

Agriculture and Livestock Applications

Magnesium sulfate can be used as a plant macronutrient, either added to fertilizers or used as a foliar spray. It has been proven to positively affect the harvest growth, crop yield and overall plant health of a wide variety of agricultural crops, including apples, berries, citrus fruits, corn, pineapples, potatoes, tomatoes and rice.

Enhance Chlorophyll Production and Disease Resistance

Magnesium sulfate is important to produce chlorophyll, a magnesium containing compound essential to photosynthesis. Increased photosynthesis results in higher nutritional value of the treated crops. Without sufficient magnesium, chlorosis can occur, causing plant leaves to turn yellow due to chlorophyll deficiency and can result in poor growth and yield. Lower levels of chlorophyll reduce the plants' ability to capture energy.

As a Source of Magnesium

Magnesium sulfate helps plants absorb phosphorous, which contributes to plant growth, flowering and disease resistance. It increases a plants' ability to synthesize food by helping plants absorb and use phosphorous, nitrogen and other important minerals.

Magnesium sulfate is also an excellent source of sulfur which is important in metabolic reactions in this readily absorbed form sulfur increases a plants' resistance to disease drought and insect damage sulfur also acts to scavenge toxic heavy metals and free radicals.

Fertilizer Supplement and Foliar Feeding

Magnesium sulfate can be formulated into granular fertilizing mixtures as well as plant nutrition solutions rapidly dissolving magnesium sulfate is the best magnesium source available for foliar feeding as it significantly increases magnesium absorption as compared to feeding by soil application. Foliar feeding is also advantageous where high levels of potassium in the soil would restrict absorption in the roots.

PLANT FOOD/FERTILIZER
Magnesium Crystals for Plants & Gardens
Table 1

Table 1

USING EPSOM SALT CRYSTALS FOR PLANTS & GARDENS
<p>TOMATOES Apply one tablespoon per foot of height for each plant every two weeks.</p>
<p>ROSES Apply one teaspoon per foot of height for each plant every two weeks.</p>
<p>EVERGREENS, AZALEAS, RHODODENDRONS Apply one tablespoon per nine square. ft. (3' x 3') over the root zone every two to four weeks.</p>
<p>LAWNS Apply three lbs. per 1250 sq. ft. (25 x 50') Apply six lbs. per 2500 sq. ft. (50' x 50') Apply twelve lbs. per 5000 sq. ft. (50' x 100')</p>
<p>TREES Apply tablespoon per nine sq. ft. (3' X 3') over root zone once every four months.</p>
<p>GARDEN STARTUP Sprinkle approximately one cup per 100 sq. ft. (10' x 10') and mix into soil prior to planting.</p>
<p>HOUSEPLANTS Mix one teaspoon per gallon of water and feed to the plants every two to four weeks.</p>

FOLIAR APPLICATION: Epsom Salt is generally applied several times per cropping season in a concentration range of 3-6%. It is recommended not to apply at high temperatures and when humidity is very low. Epsom Salt should be applied either in the early morning or late afternoon.

Table 2

CROP	TIMING	CONCENTRATION	TOTAL APPLICATION
Alfalfa	At closing and after each cutting	6%	30 lbs. per acre
Citrus	At fruit formation (not flowering)	3%	30 lbs. per acre
Corn	4 leaf stage onwards	6%	30 lbs. per acre
Cotton	Bud formation onwards	6%	20 lbs. per acre
Grapes	Leaf emerge and after flowering	3%	30 lbs. per acre
Leaf Vegetables	At 10 - 15 day intervals	3%	40 lbs. per acre
Melons	After flowering at 15 day intervals	3%	30 lbs. per acre
Peas	Ground cover to pre-flowering	6%	30 lbs. per acre
Potatoes	Inter-row leaf covering onwards	3-6%	30 lbs. per acre
Soybeans	Ground cover to pre-flowering	6%	20 lbs. per acre
Strawberries	Ground cover to pre-flowering	3%	40 lbs. per acre
Sugar-beets	Inter-row leaf covering onwards	6%	20 lbs. per acre
Vegetables	At 15 day intervals to pre-harvest	3%	40 lbs. per acre
Wheat	First node to early milky ripe	6%	20 lbs. per acre
MISCELLANEOUS	TIMING	CONCENTRATION	TOTAL APPLICATION
Ferns	At 15 day intervals	3%	5-10 lbs/1,000sq. ft.
Lawns/Turf	At 15 - 30 day intervals	6%	20 lbs. per acre
Soilless Fertilization	Continuously	According to system	10-15 lbs/1,000sq. ft.

Livestock Dietary Supplement

Magnesium sulfate is a convenient and efficient source of magnesium and sulfur for livestock it can be used as a dry or liquid supplement. The magnesium in magnesium sulfate is an essential component of bones and teeth and is a necessary activator of various enzymes for proper nerve and muscle functions. Magnesium is also important in maintaining the appetite of cattle sheep and other ruminants.

Magnesium provides a balanced environment for ionic exchange across cell membranes. In addition, magnesium is a biological carrier of phosphorus and proteins and is important in cellulose digestion. It also plays a major role in regulating heart rate and muscle relaxation.

Prevent Hypomagnesemia

Magnesium sulfate helps to prevent hypomagnesemia also known as grass tetany, grass staggers, lactation tetany or wheat pasture poisoning —from harming lactating and pregnant dairy cows. Magnesium sulfate should be used in early spring when pasture grasses may be magnesium deficient. It may also be mixed in a dry protein supplement to supply additional magnesium during fall and winter feeding.

Synthesize Sulfur Containing Amino Acids

Magnesium sulfate is also a convenient source of sulfur which is used by rumen microbes to synthesize sulfur containing amino acids. It is common to add one part sulfur per 15 parts nitrogen to rations containing urea.

Analgesic Baths

A hypertonic solution of magnesium crystals acts osmotically to draw fluid out of tissues causing coagulation of proteins in the skin cells. The underlying tissues are then protected and cell volume is decreased.

Soaking in magnesium crystals helps to reduce body stiffness relieve minor aches and pains and reduce swelling associated with minor sprain, some bruises. Magnesium Crystals is also recommended by massage therapist to pamper feet soften skin and absorb odors because it helps soften and exfoliate patches of rough dry skin. Use up to 2 cups in bathwater to provide relief.

Magnesium sulfate is becoming an increasingly common supplement for horses customarily it may be used in a weekly mash and to orally replace lost mineral salts or to supplement body levels. Equally effective, magnesium sulfate can be used as a transdermal poultice, bath brace, massage liniment or pure crystal salt bath, to aid in the restoration of valuable magnesium sulfate blood levels.