College of Agriculture, Food and Environment
Cooperative Extension Service

Kentucky Nursery LISTSERV Bulletin

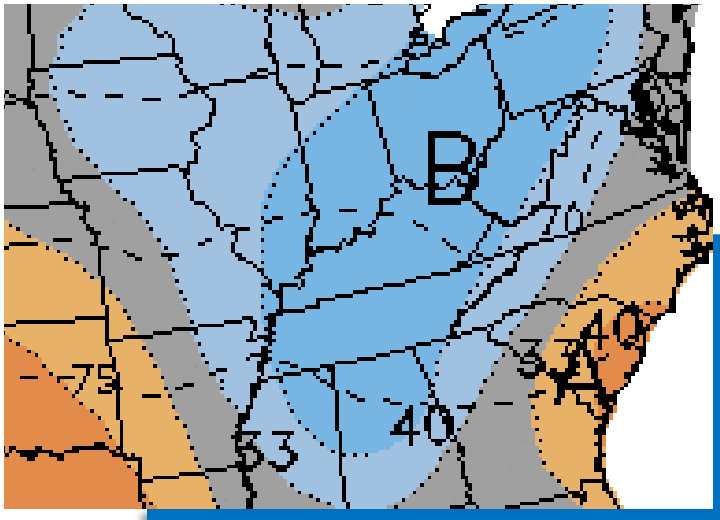
University of Kentucky Nursery Crops Team | **End of August 2021**

Cooler than Average Start to September

The NOAA's Climate Prediction Center is forecasting an increased chance of below average temperatures for the start of September, a welcome change in the pattern of late August. This is likely to hold throughout the entire first half of September, when the forecast for temperatures becomes less clear as there is a roughly equal chance for above and below average temperatures.

Drier than average conditions are more likely for the first half of September for east and western parts of Kentucky, with wetter than average rates predicted for the month overall.

See **UKAg Weather's Long Range Outlooks** for a variety of forecasts of temperature and precipitation probabilities.



September 07-13, 2021 Temperature Probability
Image: NOAA Climate.gov, 30 AUG 2021

Nursery Crops

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Joshua Knight, Senior Extension Associate & Managing Editor

- **Soil-borne Pathogens Serve as the Biggest Threat to Mum Production in KY**
- **Japanese Maple Scale Eggs Ready to Hatch**

Soil-borne Pathogens Serve as the Biggest Threat to Mum Production in KY

Nicole Gauthier, Extension Professor, Plant Pathology

Many Kentucky vegetable and greenhouse producers are beginning to include fall chrysanthemum production in their operations. Mums are usually planted in June and sold in September when fall color is in demand. In Kentucky, mum production can vary in size, and small growers can produce as few as 200 plants per season. Size of production, in turn, can influence cultural practices and initial investment in important practices like surface drainage, pre-plant fungicide dips, and pre-emergent herbicides (Figure 1).

Figure 1. Cultural practices such as surface drainage and weed control can affect disease severity in mum plots.

Photo: Nicole Gauthier, UK

Typically, these plants are set outdoors onto nursery cloth that is in direct contact with the natural ground. Because the most common mum diseases are caused by soil-borne pathogens, the threat of disease losses can be as much as 50%, while average losses range from 10% to 25%. In these cases, soil-borne pathogens overwinter in soil beneath nursery cloth. If plants are set into the same areas year after year, inoculum builds up and disease risk increases with each passing season.

The Three Most Common Diseases on Mum in Kentucky Are Caused by Soil-borne Pathogens

Pythium Root Rot

Pythium spp. are water mold pathogens (not fungi) that favor cool, wet conditions. Water molds produce swimming spores that move freely in water, increasing risk of infection when water puddles underneath pots. Pythium infects at root tips and then colonizes root systems, causing root loss (Figure 2). In turn, plants wilt from lack of water uptake.

Figure 2. Pythium root rot causes roots to turn black or gray.

Photo: Paul Bachi

Decaying roots turn black and the root cortex may slough off. Black stem lesions may be visible at soil surfaces. Because Pythium spp. are not true fungi, targeted products should be used for disease management. Products that contain etridiazole or mefenoxam are most effective. Infected plants are not curable, so preventative disease management is recommended. Cultural practices, including proficient drainage and sanitation, are critical components for a preventative disease management program.

Rhizoctonia Web Blight

The Rhizoctonia fungus does not produce spores, but moves via the growth of threadlike masses called mycelia. Initial infections begin at the soil surface and are responsible for crown rot. Fungal webbing often grows up to upper plant parts when plant canopies become dense and humid (Figure 3).

