e-GRO Alert

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Keep an eye out for *Rhizoctonia* web blight

Warmer, humid conditions within greenhouses and outdoor production areas, especially as plant canopies close, are prone to web blight caused by the fungus, Rhizoctonia solani.

Rhizoctonia is insidious infecting numerous herbaceous and woody ornamental plants. It has an extremely wide host range, and can affect plants from propagation to landscapes. I have recently seen it infecting begonia, ferns, hydrangea liners, and flats of microgreens. *Rhizoctonia* infection often goes unnoticed until plant canopies discolor and collapse. It is present year-round inside greenhouses; however, it is most common in outdoor production during the summer months.

Figure 1: Brown, necrotic areas and *Rhizoctonia* hyphae on infected pinnae on Boston fern. (Image by J. Williams-Woodward)

Rhizoctonia is often the primary cause of pre- and post-emergence damping off (Figure 3). It can infect every part of the plant (roots, stem, leaves, and flowers) causing root and crown rot, stem blighting, and aerial web blighting. Unlike most fungal pathogens that spread by water-splashed or wind-blown spores, *Rhizoctonia* spreads by hyphae (fine, thread-like filaments that make up the fungus). It is the cobweb-like, hyphal growth that is often diagnostic of *Rhizoctonia* infection.

The hyphae spread outward in a radial pattern from the initial point of infection (Figure 3). It will grow on and in the soil and then upward along stems and into the foliage

causing leaf blighting and an aerial web blight (Figure 1). Infected leaves become spotted and necrotic. Killed leaves often senesce, but are matted together and held to the stems by the hyphae (Figure 2). If infected plants are shaken gently, the infected leaves may dangle from the stems because the hyphae is holding it in place. The thread-like hyphae are often seen growing between infected tissues (Figures 1 and 2). *Rhizoctonia* hyphae grows quickly and may spread between closely spaced plants when the canopies touch.

Rhizoctonia survives in fallen leaf debris; within infected roots and in rooting medium debris on benches, floors, tools, and used containers; and as hardened survival structures called sclerotia. Sclerotia consist of hyphae that is tightly wrapped around itself to form a small, hardened mass. Sclerotia allow *Rhizoctonia* to survive for years within an area. Hyphae or sclerotia can be splashed into the plant canopy or can be introduced on any soil-contaminated tools, containers, stakes, pot labels, irrigation emitters, or worker's hands. Even the dust generated from sweeping an area could contain and spread *Rhizoctonia*. Following good sanitation practices to keep everything clean and free of debris will help to reduce pathogen spread.

Rhizoctonia infection is favored by moist, humid (80-90% relative humidity), and warmer conditions (68-86˚F). Dense canopy coverage can increase disease incidence because the moist, humid, shaded environment beneath the leaves creates perfect conditions for *Rhizoctonia* hyphae to grow and spread beneath the leaves. Always check the interior of and under the canopy for signs of *Rhizoctonia* hyphae. Hanging baskets in particular need to be checked routinely as the

Figure 2: Senescent leaf matted to adjacent leaf by *Rhizoctonia* hyphae. The hyphae looks like fine threads or cobweb-like growth between the leaves and originates from the brown, necrotic areas. (Image by J. Williams-Woodward)

Figure 3: Brown, water-soaked lesions and killed foliage and stems on hydrangea in propagation. *Rhizoctonia* hyphae is growing between the stems creating a mat of hyphae and decaying leaf tissues. (Image by J. Williams-Woodward)

Figure 4: Circular patch of pre-emergent damping off where seeds failed to germinate and post-emergent damping off at the edge where stems of seedling cilantro are infected and collapsed due to expanding *Rhizcotonia* growth across the flat in microgreen production. (Image by J. Williams-Woodward)

disease can spread quickly and may often go unseen. Rooting media washed from hanging baskets above a bench crop can spread *Rhizoctonia* into those crops as well.

Management

Management of *Rhizoctonia* begins by following good sanitation practices. *Rhizoctonia* can survive and spread in and on anything containing contaminated soil. Because *Rhizoctonia* is known to survive and spread in dust and soil debris swept from floors, never add the sweepings from floors or benches back into fresh or steam-sterilized rooting medium. This will only contaminate the medium. Benches and floors should be cleaned of debris and disinfested between crops. Plug trays and containers need to be cleaned of soil debris and disinfested before re-use.

Promoting good air circulation around plants can aid in plant drying and reduce humidity levels around plant canopies. Increasing plant spacing to reduce plant-to-plant contact can reduce disease spread as well. *Rhizoctonia* can grow from and between adjacent leaves and plants.

Fungicide applications are needed to reduce *Rhizoctonia* growth and disease development. Fungicides should be applied preventively in production areas where *Rhizoctonia* has been a problem in the past. Fungicides to control *Rhizoctonia* are not the same as those used for the Oomycete (water-mold) root pathogens, *Pythium* and *Phytophthora*). Fungicides containing (listed alphabetically) azoxystrobin, fludioxonil, flutolanil, fluoxastrobin, iprodione, metaconzole, myclobutanil, polyoxin D zinc salt, pyraclostrobin, thiophanate methyl, triflumizole, and trifloxystrobin provide good to excellent control in reducing *Rhizoctonia* infection and spread. Many of these active ingredients are found in combination products with other actives such as benzovindiflupyr + azoxystrobin, boscalid + pyraclostrobin, fluxapyroxad + pyraclostrobin, cyprodinil + fludioxonil, and fluopyram + trifloxystrobin. Preventative applications are more effective than curative applications.

It is important to read all product labels carefully as <u>some products cannot be used on certain plant species or growth stages.</u> Follow all label directions for rate and frequency of application.

******The mention of specific active ingredients does not constitute an endorsement or recommendation of, or discrimination against similar products not mentioned. ALWAYS READ PRODUCT LABELS AND USE THEM AS DIRECTED ON THE LABEL.

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