

Aster Yellows Phytoplasma—Everything You Need To Know



If your coneflowers or other members of the Asteraceae family in your summer or fall perennial programs have developed strange blooms, you may have an outbreak of “aster yellows” on your hands.

This disease is not caused by a bacterium or virus, but phytoplasma. Phytoplasmas are parasitic microorganisms that live within the phloem of plants (“nutrient highway” vasculature) and the guts of leafhoppers that vector them between plants. Aster yellows phytoplasma (AYP) can affect more than 300 species of plants, so, while “aster” is in the name, members of the *Asteraceae* family are not the only crops at risk when this pathogen is present. Common ornamental crops where disease is observed include asters, coneflowers, coreopsis, marigolds, and sunflowers, but vegetables such as celery and carrots can also suffer significant losses when infected.

What Are Typical Aster Yellows Symptoms?

The stage of crop production when plants are first infected impacts on how aster yellows symptoms present. If you receive infected young plant material or infection occurs early in production, yellowing (true to the disease’s namesake), stunting, and distortion of new growth often occur. However, symptom expression in mature crops is generally what we see in the greenhouse or outdoor production areas. Yellowing or distortion of new growth typically still occurs, but the most easily recognizable symptoms impact flowers. The fun, plant nerd terms for these iconic symptoms are:

- Phyllody—The abnormal development of flowering parts into leaves, and ...
- Virescence—The lack of normal pigmentation and subsequent greening of flower parts.

Where Does AYP Come From?

Unlike tobamoviruses (like TMV) which enter your greenhouse most often via infected cuttings or liners, AYP typically comes in from the landscape. As I mentioned, leaf hoppers (specifically the aster leaf hopper; *Macrostelus quadrilineatus*) spread this pathogen. Overwintering adults can harbor AYP in their systems and new generations can acquire it from infected plants in the landscape. While a 10 to 14-day incubation period is needed from the time a newly matured leaf hopper feeds on an infected plant and when it can transmit AYP to another, this is not very long in the grand scheme of things.

How Do You Manage Aster Yellows?

Aster yellows does not kill most perennial ornamentals, but it will certainly make any affected crops unsalable. As such, there are a few key steps you should take to clean up an infestation and prevent future outbreaks as much as possible.

- Symptoms of aster yellows on inflorescences are fairly distinctive, but if you only see chlorosis, stunting, and/or distortion on foliage, confirmation of AYP from a lab diagnosis is advisable before you destroy any suspect plant material.
- If you have a confirmed outbreak, remove and destroy symptomatic plants ASAP. Nothing can be applied to treat for aster yellows and plants do not grow out of it. If infected plants are kept, they will only serve as reservoirs for AYP and lead to spread.
- In the same breath, quickly ramp up your IPM efforts for leafhoppers in healthy, non-symptomatic crops. Use of a harder-hitting, contact insecticide rotation for a couple of weeks along with something with systemic or translaminar is advisable. This will knock down the current population of adults carrying AYP and provide some “mop-up” control for any stragglers that evaded the contact-only active ingredients.
- Many of the same chemistries that manage thrips and whiteflies are also effective controls for leafhoppers. If this pathogen comes back to visit your operation each year, build your preventative IPM program with tools that provide double-duty to control leafhoppers and other key pests—*especially during warmer months and among susceptible, outdoor-grown crops.*

Keep in mind, leafhoppers move long distances on air currents and blow in with storm systems, so there is only so much you can do to prevent aster yellows. The key to managing this disease is diligent scouting, prevention and quick action when you see early symptoms of the pathogen’s presence.