

Micronutrients In Pot Culture

ATLANTIC-FEC FERTILIZER CO.

"A little neglect may breed mischief; for want of a nail the shoe is lost, for want of a shoe the horse is lost, for want of a horse the rider is lost." This quote from Poor Richard's Almanac best sums up the role micronutrients play in plant production. Micronutrients are to plants as vitamins and minerals are to animals. One may survive without them but growth is less than optimum. Some of the functions of these minor elements are:

MANGANESE: Acts as a catalyst to promote and regulate certain functions, activates enzymes that control plant metabolism and functions with iron in the formation of chlorophyll.

IRON: Essential in chlorophyll formation, involved in oxidation-reduction processes and is a vital part of the oxygen carrying system. May also play an important role in nucleic acid metabolism.

ZINC: Vital in oxidation processes and for the transformation of carbohydrates. Regulates sugar consumption and is a key in various enzyme systems that regulate metabolic activity. Also needed for the formation of auxins which promote plant growth.

COPPER: Activates enzymes, some of which function in respiration. Important in protein utilization and indirectly effects chlorophyll production.

BORON: Important in plant growth associated with cellular activity that promotes maturity, flower set, fruit yield and quantity. Some foliage plants are quite sensitive to boron and toxicity can occur where levels are excessive.

MOLYBDENUM: Required for the assimilation of nitrogen in plants. Plant requirement is very low.

The activity of micronutrients in plant growth has been identified to some degree but much remains to be known. We know plants respond to applications of minor elements and are essential for growing quality plants. Compared to nitrogen, phosphorous and potassium, micronutrients are required in relatively small amounts.

Plant requirements vary for each element and in excessive amounts they can cause plant injury or even death. The sensitivity of certain plants to some elements, particularly boron, is known. Where ever these are a problem the fertilizer programs must be adjusted to insure these elements are eliminated or restricted.

Micronutrients come from many sources. The ability of the plant to absorb these elements depend on the source, soil environment and plant metabolism. Micronutrient sources include oxides, sulfates and chelates. Oxides are generally unavailable because of lower water solubility. Sulfates are more water soluble and tend to be preferred over oxides, however, the cost is greater. Chelate refers to a process by which metal elements are combined with chemicals, either natural or synthetic, to create a more available form of the metal.

Chelates are more expensive and their effectiveness greatly varies depending on the chelating agent used. However, they are the most available source.

The soil environment effects nutrient availability in many ways. The best Ph range for growing most plants and providing optimum conditions for nutrient availability is 6 to 7. Excessive calcium and soil colloids can combine with metals to create unavailable forms. Chelates are most desirable under these conditions. Soils must be tested to determine Ph level and adjusted accordingly.

Plant metabolism is important as it effects nutrient absorption. An active plant will absorb more nutrients. Cold weather will slow plant metabolism and nutrient uptake will be diminished.

Soil applications and foliar sprays are both effective ways of applying micronutrients. Even though micronutrients are not used in large amounts, their availability may mean the difference between average and optimum plant growth. Make sure your fertilizer program does not neglect the "nail" (micronutrients).■

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been blessed with in recent decades, traces of man-made chemicals will certainly find a way into our food — from pest control, packaging, protection in storage and other sources. Given today's highly sophisticated analytical techniques, these miniscule amounts can be detected, even at the parts per million level.

The only sensible course is to follow the recommendations of authorities and eat a varied diet with less fat than is now commonly consumed and include plenty of fruits, vegetables and fiber-rich cereal products. I would also put some faith in our laws and our regulators. On the whole, I think they have served us well. Remember never have people lived as long and amid such abundance as the technically advanced world of 1984.

(Keith C. Barrons — Taught crop production at Michigan State University, worked for Burpee Seed Co. and Dow Chemical Co. — NEWSWEEK, April 9, 1984.)■

—CHEMICALLY SPEAKING

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