

Plant Disease Corner:

Jon A. Appel, Plant Pathologist

Downy mildew (DM) of Impatiens, *Plasmopara obducens*:

This disease is specific to *Impatiens walleriana* and has been present in the United States since 2004. Garden or double Impatiens are known for showy colors in the shady areas of the landscape and of great popularity. Almost every greenhouse and retailer in Kansas sells them.



Early yellowing from DM.
Greenhouse Grower

Why is Downy mildew a concern to Impatiens growers and retailers? Control of Downy mildew can be costly and the disease can easily move through a greenhouse or a display destroying a valuable crop in a very short time. Here are a few tips to avoid and manage the disease.

- The disease is moved easily by cuttings of the plant. There is a latent period of five to 14 days depending on moisture, temperature and humidity. Growers are encouraged to isolate new cuttings into houses away from those plants that are almost ready to be marketed and full of flowers and foliage. Consider starting impatiens from seed to lower the risk of introduction. Retailers should physically separate shipments of Impatiens when possible. Do not overcrowd.



Mildew growth on underside of leaf, Purdue University.

- Scout plants especially the ones from cuttings for early signs of the disease. Look for leaves that are light green, stippling or tips that are turning downward. These infected leaves will then produce a white mold on the underside of the leaf. If a white mold is found (a hand lens can help), then spores are being produced and can be carried by wind currents or water. Young plants and tender foliage are very susceptible to DM.

- If the disease is found to be aggressive fungicide programs should begin immediately (see <http://extension.umass.edu/floriculture/factsheets/downy-mildews-ornamental-plants> fungicides and schedules). Infected plants should be bagged up and disposed of immediately. It is better to bag up the plants on the spot than drag them through the greenhouse. Immediately clean up all debris and keep impatiens out of the area. Any remaining soil or impatiens debris can harbor a resting stage of the fungus called oospores that survive for several years. Do not merely throw infected plants on a refuse pile. The fungus will survive, sporulate and infect nearby impatiens in your other production houses as winds or workers carry the spores back into the operation. Workers should not work with or near other Impatiens until they have showered and changed clothing after handling diseased plants.

- Some growers may want to start a preventative fungicide program. Talk with your supplier and see what their management program is and the history of the disease. It is important to rotate fungicides by their mode of action for control and knowing what the supplier has been using and the frequency will help you decide on a program.

- Consider alternative plants. Sakata SunPatiens and Ball's FloraPlants Celebration are reported to be highly tolerant. New Guinea Impatiens (*Impatiens harkerii*) are widely reported as resistant.

- Be aware of other diseases and insect pests of Impatiens. Root rots will cause yellowing of leaves. Apply the pull test to a few plants, root rotted plants easily pull up. Fungus gnats and thrips can also act as carriers of DM spores through a greenhouse. Keep all insect populations to a minimum. Gray mold will yellow leaves like DM but fungus sporulation is gray in color and occurs on all surfaces of plant tissue.

- Downy mildew can be subject to the State of Kansas Plant Pest Act Plant Pest Freedom Standards if infection exceeds 15 percent of the lot or cultivar. Measures must then be taken to reduce percent of infected plants below 15 percent before sale or distribution.

Did you know?

Kansas is considered a protected state by USDA regulation regarding Black Stem Rust of Wheat. Barberry, because of its importance as an alternative host to Black Stem Rust, can only be propagated in Kansas through vegetation cuttings from an USDA approved resistant cultivar. No seed production is allowed.

Kansas has a quarantine regarding importation of walnut trees and saplings. Importers must reach a compliance agreement with the Kansas Department of Agriculture regarding importation and movement of plants. States to the west of Kansas and the states of North Carolina, Ohio, Pennsylvania, Tennessee and Virginia have known reports of the disease insect complex and importation is nearly prohibited.

A Spring Tale

Greg Chrislip, State Entomologist

Springtails are small insects that belong to the order Collembola. Springtails are only about 1-2 mm long. However, due to structures on the abdomen, which gives them their common name springtails can move up to 4 inches in a single motion. The springing appendage on the abdomen is a hinged structure bent forward called the furcula. The furcula is held in place by a latching mechanism called a tenaculum. When the furcula is released from the tenaculum, it springs down catapulting the springtail forward. The springtails are perhaps the most numerous creatures with some estimates of 50,000 springtails per 1 cubic foot of organic topsoil.

The majority of collembolan are helpful detritivores found in the soil feeding on fungi, decaying vegetation, pollen, algae, lichens, bacteria and insect frass (feces). On occasion springtails will invade homes if moisture in their habitat begins to dry. To help prevent home entry, pull mulch away from the foundation of the house. Also mulch should only be



Garden Springtail -
Bourletiella hortensis
Photo by: Tom
Murray/Bugwood

2-4 inches deep and allowed to dry between watering. The springtails may also be come into the house in the soil of potted plants.

