AGRI-BRIEFS
AGRONOMIC NEWS ITEMS

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Spring 2005, No. 3

DON'T FORGET TO KEEP YOUR ALFALFA IN TOP SHAPE WITH PHOSPHORUS

Many factors are involved in producing a top-quality alfalfa crop. Although some things (like weather) cannot be controlled, many other critical components need to be carefully managed. As the demand for high-quality hay increases, a closer look at the role of proper nutrition is needed.

There is no substitute for maintaining an adequate plant nutrient supply for production of high-yielding and high-quality alfalfa. Alfalfa production removes large amounts of nutrients from the soil that must eventually be replaced to remain sustainable (about 15 pounds of P_2O_5 removed in each ton of hay). Since phosphorus has many essential roles in alfalfa, both yield and quality are reduced when this nutrient is limited.

Most phosphorus in the plant is rapidly converted into organic compounds involved in a variety of essential reactions. For example, phosphorus in alfalfa is essential for the formation of nucleic acids, phospholipids, and ATP, which is associated with photosynthesis, protein formation, and nitrogen fixation.

In addition to direct plant growth benefits, phosphorus fertilization has also been shown to increase nitrogen fixation, nodule number, and nodule size. There are frequent reports where adequate phosphorus or potassium nutrition has been found to improve disease tolerance or resistance.

Soils vary in their ability to supply phosphorus and nutrient deficiency symptoms in alfalfa are hard to detect before the deficiency becomes quite severe. Therefore, soil testing is the best way of predicting the potentially available nutrient supply. It is generally best that phosphorus be applied prior to establishing the crop, since an adequate supply of phosphorus is critical for rapid stand development and a strong root system. For established stands, surface applications are a good way to meet plant needs.

Many sources of fertilizer phosphorus are successfully used for alfalfa production, including both solid and liquid forms. A number of comparisons have demonstrated that most phosphorus fertilizer sources are equivalent, when properly used. The selection of a specific phosphorus fertilizer is generally based on local availability, ease of application, and the cost per unit of nutrient.

Phosphorus fertilization is an essential component of alfalfa production. High-yielding alfalfa removes large amounts of phosphorus, which must be replaced when the soil phosphorus supply can not meet the plant demand. Soil and tissue tests are useful for determining the appropriate amount of phosphorus to apply. **Failure to monitor and replace the nutrients removed in harvested hay will lead to losses of yield, plant stand, and profit.**

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