

# LOUISIANA HOME LAWN SERIES

A guide to maintaining a healthy Louisiana lawn



## Micronutrients

Micronutrients are needed in lower quantities by the plant compared to macronutrients. Micronutrients include iron, manganese, zinc, copper, boron, molybdenum, chlorine and nickel. Management of these nutrients can occur through routine soil testing. Understanding the role of these nutrients in turfgrass growth is important in developing a sound fertility plan for your lawn.

**Manganese:** Manganese (Mn) is available for plant uptake in the form of  $Mn^{2+}$ . It is important in photosynthesis and the activation of several enzymes. Manganese can be deficient in acidic, sandy soils. Other factors, such as soil pH, aeration and soil temperatures, can affect manganese availability. As soil pH becomes more acidic (a pH lower than 7), manganese becomes more available for plant uptake. Decreasing soil organic matter may also make manganese more available for plant uptake. Deficiency symptoms include reduced growth with gray spots on yellowing newer leaves. Leaves can also yellow between veins with tips turning white.

**Zinc:** Zinc (Zn) is available for plant uptake in the form of  $Zn^{2+}$ . It is important as a structural component of enzymes and is involved in DNA and RNA replication. If soil conditions include high soil pH (a pH greater than 7), very low organic matter or very high soil organic matter, zinc becomes less available for plant uptake. Deficiency symptoms can include deformed, stunted leaves and yellowing new leaves.

**Copper:** Copper (Cu) is available for plant uptake in the form of  $Cu^{2+}$ . It is important in photosynthesis processes and in some proteins and enzymes. Copper deficiency can occur in sandy, acidic (a pH less than 7) soils. Increasing soil organic matter may make copper more available for plant uptake. Deficiency symptoms include stunted growth and yellowing of young leaves.

**Boron:** Boron (B) is available for plant uptake in the form of  $H_3BO_3$  at a soil pH less than 9. Boron is important to cell wall structures and is also involved in cell elongation. Soils with low organic matter have lower boron availability. Boron

can easily be lost through leaching in sandy soils. Deficiency symptoms can include curled, yellowing leaves.

**Molybdenum:** Molybdenum (Mo) is available for plant uptake as  $MoO_4^{2-}$  and  $HMoO_4^-$ . It is important in some enzymes reactions related to nitrogen fixation. As soil pH increases above 7, molybdenum becomes more available for plant uptake. Increasing soil organic matter can also increase molybdenum availability.

**Chlorine:** Chlorine (Cl) is available for plant uptake in the form of Cl<sup>-</sup>. It is involved in relations to split water molecules during photosynthesis and is also involved in osmotic regulation. Losses can occur in soil with very high leaching potential. Deficiency symptoms can include leaf wilting and yellowing in younger leaves. However, chlorine deficiency is not typically an issue for many turfgrass species.

**Nickel:** Nickel (Ni) is available for plant uptake in the form  $Ni^{2+}$ . It is involved in regulating enzyme processes in the plant, but there is limited information regarding nickel in turfgrass.

**When to Apply:** The first step in managing micronutrients is having the soil tested to determine deficiencies and soil pH. Management of soil pH and soil organic matter can correct micronutrient deficiencies. Packets for micronutrient fertility are available to consumers, but consult your local extension service before applying. Fertilizers should only be applied when the turfgrass is actively growing.

January	February	March	April	May	June	July	August	September	October	November	December
Turfgrass dormant		Turfgrass active growth season								Turfgrass dormant	

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