



INCREASED ALFALFA HAY PRODUCTION USING HI-CAL™ LIQUID CALCIUM CHLORIDE

ALFALFA REMOVES AS MUCH AS 300 LBS OF CALCIUM PER YEAR IN A 10 TON CROP (SEE TABLE 1)

Table 1. Average tissue nutrient contents and their removal in alfalfa hay production.

Nutrient	Nutrient concentration in early bloom hay (dry matter basis) ¹	Nutrients removed per ton of early bloom alfalfa hay (analysis from previous column, 88% dry matter)	Range of nutrients removed per ton of hay at 88% dry matter ²
Nitrogen (N)	19.9% crude protein (3% N)	56 lb N	50-70 lb N
Phosphorus (P)	0.2% P	8 lb P ₂ O ₅ ³	8-16 lb P ₂ O ₅
Potassium (K)	2.6% K	54 lb K ₂ O ⁴	48-72 lb K ₂ O
Sulfur (S)	0.3% S	5 lb S	4-6 lb S
Calcium (Ca)	1.6% Ca	30 lb Ca	28-35 lb Ca
Magnesium (Mg)	0.3% Mg	6 lb Mg	5-8 lb Mg
Boron (B)	-	-	0.05 lb B
Zinc (Zn)	30 ppm ⁵ Zn	0.05 lb Zn	0.05 lb Zn
Copper (Cu)	12.7 ppm ⁵ Cu	0.02 lb Cu	0.02 lb Cu
Molybdenum (Mo)	0.29 ppm ⁵ Mo	0.0005 lb Mo	0.0005 lb Mo

¹Adapted from National Research Council 2000, pp. 134-135.

²Variations in nutrient removal that may occur with different soil residual nutrient values.

³To convert P (phosphorus) to P₂O₅ (oxide form), divide by 0.44.

⁴To convert K (potassium) to K₂O (oxide form), divide by 0.83.

⁵Parts per million.

IN ADDITION TO BEING A SOURCE OF READILY AVAILABLE CALCIUM, HI-CAL (12% LIQUID CALCIUM CHLORIDE) ALSO PROVIDES THE FOLLOWING BENEFITS:

- INCREASED IRRIGATION WATER PENETRATION, WHICH PROVIDES DEEP MOISTURE FOR INCREASED CROP YIELDS.
- REDUCES THE BUILD UP OF HARMFUL SODIUM SALTS, REDUCING STRESS DUE TO HIGH SALINITY AND POOR WATER PENETRATION.
- INCREASES ALFALFA RESISTANCE TO ENVIRONMENTAL STRESS FROM DROUGHT AND HIGH TEMPERATURES.

- PROVIDES INCREASED RESISTANCE TO PLANT AND SOIL BORNE DISEASES SUCH AS PYTHIUM, RHIZOCTONIA AND OTHERS.
- HI-CAL CAN ALSO INCREASE THE NUTRITIONAL QUALITY OF ALFALFA HAY FOR DAIRY COW CONSUMPTION BY IMPROVING THE DIETARY CATION ANION DIFFERENCE (DCAD) IN THE RATION.
- MILK FEVER (HYPOCALCEMIA) CAN BE MANAGED BY KEEPING DCAD BELOW 200 MEQ/KG OF RATION.

DCAD* (DIETARY CATION ANION DIFFERENCE) THE IDEAL TARGET IS <200 MEQ/KG OF RATION

Forage Crop	Control	K ₂ O	CaCl ₂	K ₂ O + CaCl ₂
Alfalfa	+244	+360	+77	+227
Orchardgrass	+289	+368	+74	+256
Reed Canarygrass	+289	+367	-11	+163
Smooth Bromegrass	+282	+435	+94	+255

DCAD* = (K⁺ + Na⁺) – (Cl⁻ + SO₄²⁻) (meq/kg). In the above trial Hi-Cal was applied at 40 gals/ac. to supply 100 lbs/ac. of chloride resulting in a much lower DCAD compared to the control and the potassium (K₂O) fertilized plots.

RECOMMENDATIONS

APPLY HI-CAL (12% CALCIUM) AT A RATE OF 25 TO 50 GALS/AC. IN ANY IRRIGATION DURING THE GROWING SEASON. FOR BEST RESULTS APPLY IMMEDIATELY AFTER A CUTTING. USUALLY THE ABOVE RATES WILL LAST FOR THE ENTIRE GROWING SEASON. APPLICATIONS MAY BE REPEATED AS NEEDED TO MAINTAIN GOOD WATER PENETRATION OR AS NEEDED TO PROVIDE DESIRED DCAD LEVEL.

Contacts for more information:
 Scott Arnold – Office 559.447.0345 or Cell 559.250.1628
 TETRA Chemicals' Customer Service – 281.367.1983