

WHY USE GYPSUM?

The US EPA estimates that over the next ten years, annual production of FGD (synthetic) gypsum may double, as more coal-fired power plants come online and as scrubbers are added to existing power plants. Because of the nature of the production process, synthetic gypsum is normally much purer than natural gypsum, and has consistent silt-sized particles which enhance solubility and spreadability, which in turn improve the beneficial effects of gypsum.

The beneficial effects of gypsum include:

- Helps reclaim sodic soils
- Works as an ameliorant in acid soils
- Enhances liming programs
- Improves soil structure
- Prevents crusting of soil and aids seed emergence
- Improves compacted soil
- Makes wet soils easier to till
- Stops water runoff and erosion
- Prevents waterlogging of the soil
- Increases stability of soil organic matter
- Improves water use efficiency
- Decreases heavy-metal toxicity
- Acts as a nutrient
- Improves fruit qualities and prevents some plant diseases
- Is a source of sulfur
- Helps earthworms to flourish
- Can increase crop yields

GYPSUM AS A FERTILIZER

Gypsum is rich in calcium and sulfur, two nutrients essential to all crops. The most common application is to crops that have high calcium requirements, such as peanuts, or to areas that have particularly high calcium requirements. Calcium is nearly always only marginally sufficient and

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Gypsum has been used as a soil amendment and fertilizer around the world for hundreds of years. In the United States, Thomas Jefferson and Ben Franklin were both early proponents of gypsum as a soil amendment and fertilizer.

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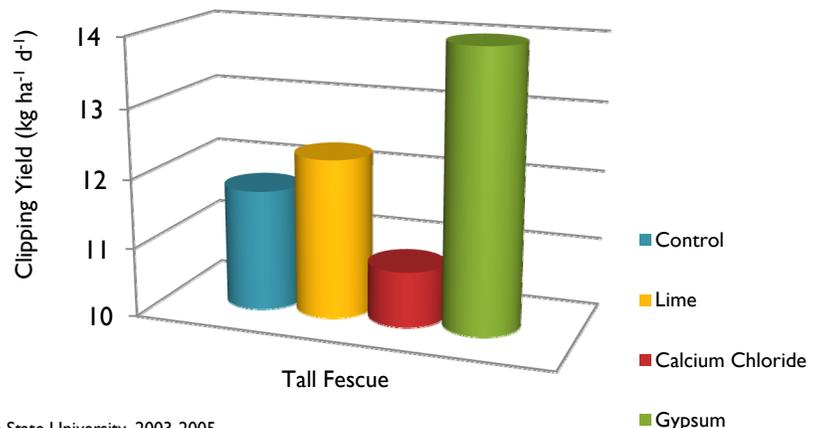
often deficient in developing fruits. Gypsum helps prevent blossom end rot of watermelon and tomatoes. Gypsum is preferred over lime for potatoes grown in acid soil to control scab disease. Calcium may prevent fruit cracking and immature fruits falling. Root and stem rot in fruit trees are partially controlled by gypsum.

Sulfur fertilization is also required for many crops, and gypsum can be an effective sulfur source. In addition to calcium and sulfur, gypsum, depending on its source, may provide essential micronutrients to plants.

GYPSUM AS A SOIL AMENDMENT & CONDITIONER

Gypsum helps loosen clay and compacted soil to improve water penetration and aeration. Gypsum creates a more porous soil that is easier to work with, and permits deeper circulation of air, water, and other nutrients to promote strong, vigorous root growth. The calcium and sulfur in gypsum help plants absorb nutrients, so surface fertilizers are more effective without affecting pH levels.

Mean Shoot Biomass Production by Treatment



Penn State University, 2003-2005

GYP SUM INCREASES WATER USE EFFICIENCY AND WATER QUALITY.

Improved water infiltration rates, improved hydraulic conductivity of soil, better water storage in the soil all lead to deeper rooting and better water-use efficiency. From 25 to 100 percent more water is available in gypsum-treated soils than in non-treated soils. Calcium also prevents excess uptake of many heavy metals and helps to maintain a healthy balance of nutrients and non-nutrients within plants.

In addition to water quality benefits associated with reduced runoff and erosion, FGD gypsum application can reduce the solubility of nutrients such as

phosphorus in livestock and poultry manure and soils treated with manure. Gypsum converts readily soluble phosphorus to less-soluble forms, which can reduce the runoff of phosphorus into adjacent streams, lakes, or ground water.

Appropriate application rates should be determined to accomplish specific soil improvement goals. The US EPA says, "In general, application rates of up to two tons per acre should be sufficient to accomplish most agronomic and horticultural objectives."

