

SUL-PO-MAG[®] AGRI-FACTS

Alfalfa & Balanced Fertilization

Increasing numbers of alfalfa growers are recognizing the benefits of using Sul-Po-Mag in their fertility programs.

Sul-Po-Mag contains 10.5-11% magnesium (Mg), a very important nutrient for the production of high quality alfalfa.

Sul-Po-Mag contains 21-22% sulfur (S) in a NON-ACIDIFYING FORM.

Sul-Po-Mag contains 21-22% potash (K₂O) in the premium, sulfate form.

Sul-Po-Mag is highly water soluble. This means its nutrients can move through the soil profile to the rooting depth of alfalfa. Thus, the nutrients in Sul-Po-Mag are readily available for plant uptake.

For optimum yields and profits, alfalfa requires intensive management in frequency of harvesting, choice of cultivars, pest control, water management and fertility. Soil fertility and fertilizer practices are key elements in high-yield alfalfa management. Recent research has shown that the highest yields (6 to 8 tons/ha) were obtained from applications of 460-645-67-134 kg/ha (P₂O₅-K₂O-S-Mg). In contrast, many of the better alfalfa growers typically topdress alfalfa with about 150 to 200 kg K₂O/ha annually. When you consider that the average K₂O removal rate is 30-35 kg/ton of hay harvested, it follows that the average yields correspond with the typical fertilization practices: most farmers are fertilizing for 6-8 ton yields. These average fertilization rates are quite typical for many major alfalfa growing areas.

High Yields Remove Large Quantities of Nutrients

Many growers do not realize the high nutrient demand that their alfalfa puts on their land. The following table reflects the nutrient removal of alfalfa at different yield levels.

Table 1.

	N*	P ₂ O ₅	K ₂ O	Mg	S
Yield	-----kg/ha-----				
8 tons/ha	225	40	240	20	20
12 tons/ha	335	60	360	30	30
16 tons/ha	450	80	480	40	40
20 tons/ha	600	120	600	50	50

* Most of the N requirement is supplied by N-fixing bacteria. Obviously, not all these nutrients come from direct fertilization.

However, a good yielding alfalfa soil must be fertile and then must be fertilized at a level to maintain a high soil test. In Canada, research has shown an 86% increase in production on high K soils with intensive management vs. low K soils with average management. In addition, the amount of K removed under intensive management was greater than the amount applied, until 480 kg K₂O/ha was used.



Balanced Fertility is Important

Research has shown good economic returns from P and K fertilization for irrigated alfalfa. Many studies have indicated the necessity of high nutrient levels prior to alfalfa establishment, and that producers must soil test and apply P₂O₅ and K₂O to maximize yields of aging alfalfa stands.

Another aspect of a balanced fertilization is the relationship of K to Mg. It has been shown in many crops that increased K fertilization will reduce the plant content of Mg and potentially reduce the plant's ability to produce chlorophyll, the green coloring in plants. Therefore, it is important that the magnesium levels in alfalfa be maintained at adequate levels. Magnesium also helps carry phosphorus throughout plant tissues. Again, as alfalfa management intensifies, balanced fertilization is critical.

An often neglected nutrient in alfalfa fertility programs is sulfur. But a shortage of this nutrient can severely affect yields, and especially the quality, of alfalfa. That's because S is a component of plant proteins. Many experiments have conclusively shown that under conditions of S deficiency plant protein content is markedly reduced, and the feeding value of the forage is adversely affected.

Effect of Yield on Profit

Economic analyses reveal that the profitability of an alfalfa crop is increased both by increasing yield and by increasing stand life. However, it is of particular interest to note that increasing the tons of alfalfa produced per acre increases profit at a much more rapid rate than adding extra years to the stand life. This clearly emphasizes the fact that when growing alfalfa, it pays to strive for high yields! The reason is that many of the costs associated with producing alfalfa are fixed costs which are much the same regardless of yield.