

RED THREAD IS HERE AGAIN - A DISEASE PROFILE

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The following is a disease profile of the turfgrass disease red thread. There is detailed information about the fungi that causes the disease, what turfgrasses are affected, environmental conditions (weather) that is conducive for development, symptoms, the disease cycle and management strategies.



Active red thread – in a perennial ryegrass lawn, March 2017, Columbus, Ohio. (Photo courtesy J.W. Rimelspach)



Note the reddish/pink sclerotia and pink cottony floccs of mycelium of *Laetisaria fuciformis*. (Photo courtesy J.W. Rimelspach)

PATHOGEN:

Laetisaria fuciformis / *L. fuciformis* is a Basidiomycete. Mycelium is multinucleate and do not typically have clamp connections.

HOST:

Occurs on a wide variety of turfgrass species (mostly cool season) over a wide geographical distribution. Mostly seen in Ohio in the transition from spring to summer. Especially severe under prolonged misty (wet) cool spring weather. However, the disease has been seen in every month of the year in Ohio and can be active whenever conditions are right for the fungi to grow.

Cool-Season Grasses:

- Fine Fescues – severe
- Tall Fescue – moderate to light
- Perennial Ryegrass – severe
- Kentucky Bluegrass – moderate
- Bentgrasses – moderate to light

Warm-Season Grasses:

- Bermudagrass – moderate to light

ENVIRONMENTAL FACTORS:

Cool to mild temperatures; heavy dew, light rain, fog (wet leaves) and slow turf growth is ideal for disease development. *L. fuciformis* may be active over an extremely broad range of temperatures ranging from 32-85 F. Red thread is most severe under low N, P, K, and Ca fertility. The disease may occur year-round, but is generally most severe for no more than several months in any given location. In Ohio, red thread has been recorded as being active in every month of the year.

TRIVIA:

This is the first reported disease of a turfgrass species. First observed on ryegrass in 1873 by Berkeley in Australia and Wallis in England.

SIGNS and SYMPTOMS:

Circular or irregular shaped tan-colored patches of blighted grass 2 inches to 3 feet in diameter. The tan color of the dead leaf blades may be the initial symptoms observed.

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The patches often appear diffuse or ragged as they contain both infected necrotic and healthy green tissue. Small patches may coalesce to form larger patches.

Primarily a disease of that affects leaves and sheaths. Infection typically begins at the leaf tip and moves towards the crown. The fungus typically produces pale pink, web like mycelial growth that surrounds and connects leaf blades in close proximity to one another. The color of the mycelium can vary from pinkish to red.

Under humid environmental conditions, the pathogen produces fine pink-pale red-orange antler like mycelial growths called red threads or sclerotia. Pink cottony tufts of mycelial growth are also typical.

May be confused with Pink patch or Dollar spot; especially when mycelial growth is absent.

DISEASE CYCLE:

Survival: The fungus persists during unfavorable environmental conditions as sclerotia (red threads) on infected leaves or in the thatch. These threads / mycelial fragments may remain viable for several years.

Dispersal: Dissemination of sclerotia and arthroconidia occurs via wind, rain, animals, and equipment.

Infection: Growth and Reproduction: Growth and establishment of the pathogen occurs rapidly under optimal environmental conditions. Leaf death may occur as soon as two days post penetration. Prolonged periods of high humidity favor rapid disease development. Free water on the leaf surface appears to be required for germination of sclerotia and arthroconidia. Basidiospores may be produced, but their role in the disease cycle is not clear.

INTEGRATED MANAGEMENT STRATEGY:

I. Cultural / Maintenance

- In general any practice that encourages optimal growth of turf should be employed such as maintenance with a balanced fertility program, good drainage, adequate light, etc.

- Increased Nitrogen (N) and Phosphorous (P) fertility has been correlated to decreased red thread susceptibility. Fertilizers alone may not eliminate red thread but can be a valuable maintenance approach to reduce the disease severity and for faster recovery.
- The bottom line is to think about and know the fertility needs of lawns for optimal health. Soil testing can be a tool to help determine fertilizer needs and rates.

2. Genetic Resistance

Home lawns, golf courses, or athletic fields: Plant less susceptible grasses if given the opportunity. For example, Kentucky bluegrass or Tall Fescue versus Perennial Ryegrass. Check state recommendations and NTEP (National Turfgrass Evaluation Trials – ntep.org).

3. Chemical

- Red thread is more easily managed using a preventative spray program rather than via curative chemical applications. Once the disease is active and patches are present, control is a two-step process
- First, stop the growth of the fungi (use of an effective fungicide) and Second, grow the turfgrass to have new healthy leaves replace the diseased and damaged leaves.
- There are many fungicides that are effective on red thread the key is to select one that is labeled for the site you are using it on. Many fungicides are NOT LABELED for RESIDENTIAL turfgrass areas. Read the label and follow instructions.