

Ironing Your Turfgrass

Although the earth's crust is about 5% iron (Fe), we still see iron deficiency in plants. This may be because of a problem with the plant roots, soil and/or environment.



Fe deficiency symptoms first appear as interveinal yellowing on younger (uppermost) leaves. These yellow areas are patchy, with some local areas showing no symptoms. In contrast, a nitrogen (N) deficiency appears first on lower, older leaves and is more uniform over the area of the lawn. Applying N to Fe-deficient sod will make the situation worse because of extra growth and thus extra demand for Fe. Applying iron to Fe-deficient sod will green up the turf without causing much extra growth; lower foliage may still show some lighter color from the lack of N.

Iron or Nitrogen Deficiency?

Iron

1. May occur in blotchy or patchy area.
2. Turf is definitely yellow.
3. Upper (youngest) leaves are yellow.
4. Growth may not be reduced.
5. Reacts negatively to N application (entire, plant turn more yellow).

Nitrogen

1. Usually affects most of the lawn.
2. Turf is light green/pale.
3. Lower (oldest) leaves are yellow.
4. Growth is often stunted and thin.
5. With applied Fe, plant turns dark green, but growth is still slow and older leaves often remain yellow.

What to do?

The quick fix is to wait for the environmental stress to ease and spray an Fe fertilizer. Foliar feed sprays work quickly, but they last only three to four weeks.

If the deficiency was brought on by cold, wet soils or high N fertility, then the spray may do the trick. Fe is applied at about 1 pound of elemental iron per acre. This is about 2 ounces of Fe Sulfate per 1,000 sq.ft. or 5 pounds per acre. Bermudas and zoysias can tolerate twice this amount, but centipede grass blackens and may begin to show foliar burn at twice this rate.

If yellowing is encountered after Fe application, you have induced a short-term manganese (Mn) deficiency and can reverse that with an Mn spray of 1/2 to 1 pound of Mn per acre. Chelates of Fe and Mn are excellent forms with which to supply these elements in spray.

If yellowing returns and soil is no longer cold and wet, a soil nutrient analysis is definitely in order. Follow the instructions on the test results. A high soil pH will reduce Fe availability depending on the species of grass. Applying Fe to a high pH soil will just revert this new material to an unavailable Fe form and thwart an expected response. It may require two or three applications of sulfur at 7 to 8 pounds per 1,000 sq.ft. applied during the milder seasons to relieve a high soil pH. An acid form of N (like ammonium sulfate) would be the preferred N source as well.

Management practices that improve root growth will also improve Fe availability since good roots are needed for iron uptake. These include proper mowing, fertility and watering as well as soil aeration.

Potential Sources of Fe	% Fe	Material Use*
Fe Sulfates	20-23	F, S
Fe Sulfide	45	S
Fe Oxides	69-77	S
Fe Ammonium Phosphates	29	F, S
Fe Ammonium Sulfate	14-22	F, S
Fe Ammonium Polyphosphate	22	F, S
Fe Chelates; various	1-14	F, S

*F= foliar applied and S=soil applied



Example of liquid iron foliar spray concentrate

Visit our Web site: www.lsuagcenter.com

Author and Photo Credits

Thomas J. Koske, Ph.D.
Professor (Horticulture)
School of Plant, Environmental
and Soil Sciences

Louisiana State University Agricultural Center
William B. Richardson, Chancellor
Louisiana Agricultural Experiment Station
David J. Boethel, Vice Chancellor and Director
Louisiana Cooperative Extension Service
Paul D. Coreil, Vice Chancellor and Director
Pub. 2895 (online only) 10/08 Rev.

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.