Kentucky Nursery LISTSERV Bulletin

University of Kentucky Nursery Crops Team

End of August 2018

End of Summer Continues Warmer and Wetter Weather

The forecasts predict a high likelihood of warmer and wetter than average weather for the first half of September, and that trend is expected to continue throughout the month. The trend of "warmer and wetter than average" has been consistent throughout the summer, but precipitation patterns may change as we move into the fall. Currently conditions in the pacific are consistent with the "ENSO-neutral" designation (neither El Niño or La Niña), but atmospheric monitoring calls for developing a weak El Niño in Fall and Winter.

The primary effect of this pattern is the location of the jet stream that crosses the continental U.S., with an El Niño jet stream being more persistent and "straighter" from west to east, with generally milder and less precipitation across the upper Midwest and to the north of Kentucky, with increased precipitation to the east and south of Kentucky.

Please see the **UKAg Weather Center's Long Range Outlooks** for more information.

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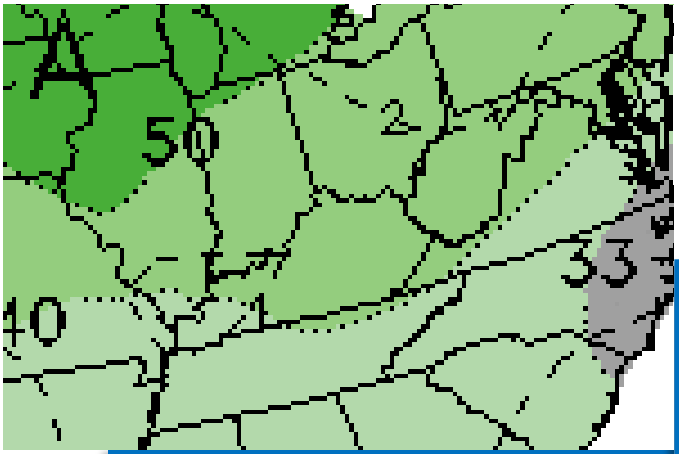

6-10 Day Outlook, Precipitation Probability
Aug 30, 2018. Valid Sept 5—Sept 9, 2018
Source: NOAA Climate Prediction Center

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

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

Nicole Ward-Gauthier, Extension Specialist, 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.

Image: Nicole Ward-Gauther, 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

Image: Nicole Ward-Gauthier, UK

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.

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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). 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).

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

Image: Nicole Ward-Gauther, UK

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.

Image: Nicole Ward-Gauther, UK

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

Image: Nicole Ward-Gauther, UK

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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 6. Fusarium wilt causes yellowing and wilting as fungi affect vascular tissue and water transport.

Image: Chazz Hesselein, Alabama Cooperative Extension Service, bugwood.org

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)

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.

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