While the majority of springtails are beneficial detritivores, a number of species can be agricultural

pests. The garden springtail, *Bourletiella hortensis*, feeds on the young tender leaves of plants. The feeding results in shot holing of leaves. Plants fed upon include beans, beets, broccoli, cabbage, cantaloupe, carrot, cauliflower, celery, lettuce, onion, pea, potato, pumpkin, radish, spinach, squash, tomato and watermelon (University of Minnesota). In Australia an introduced collembolan, *Sminthurus viridis*, is a major pest of alfalfa. Other springtails in the genus *Onychiurus* attack the roots of plants.

A real natural wonder in late winter is finding snow fleas, a type of springtail that is often found on top of snow. Large numbers of *Hypogastrura nivicola*, make the snow looked like it has been sprinkled heavy with black pepper, but closer examination reveals the spots are moving.

Insecticidal treatments are generally not required for springtail control. If springtails invade the home due to dry weather outdoors, keep the area indoors dry and clean and they will soon disappear. If chemical control is needed in the garden there are a number of effective controls available. Springtail numbers can also be controlled in garden settings by planting in areas with high organic matter.

Yellow Starthistle, A Weed to Watch For
Scott S. Marsh, State Weeds Specialist

Early Detection and Rapid Response (EDRR), this is a very significant concept in the management of

invasive species. It refers to the importance of finding new populations of invasive plants and taking quick and effective action to eradicate or control them before they have a chance to become established and spread. We have several EDRR species that have already established a foothold in Kansas and even more that have not yet crossed our borders.

Yellow starthistle (*Centaurea solstitialis*) is most definitely an EDRR species. It is an annual plant, which means it lives for only one growing season, produces seed and dies. How can a plant that lives for only one season be a problem? By producing a lot of seed and having help in spreading that seed. Yellow starthistle seed is a common contaminant in uncertified hay, straw and seed. It is also unwittingly transported on the undercarriages of vehicles that drive through infested areas and the seeds have bristles that readily attach to the fur of livestock and the human clothing.



The plant is easily identified by the bright yellow flowers, the 1 inch long yellowish-brown spines protruding from the base of the flower head and the gray-green stems that have tiny, woolly hairs growing on them. The plant will grow anywhere from 6 inches to 5 feet in height and the leaves, while small, grow along the length of the stem

giving it a winged appearance.

Yellow starthistle has been identified 41 states from coast to coast, including 16 counties in Kansas. It occurs mostly in the eastern and central parts of the state although it has been found in the west as well. While those populations are small and isolated, they can easily grow to become unmanageable problems. In California, for example, the plant was introduced in the late 1800s and was not thought to be much of an issue because it only grew in small patches in and around forage fields. Today it covers more than 12 million acres throughout the state and is considered to be one of the most ecologically and economically damaging invasive plants in the state. It often takes

over large tracts of land, out-competing all other species until it is the only plant left growing.

If that were not enough, the yellow starthistle is poisonous to horses. It causes an usually fatal neurological disorder called “chewing disease” after being eaten. Symptoms include the inability to swallow, drowsiness, chewing with nothing in the mouth and spitting out food.

Integrated Weed Management provides several approaches to controlling yellow starthistle. Because it is an annual species, it can be easily controlled by pulling or digging the plant out of the ground. This, of course, works well for small infestations or individual plants but is very laborious for larger populations. Mowing does not work because the plant will start to flower below the height of the mower blade. For these larger infestations try applying aminopyralid or clopyralid in early spring. They both provide pre- and post-emergence protection and are residual in the soil for up to 5 months. Other herbicides such as 2,4-D, picloram, triclopyr and glyphosate also provide varying levels of control.

With any application of pesticides you are required



by law to follow the label directions. Because yellow starthistle is not a designated noxious weed in Kansas, you will not be able to use cost-share chemicals to treat it.

Grazing with sheep or goats is also an effective option for controlling but not eradicating yellow starthistle. To prevent

regeneration, turn the animals out to graze heavily at least twice a year before seeds are produced.

Keep in mind that if the plant has been growing for more than one year before you start controlling it, there will probably be seeds lying dormant in the soil. Therefore, you will need to plan on working for three or more years to fully eradicate the infestation.

If you find yellow starthistle, do what you can to control it and also call the Kansas Department of Agriculture at (785) 862-2180 to report it.

* New website: <https://agriculture.ks.gov/divisions-programs/plant-protect-weed-control>

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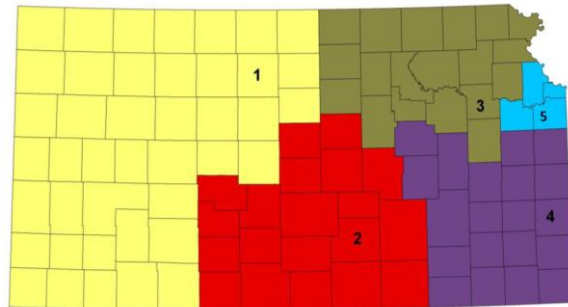
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