



# OEFFA Organic Certification Fact Sheet

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## Secondary Nutrients & Micronutrients

### Maintaining and improving soil fertility on your organic farm

One of the primary goals of organic agriculture is to produce healthy crops by feeding not just the plant, but the soil as well. In order to provide the best environment for growing crops, soils often need adjustments to their nutrient composition. Balanced soils enhance soil life and tilth, improve weed and insect control, and increase crop yield and quality. To achieve balanced soils, you might want to add secondary nutrients or micronutrients. Fertilizer products can contain secondary nutrients and micronutrients from both synthetic and natural sources. National Organic Program (NOP) rules allow for the limited use of certain synthetic fertilizers to support the health of the current crop while correcting and enhancing soil fertility with sustainable management practices and natural materials. Restrictions on the use of these inputs are explained here.

#### Abbreviations Used in this Document

**Secondary Nutrients:** Calcium (Ca), Magnesium (Mg), and Sulfur (S)

**Micronutrients:** Boron (B), Zinc (Zn), Copper (Cu), Iron (Fe), Manganese (Mn), Molybdenum (Mo), and Cobalt (Co)

#### The National List of Allowed and Prohibited Substances

The National List identifies substances that may and may not be used in organic crop and livestock production. All **natural, nonsynthetic** sources of secondary nutrients and micronutrients are allowed *unless* listed under NOP § 205.602. Calcium chloride produced through the brine process is natural, but is only allowed in organic production when used as a foliar spray to treat a physiological disorder associated with calcium uptake.

Some **synthetic** sources of secondary nutrients and micronutrients are allowed for use as fertilizers. These allowed synthetic sources are listed under NOP § 205.601(j).

- The synthetic secondary nutrients listed below are allowed:
  - Magnesium sulfate (including synthetic Epsom salts) is allowed with a documented soil deficiency.
  - Elemental sulfur is allowed with no restrictions.

- The micronutrients listed below can be used to improve fertility *when a documented deficiency exists*, but not as defoliants or herbicides:

- Soluble boron (B) products
- Sulfates, carbonates, oxides, or silicates of Zn, Cu, Fe, Mn, Mo, and Co

In order to use products that contain these synthetic micronutrients, you must:

- Make sure the product is approved by OEFFA before use. OEFFA will ensure all ingredients are compliant with NOP rules.
- List the product on your Organic System Plan as an input.
- Have documentation that shows a deficiency of the synthetic nutrient(s) in the product.



#### How to Document Deficiencies for Secondary Nutrients and Micronutrients

The NOP requires documented soil deficiencies to use most synthetic forms of these nutrients. OEFFA accepts soil tests from within the last three years as documentation of nutrient deficiency. Soil tests must show deficiencies of all synthetic micronutrients planned for use in all areas where they will be used. Remember to obtain approval through OEFFA *before* applying fertilizers recommended by your soil testing company.

Nutrient deficiencies or imbalances can also be documented using plant tissue tests from current crops, recorded observations/monitoring of plant health, the use of check strips or test plots, or some combination thereof. OEFFA will assess this deficiency documentation on a case-by-case basis.

## Common Symptoms of Nutrient Deficiencies

### **Calcium**

- Distorted leaves at top of plant
- Blossom-end rot (sunken, decayed area on the bottoms of fruit)



### **Magnesium**

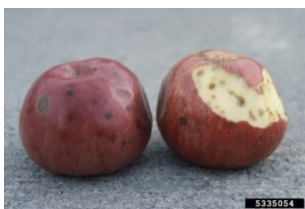
- Older leaves yellow around edges
- Green arrowhead shape in leaf centers

### **Sulfur**

- Leaves turn yellow

### **Boron**

- Buds at the ends of branches die
- Distorted leaves
- Brittle, cracked stems
- Failed or malformed fruit



### **Iron**

- Younger leaves turn yellow
- Brown spots on leaves
- Leaves are smaller than normal
- Leaves dry up, curl, and fall off easily

### **Molybdenum**

- Fewer leaves grow
- Older leaves turn yellow
- White or green swollen bumps on roots
- Legumes (such as soybeans) are shorter than normal

### **Cobalt**

- Plants grow shorter than normal
- Pale green stems and leaves
- Older leaves turn yellow
- Swollen bumps on roots of legumes (such as soybeans)

### **Manganese**

- Younger leaves turn yellow
- Smaller than normal leaves, shoots, and fruits
- Brown spots on leaves and stem

### **Copper**

- Plants grow shorter than normal
- Buds at the ends of branches die
- Leaves turn copper-brown

### **Zinc**

- Plants grow shorter than normal
- Distorted leaves at the ends of branches
- Younger leaves turn yellow



### **Summary**

Organic farmers feed the soil and the soil feeds the crops. A wide range of soils, crops, production systems, theories on soil fertility management, and testing methods can make it difficult to determine when a “deficiency” exists. Partnership and communication between you, OEFFA Certification, and your local agricultural extension agent and/or soil testing company will help improve and maintain the quality of your soil and your crops while maintaining compliance with NOP rules.

### **Resources**

- ✓ If you would like more information about testing for nutrient deficiencies or choosing products to apply to your fields based on testing, feel free to contact OEFFA’s Sustainable Agriculture Educator at (614) 262-2022 ext. 209. You can also contact your county agricultural extension or agent or a Certified Crop Advisor.
- ✓ The Organic Materials Review Institute (<http://www.omri.org>) and the Washington State Department of Agriculture (<http://agr.wa.gov/FoodAnimal/Organic/>) approve products and materials. You can search their websites for a fertilizer product or material you are interested in, or look for the OMRI logo on packaging to know it’s been approved for use in organic production.
- ✓ The OEFFA Approved Materials List has a section on approved crop fertilizers and their restrictions.
- ✓ If you want to use a product and you are not sure if it is approved or if there are restrictions on its use, contact OEFFA Materials Review Staff at (614) 262-2022 ext. 230, [materialsreview@oeffa.org](mailto:materialsreview@oeffa.org), or drop a note in the mail.