tissues of infected plants. Aster leafhoppers (*Macrostelus quadrilineatus* Forbes) are the most common vector of aster yellows in North America. Phytoplasmas may overwinter in insect vectors or in perennial plants.

Aster yellows phytoplasma has an extensive and diverse host range infecting over 350 plant species including many common vegetable, ornamental, and agronomically important field crops, and several non-crop plant species.

Currently, the only available control strategies include early eradication of infected plants, early eradication of infected source plants (weed control), and chemical control of vectors through regular insecticide treatments. However, leafhopper control in a field setting is generally of limited effectiveness due to the nature of the insect and subsequent spread of the pathogen. By the time plants are showing symptoms, the infected pest population is often long gone.

An uninfected insect feeds in the phloem of an infected plant, ingesting phytoplasma particles. Feeding duration to acquire sufficient titer of phytoplasma is the acquisition access period which can be as short as a few minutes but is generally on the order of hours. The longer the acquisition access period, the greater the chance of transmission. An incubation period may be from 10 days to 3 weeks. After which the insect will then release phytoplasma with saliva secreted from the salivary glands when feeding in the phloem of a plant host. Knowing the temporal trends of aster leafhopper abundance and infectivity is necessary to better understand when to time insecticide treatments.

Symptomatic plants should be rouged, but insecticide applications will not be effective if the leafhoppers are no longer present. The occurrence of aster yellows can be highly variable from year-to-year and you may not see this issue again for several years.