

*Home & Garden*

# MANGANESE SULFATE

**FOR USE IN CORRECTING MANGANESE DEFICIENCIES IN PALMS (FRIZZLE-TOP), TREES, SHRUBS AND OTHER PLANTS.**

**FOR PALMS:** Use 1/2 to 6 lbs. for each palm, depending on size.

**FOR LANDSCAPES:** Use 1/3 to 2/3 cupfuls per 100 square feet.

**FOR LARGE SHRUBS AND TREES:** Use 1/4 to 1/2 pound per plant.

**Guaranteed Analysis**

**Secondary Plant Nutrients**

Total Manganese as Mn ..... 29.0%

Water Soluble Manganese as Mn ..... 29.0%

Derived from: Manganese Sulfate

**Guaranteed By:** Southern Agricultural Insecticides, Inc.

P.O. Box 218, Palmetto, Fl. 34220

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION

**May be harmful if swallowed. Avoid breathing dust. May cause irritation of skin and eyes. Wash thoroughly after using.**

**NOTE: Manganese Sulfate will stain masonry, asbestos and certain painted surfaces.**

Buyer assumes all risks of use, storage, or handling of this material not in accordance with directions and precautions given herewith.

**Manganese deficiency or "frizzle top"** is a common problem in palms. Symptoms first begin to show on the newly emerging fronds(leaves). The fronds will appear chlorotic (yellow), small, and weak looking. As the deficiency progresses, fronds will emerge withered or scorched in appearance, dwarfed, and distorted. This is what gives "frizzle top" its name. If not corrected, the palm will stop growing and only small brown stubs will emerge, this is quickly followed by death of the palm.

All palms can benefit from regular applications of **SA-50 Manganese Sulfate**. Some of the most susceptible palms to manganese deficiency are Queen Palms, Royal Palms, Pygmy Date Palms, Paurotic(Everglade Palms), and Coconut Palms.

For quicker results, **SA-50 Brand Chelated Palm Nutritional** may be used as a foliar spray in tandem with a soil application of this product.

### APPLICATION RATES (Spread material under canopy of tree.)

**Small Palms:** use 1/2 to 1 pound per tree

**Medium Palms:** use 1 to 3 pounds per tree

**Large Palms:** use 3 to 6 pounds per tree

**Large Shrubs and Trees:** Use 1/4 to 1/2 pound per plant.

**Landscapes:** Use 1/3 to 2/3 cupfuls (1/4 to 1/2 lbs.) per 100 square feet.

(Manganese deficiency in plants may appear as yellowing of the leaf while the mid vein remains green).

The deficiency symptoms exhibited by the plant may be a sign that the pH of the soil is wrong. The desired pH so that most elements are available to the plant is 6.0 to 6.5. Very few homeowners plant palms on native soil, mostly the elevation of the home is made of fill-soil brought in during the construction of the home. This soil is essentially inorganic sand that provides little nutrition to the plants and tends to be alkaline(high pH). This "ties up" many of the essential nutrients making them unavailable to plants. Alkaline soils (high pH) can easily be fixed by the addition **SA-50 Soil Acidifier** to the soil (see label for application rates).

Magnesium deficiency is also very common on palms. Symptoms occur first on the older leaves of the palm and progress up through the canopy. This deficiency can be fixed by regular applications of **SA-50 Magnesium Sulfate**. Magnesium sulfate can be applied along with the manganese sulfate application as a preventative.

## Southern Agricultural Insecticides, Inc.

Palmetto, FL 34220

Hendersonville, NC 28793

Boone, NC 28607

revised 1998