



Considerations for Phosphorous Applications to Alfalfa

Agronomics

In most areas, Phosphorous is the nutrient most often required by alfalfa (*Medicago sativa*) even though the crop uptake for other nutrients such as nitrogen, potassium, and calcium is much greater.

Phosphorous fertilization becomes increasingly important for alfalfa in high yield situations. A six ton/acre yield of alfalfa will remove approximately 72 pounds of P_2O_5 . Sufficient Phosphorous levels in alfalfa leaf tissue should be between 0.25 percent and 0.45 percent. When tissue test levels drop below 0.25 percent, yields and protein levels will be reduced. Phosphorous is also utilized by plants to form Nucleic Acids (DNA and RNA). Phosphorous is used for storage and transfer of energy via ATP and ADP which are critical for growth and reproduction. In alfalfa, Phosphorous is very important for root growth and development. In new seedling alfalfa, Phosphorous is critical for early growth and seedling vigor.



Alfalfa treated with BRANDT Smart Trio & BRANDT Smart B-Mo.

Symptoms of Phosphorous deficiency in alfalfa include stunted plants, slightly smaller leaves and less branching. It is well documented that yields can be greatly increased, when Phosphorous fertilizer is applied to soil deficient in Phosphorous. However, the fertilizer use efficacy can be improved.

Problems with applying Phosphorous fertilizers to alfalfa

Problem number one is Phosphorous is not mobile in the soil. When the fertilizer is applied to the soil surface, it is not in the root zone. Therefore, the alfalfa plants are not able to take-up the Phosphorous. I have seen good success when 10-34-0 is injected into the soil several inches deep in the soil using coulters. However this is not a widely adapted practices in most areas.

Problem number two is Phosphorous reacts with Calcium (Ca) or Iron (Fe) or Aluminum (Al) in the soil becomes unavailable to the plants. Research has shown 75 to 95 percent of phosphorus fertilizer is tied up or fixed in the soil. In high pH (basic) soils, the Phosphorus forms bonds with Calcium. In low pH (acidic) soils, it bonds with Iron and Aluminum molecules. In both the high pH soils and low pH soils much of the Phosphorous is not available to the plants.

BRANDT EnzUp P DS

BRANDT has developed a product called EnzUp P DS. It is a unique fertilizer that contains 58% P_2O_5 in the ortho-phosphorous form. EnzUp P DS contains organic acids that overcome the two problems when applying Phosphorous fertilizers to alfalfa. These organic acids are chelates that bind with Ca, Al & Fe. This prevents them from reacting with P_2O_5 , and making it unavailable to plants. The organic acids also break the chemical bond that ties-up P_2O_5 to Ca, Al and Fe. EnzUp P DS also has greater mobility in the soil. Therefore, when applied to the soil surface the phosphate inion (P_2O_5) is able to move into the root zone and the alfalfa plants are able to take up the Phosphorous.

BRANDT EnzUp P DS contains Mannanase and Phosphatase enzymes

EnzUp P DS contains a high concentration of the Mannanase and Phosphatase enzymes that boost nutrient availability and converts organic matter into smaller, digestible units.



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EnzUp P DS rates:

EnzUp P DS 2 to 10 lbs/Ac

The best time to apply EnzUp P DS is in the spring before the alfalfa has greened up or between cuttings.