Figure 3. High humidity and long periods of wetness are conducive to disease such as web blight.

Photo: Nicole Gauthier, UK

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These web-like mycelia often can be seen without a microscope (Figure 4). Disease usually becomes a problem as plants mature and foliage does not dry out quickly. Large parts of plant turn brown and necrotic and wilt as the fungus invades branches (Figure 5).

Fungicides containing azoxystrobin, fludioxonil, iprodione, propiconazole, pyraclostrobin, tebuconazole, thiophanate-methyl, trifloxystrobin, and triflumizole provide effective control. Increase air circulation and promote rapid drying to help reduce disease development. Sanitation is also important to reduce carry-over from one season to the next.

Figure 4. Fungal "webbing" of Rhizoctonia web blight may be visible on upper plant parts

Photo: Nicole Gauthier, UK

Fusarium Wilt

This fungal pathogen invades vascular systems and causes leaf yellowing and plant wilt (Figure 6). Fusarium fungi infect plant roots and then colonize internal tissue. Collapse of these "water and nutrient highways" can result in starvation of upper plant parts. Often, a single branch or plantlet will show symptoms before the rest of the plant. Necrosis or brown streaks may be visible on outer surfaces of stems, and cross sections usually indicate necrotic (brown decaying) vascular tissue. Often, Fusarium wilt is present with one or more other soil-borne diseases. Adjust pH to 6.5 to 7.0 (avoid highly acidic soil). Fusarium wilt is extremely difficult to manage after infection occurs, but fungicides containing azoxystrobin, fludioxonil, and pyraclostrobin are effective at suppressing the pathogen. Avoid infection by preventing contact with soil or surface water.

Figure 5. Leaves and stems turn brown from Rhizoctonia web blight.

Photo: Nicole Gauthier, UK

Resources

- Garden Mum Production: Diseases and Nutritional Disorders (PPFS-OR-H-10)
- Fungicides for Management of Diseases in Commercial Greenhouse Ornamentals (PPFS-GH-3)
- Greenhouse Sanitation (PPFS-GH-04)
- Effectiveness of Various Chemicals for Disease Control of Ornamental Plants (Southern Nursery IPM)

Figure 6. Fungal "webbing" of Rhizoctonia web blight may be visible on upper plant parts

Photo: Nicole Gauthier, UK

Japanese Maple Scale Eggs Ready to Hatch

Jonathan Larson, Extension Professor, Entomology

One of our least favorite armored scales is gearing up for a final hurrah as we head towards the end of summer. Japanese maple scale, an introduced pest of over 15 different genera of plants, can pop up and take over sections of nurseries. Several producers over the last few years have reported dealing with large infestations.

Sampling conducted last week at a central Kentucky nursery showed that there were still new eggs hidden under the waxy cover of females. These will likely begin to hatch in the next few days and the emerging crawlers will settle down near their mother to begin their life. This corresponds with research done in Tennessee that showed this pest has at least two generations there with an estimated second egg hatch around August 1.

Figure 1. The distinctively purple eggs of this scale are diagnostic though they can be hard to see without proper magnification.

Photo: Lorraine Graney, Bartlett Tree Experts, Bugwood.org

Managers might consider scouting right now to see if they have this pest on their plants. Focus efforts on lilac trees, red maple, Japanese maples, and dogwoods. Look for patches of scales, they look like oblong dandruff flakes settled on twigs and trunks. Using a hand lens or magnifying glass, try to magnify the pests and then flip them over using a small pin or needle. If you have selected a female, you may see the elongated purple eggs. Managers can also use visual survey to see the small crawlers as they emerge or try to use a scouting trap like electrical tape wrapped around twigs near scale populations. Be sure the sticky side is facing up to snare the little beasts. Scouting for this pest can be easier said than done, they are one of our most challenging pests to deal with.

If you do discover there are egg laden populations in your nursery, you have options for control. If you haven't already used a systemic on the trees, then attacking the new scale crawlers with insect growth regulators like pyriproxyfen and buprofezin can suppress them. Horticultural oils are also an option if you want an organic solution. Next season though, it would be wise to follow up with a systemic application of dinotefuran or clothianidin to help keep JMS in check.

The University of Kentucky's **Nursery Crop Extension Research Team** is based out of two locations across the bluegrass to better serve our producers.

The **University of Kentucky Research and Education Center (UKREC)** in **Princeton** serves western Kentucky producers while our facilities and personnel on main campus in **Lexington** serve central and eastern Kentucky producers.

Check out our YouTube Channel!

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