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QUALITY ALFALFA REQUIRES GOOD FERTILITY

Alfalfa is an important component of agricultural production in many areas of North America. It can be harvested as hay or silage, and in some cases may be used for pasture and grazing. It is often preferred over other forage legumes due to its high yield potential, protein content, and palatability. Good quality hay has excellent nutritive value and may be in high demand, especially for horses and dairy cattle.

There are many factors involved in producing a high quality alfalfa crop. Some of these factors, like rainfall and temperature, are uncontrollable; however, many other critical factors are controllable and can be carefully managed. Alfalfa is relatively sensitive to soil acidity, and does best in soil pH range of 6.5 to 7.5. The bacteria that fix atmospheric N for alfalfa also do best in this soil pH range. Thus, soil acidity issues and liming needs should be addressed before planting.

Among the other controllable factors important in the production of quality alfalfa is an adequate supply of nutrients. A few of the general benefits of a complete and balanced fertility program include:

- Increased yield
- Improved quality
- Higher profit potential
- Greater water use efficiency
- More resistance to pests
- Improved winterhardiness
- Enhanced drought tolerance
- Improved nodulation and N fixation

In most areas, alfalfa begins growth in the early spring and continues into the late fall, therefore there is a continuous demand on the soil nutrient supply for several months. Alfalfa hay removes about 56 lb N, 15 lb phosphate (P_2O_5), 60 lb potash (K_2O), and 5 lb each of S and Mg per ton of production. Rhizobium bacteria on well nodulated alfalfa can fix enough N to meet crop needs, although a newly planted crop may require some N fertilizer (15 to 20 lb N/A) until nodulation occurs. On the other hand, P, K, and other nutrients can be rapidly depleted from alfalfa fields if not replaced by fertilization.

Phosphorus performs several vital functions in alfalfa plants. It is involved in energy storage and transfer, is a structural component of biochemicals, and is involved in maintenance and transfer of genetic code, root growth, crop establishment, hastening maturity, and accelerated recovery. Adequate P in the soil also helps support higher nodule numbers and nodule health essential for protein production. Plant regrowth and recovery after cutting is more rapid with adequate P, compared with deficient P conditions.

Alfalfa takes up and removes large amounts of K, in fact more K is removed than any other soil nutrient (50 to 60 lb K_2O per ton). Alfalfa forage may contain 2 to 3% K. Potassium has many critical roles in plant growth and development. It has long been recognized as a factor affecting disease incidence. It is also important in stomatal regulation, photosynthate transport, and has an important role in enhancing N_2 fixation in alfalfa. Adequate K also helps to reduce grass and weed invasion and improves stand persistence and winter survival.

Alfalfa provides excellent forage. Stands can remain productive for years with proper care and nutrition. Remember that not all yield robbing deficiencies are visible to the naked eye. So, to determine best rates of fertilization of alfalfa in a specific area use tools such as soil testing, plant analyses, local information, and nutrient input and removal history.

—WMS—

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Abbreviations: N = nitrogen; P = phosphorus; K = potassium; S = sulfur; Mg = magnesium