e-GRO Alert

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Blackleg of Geranium

Geranium plants with black stems and leaf petioles, wilt, and overall plant collapse were observed. This Alert describes blackleg of geranium caused by Pythium sp. To diagnose blackleg, submit plant samples to your preferred diagnostic lab.

An eight-week-old zonal geranium (*Pelargonium* × *hortorum*) crop was inspected because greenhouse-grown plants had started to wilt during the day, recover at night, and wilt again the following day. Most plants exhibited lower leaf chlorosis (yellowing) and root tip browning. The outer root tissue (cortex) easily pulled off exposing vascular tissue, typical of Pythium root rot disease. Upon closer inspection, a few plants exhibited blackening of the crown (Fig. 1), lower stem (Fig. 2), upper stem (Fig. 3) and leaf petioles (Fig. 4). Few plants exhibited stem rot at the substrate surface. Overall plant collapse (Fig. 5A) was also observed. These stem and crown symptoms are characteristic of the blackleg disease of geranium, which is caused by several species of the *Pythium* pathogen.

Figure 1. Zonal geranium (*Pelargonium* × *hortorum*) plant exhibiting black discoloration of the crown caused by blackleg (*Pythium* sp.).
Photo by: W. Garrett Owen.

According to the grower, initial wilting symptoms were observed during week six of the geranium crop cycle. By week eight, significant wilting was observed along with discoloration and plant collapse. The crop log indicated that some plants were irrigated

overhead daily while others were irrigated twice daily using an ebb-and-flood bench-top system (Fig. 5B).

To prevent infection and mitigate disease spread, greenhouse growers should consider sources for pathogen introduction, carefully inspect shipments, and maintain a strict sanitation program. Cultural practices such as cleaning and disinfesting all tools, surfaces, and equipment are essential. Prior to transplant, sanitize greenhouse surfaces such as greenhouse floors, bench-tops, and ebb-and-flood tables. At transplant and throughout production, avoid any damage to the roots or root tips. Do not oversaturate substrate during overhead irrigation. Adjust irrigation frequency and duration if plants are irrigated through drip or ebb-and-flood systems so that the substrate is not overly saturated.

If symptoms suggestive of blackleg are observed in the greenhouse, affected plants should be destroyed immediately and samples submitted to your preferred diagnostic lab to confirm the diagnosis. Nearby plants should be monitored closely. Chemical control options can be used to protect healthy plant material, particularly when risk for infection is high due to infected plants either within the crop, neighboring crop, or suspended above the crop. Growers should consult with state greenhouse Extension specialist(s) or preferred diagnostic lab for options of registered fungicides.

To learn more about Pythium diseases in other floriculture crops, refer to:

- e-GRO Alert 6.08: Pythium Problems
- e-GRO Alert 8.04: The Problem with a Picture: Pythium in Propagation

Figure 2. Zonal geranium (*Pelargonium* × *hortorum*) plant exhibiting black discoloration of the lower stem caused by blackleg (*Pythium* sp.). Photo by: W. Garrett Owen.

Figure 3. Zonal geranium (*Pelargonium* × *hortorum*) plant exhibiting black discoloration of the stem caused by blackleg (*Pythium* sp.). Photo by: W. Garrett Owen.

Figure 4. Zonal geranium (*Pelargonium* × *hortorum*) plant exhibiting black discoloration of the leaf petiole caused by blackleg (*Pythium* sp.). Photo by: W. Garrett Owen.

Figure 5. (A) Container-grown and overhead irrigated zonal geranium (*Pelargonium* × *hortorum*) plant exhibiting overall plant collapse caused by blackleg (*Pythium* sp.). (B) Container-grown zonal geranium and irrigated with an ebb-and-flood bench-top system exhibiting discoloration of the crown, stem, and leaf petioles caused by blackleg. Photo by: W. Garrett Owen.

- e-GRO Alert 10.25: Taking a More Holistic Approach to Fungus Gnat Management
- e-GRO Alert 10.38: Pansy Problems: Leaf Spot, Powdery Mildew, and Myrothecium Crown Rot

Overall, proper cultural practices and management can help mitigate blackleg infections. Disease prevention is the best management practice, as plants cannot be cured once infected.

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