

# K-Mag AGRI FACTS

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## Alfalfa Research Indicates K-Mag For Increased Production, Profits

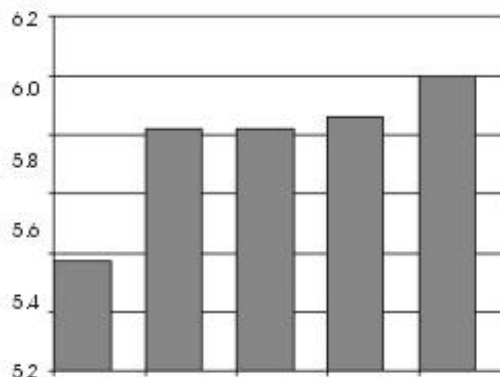
Alfalfa production requires good management. Alfalfa management has been widely researched. Researchers confirm that as high yields are attained, more nutrients are removed from the field. These nutrients must be replaced if high production is to be sustained.

Recent research and demonstrations confirm the need for complete balanced fertilizer programs to promote continuous high production. These balanced fertilizer blends should contain K-Mag, as borne out by the four research projects covered here. K-Mag is an excellent source of K, Mg and S for alfalfa. K-Mag is a combination of 20-22%  $K_2O$ , 10-11% Mg, and 21-22% S in the sulfate form. K-Mag is mined and processed by IMC Global near Carlsbad, New Mexico, from the world's largest deposit of langbeinite ore.

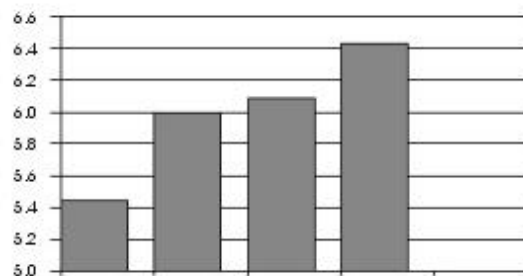
### Indiana

Researchers at Purdue University found that applying various rates of  $P_2O_5$  and  $K_2O$  in a factorial experiment increased forage yields as rates increased. They identified the yield component that produced the yield increase. Figure 1 shows that as P and K applications increase, so does the weight per shoot of the alfalfa plants. The objective of this experiment will be to find the rates of P and K that will optimize production. Evaluation of stand longevity as affected by fertility will also be observed.

Figure 1. Forage Weight Of One Thousand Alfalfa Shoots As Influenced By  $K_2O$  (1a) And  $P_2O_5$  (1b), Applications Rates. Indiana.



1a:  $K_2O$  Applied, lb/A



1b:  $P_2O_5$  Applied, lb/A

### Kansas — Gray County

A nutrition demonstration was initiated in a 4-year old stand of Pioneer 555 alfalfa. The entire field got a NPK application of N= 19,  $P_2O_5$ = 90,  $K_2O$ = 40 and S= 2. Later, one half of the field got 300 pounds of K-Mag containing 66 lb/A  $K_2O$ , 66 lb/A S, and 33 lb/A Mg. Results at the end of the season were:

Without K-Mag: 7.2 tons/A alfalfa hay  
 With K-Mag: 7.8 tons/A alfalfa hay

**That is 37.5 tons per acre more hay with K-Mag.**

Or, in financial terms, an investment in K-Mag of \$1,368 added \$3,480 to the bottom line.

**Riverhurst, Saskatchewan**

Alfalfa in its second year is poised to produce. An irrigated field was split in the early spring of 1999 and K-Mag was applied at 150 lb/A to one half.

Observations taken before the 1999 first cutting were:

Without K-Mag: 3.96 tons/A  
 With K-Mag: 4.09 tons/A

This is a difference equal to 260 lb/A increase with K-Mag, or 7.5 ton increase on half of a 60-acre circle. This increase resulted in \$750 profit increase on the first cutting on an investment of \$800 for the whole season per half circle. As you can see, the K-Mag essentially paid for itself on the first cutting alone.

Forage quality data indicate that the field treated in the early spring with K-Mag was more mature than the untreated field. This may be a valuable practice, as early harvest would allow the potential for more cuttings per year without depleting carbohydrate reserves.

**Kansas — Sandyland**

Alfalfa management and nutrition was studied on the sandyland experiment field in south central Kansas. These researchers studied maximizing yield and eliminating forage loss. Preplant fertilizer applications were compared to seasonal applications. In-season applications of different P and K rates were also observed.

**Table 1. The Influence Of P<sub>2</sub>O<sub>5</sub> And K<sub>2</sub>O Applications And Harvest Schedule On Alfalfa Yield. Kansas.**

	P <sub>2</sub> O <sub>5</sub> lb/A		K <sub>2</sub> O Annual	Yield, T/A 15% H <sub>2</sub> O		
	Preplant	Annual		0.1 Bloom	Bud	Full Bloom
0	120	80		11.0	9.6	9.6
0	120	160		11.5	9.1	9.2
320	120	80		11.3	10.0	10.4

Yield of high-quality alfalfa was over 11 tons per acre when adequate P and K fertilizer were supplied. In this study, the high preplant rate of 320 lb/A P<sub>2</sub>O<sub>5</sub> with annual application of 120 lb/A P<sub>2</sub>O<sub>5</sub> and 80 lb/A K<sub>2</sub>O, or an annual application of 120 lb/A P<sub>2</sub>O<sub>5</sub> and 160 lb/A K<sub>2</sub>O produced superior yields.

These data confirm that plant nutrition requires nutrient balance and careful management to excel. To one nutrient, or inadequate amounts of nutrients, cost yield. Managing harvest date at .1 bloom will pay; either earlier or later will cost yield.

This study has firm removal numbers for the macronutrients. It clearly shows that this alfalfa crop is depleting the exchangeable K reserves as removal is greater than K supplied.

**Summary**

- Adequate, balanced nutrition will increase alfalfa hay yield by increasing the weight per stem.
- K-Mag supplies sulfate sulfur that may encourage first cutting growth of alfalfa in the northern latitudes of the Canadian Prairie Provinces. This may allow more cuttings per year increasing yields through both higher weights per cutting and greater number of cuttings.
- Supplemental nutrition with K-Mag on irrigated alfalfa provided the ananger with over 2 dollars in profit for each dollar invested in K-Mag.
- Balanced fertility and good harvest management provided over 11 tons/A alfalfa forage in Kansas.