

Garden mums are most often produced outdoors and can be subject to weather conditions favorable for pests and diseases. Some of the more common problems occurring on garden mums are caused by *Pythium* and *Fusarium*. Both of these pathogens are likely to emerge under higher temperatures and moisture conditions.

Left uncontrolled, *Pythium* can cause root and stem rot, sometimes resulting in wilt and leaf rot (Figure 1 and 2), and it can spread in water and potting medium as well as by tools and worker handling. Apply fungicides early in the crop to avoid any losses to *Pythium*, and use good sanitation practices for the most effective preventive treatment. Growing media with high soluble salts can cause root burn and make the plants more susceptible to *Pythium* attack. Plant protection products for *Pythium* include: [Subdue Maxx](#)<sup>®</sup> (mefenoxam), [Segway](#)<sup>™</sup> (cyazofamid), or [Terrazole](#)<sup>®</sup> (etridiazole) fungicides. As with all plant protection products, follow all label recommendations.

*Fusarium* problems occur more frequently when the plants are stressed, so attention to proper growing practices is essential. Wilt, stem rot and root rot can occur with a *Fusarium* infection (Figure 3), and plants are often infected simultaneously by *Fusarium* and *Pythium*. *Fusarium* can travel by soil, water or air. Plant protection products effective for *Fusarium* include: [Heritage](#)<sup>®</sup> (azoxystrobin) and [Medallion](#)<sup>®</sup>-WDG (fludioxonil) fungicides. Tank mixes to address both *Pythium* and *Fusarium* can be appropriate. Use Heritage + Subdue Maxx for prevention of both *Pythium* and *Fusarium*. View the [chrysanthemum disease control bulletin](#) for additional fungicide recommendations.

Another problem for garden mums grown outdoors is bacterial leaf spot (BLS), caused by *Pseudomonas cichorii*. This bacterium causes black spots on foliage and can also affect flower buds (Figure 4). Overhead watering and rainy periods in warm weather favor this disease. Free water must be on the leaf surface for the disease to develop. Drip irrigation or irrigating early in the day may decrease disease probability. There are no effective bactericides; some copper compounds may help in preventing some spread, but the best bacterial control measure is sanitation. Remove affected plants to reduce inoculum spread.

Occasional pests on garden mums include aphids, two-spotted spider mites, thrips and whiteflies. [Flagship](#)<sup>®</sup> 25WG insecticide is effective against aphids, thrips and whiteflies and should be used in a rotation schedule with [Avid](#)<sup>®</sup> 0.15EC. View the [chrysanthemum pest control bulletin](#) for additional prevention measures and effective plant protection products. If garden mums are being grown in the greenhouse, there are biological control agents available. Recommended [Bioline](#)<sup>™</sup> biological control agents for use in the greenhouse are listed in the following table (These biological can also be used in outdoor production.):

Target Pest	Bioline™ Biological Control Agent for Greenhouse Use
Aphids	Aphiline™ c, Aphiline™ e, Aphiline™ ce, Aphidoline™ a
Thrips	Amblyline™ cu, Swirskiline™ as, Exhibitline™ sf, Hypoline™ m, Oriline™ i, Thripline™ ams
Whiteflies	Encarline™ f, Eretline™ e, Swirskiline™ as
Two spotted spider mites	Phytoline™ p, Anderline™ aa, Amblyline™ ca

Controlling thrips and aphids can prevent the spread of viruses. Thrips act as a vector for the tospoviruses: Impatiens Necrotic Spot Virus (INSV) and Tomato Spotted Wilt Virus (TSWV). Aphids can spread Chrysanthemum Virus B (CVB). There are no chemicals that control viruses, so vector control is critical.

Finally, Chrysanthemum White Rust (CWR) can destroy your crop, so prevention is vital in areas where this disease has been found. Additional information is available in our 2013 [CWR Tech Tip](#), [CWR bulletin](#) and [webinar](#).



Figure 1. Left: Chrysanthemum infected with *Pythium*. Right: Healthy Chrysanthemum



Figure 2. Close-up of *Pythium* spreading into Chrysanthemum leaves.



Figure 3. Chrysanthemum showing Fusarium symptoms: non-uniform chlorosis and necrosis of foliage.



Figure 4. Bacterial Leaf Spot (BLS) caused by *Pseudomonas cichorii* on Chrysanthemum.

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