

Correcting Iron Deficiencies

1. Add iron during establishment. Because ferric ions and hydroxides are not very mobile in soil, it is difficult to introduce iron into the soil profile once the turf is in place. Iron, phosphorus and many of the other micronutrients are similar in this regard. Organic sources such as composts and iron fortified humic materials could be used but FeSO_4 would probably be as good or better than anything.

2. Apply iron soon after mowing. The longer iron salts or chelates remain on grass leaves, the more absorption will occur. Periodic wetting by dew or light rain will further increase penetration into leaves. While iron is not readily redistributed within a plant, the longer leaves that have absorbed iron remain on the grass plants, the more partitioning to growing points and new leaves will likely occur. The idea is to lose as little iron as possible to clippings especially if they are removed from the turf site.

3. Frequent applications. Because absorption into leaves is not very efficient and loss in clippings is inevitable, it is better to provide several iron uptake cycles than to rely on only one. Because iron does not move much through the phloem, new leaves that emerge after spraying will benefit little from a single application. Repeated sprays at seven day intervals will provide more completely the iron requirements of turf.

4. Light applications. Iron rates should be based on avoiding toxicity. Because iron application of more than a few lbs/acre will likely cause turf darkening, even blackening, frequent light sprayings are more likely to avoid toxic injury and provide longer lasting effects. Hot weather will increase the probability of a toxic response as will the simultaneous application of nitrogen. Since a toxic response is fairly rapid, some trial applications might be made before treating a large area. Remember that iron toxicity is rarely lethal and recovery is often rapid.

5. Adequate nitrogen. Iron response requires adequate nitrogen. Applying nitrogen with iron will insure a maximum response from the iron. It can also increase the toxicity potential. If grass is well supplied with nitrogen (soil solution concentrations of nitrate are above a few parts per million) you can assume nitrogen is not lacking and it need not be applied with an iron treatment. Late in the summer, cool-season grasses may have badly reduced root systems so adding nitrogen with an iron application may be advisable even if the soil water nitrate level is adequate.

6. Acid soils have more available iron. Consider this when establishing a liming program. Sand based greens have little buffering so lime applications may increase pH more than would occur in a soil. A high pH (above 6.5) will make iron less available to the roots and will favor the formation of black layer during times of excess water.

7. Healthy roots. Iron uptake is energy demanding so healthy roots are important. As for most turf responses to environmental challenges, a good root system is always beneficial. Managing turf for greater root growth will make iron applications, especially to the soil, more effective. Allowing the grass to grow a little more than normal before mowing and applying iron may be helpful. Applying iron following a sunny period may be better than an overcast one.

8. Iron does not cause black layer but it makes anaerobic layers black. Remember the cause of black layer is poor drainage and anaerobic conditions not the presence of iron in the soil column. Aerification and lowering the soil pH will help prevent black layer.

9. Iron is not the solution to yellow turf; good nutritional management is. Iron is only one of 14 essential mineral nutrients. Off color is usually the result of poor nutrition, not just a lack of iron. It is best to manage for complete nutritional needs rather than to correct problems.