



## Crop Production Planner

## Forages

Forage is a very important commodity to the livestock industry. The value of hay has received increased emphasis across the nation in the past few years. The understanding of the value of forages and the impact they have in many operations either as a feed source or as a saleable commodity, has really hit home lately. An increased level of fertility management is required for maximum forage production.

Nitrogen, phosphorous, potassium and sulphur are the nutrients most limiting to forage production. Forage legumes such as alfalfa and clover also have relatively high boron requirements. Nutrient availability and uptake is restricted by soil type, temperature, moisture, acidity/alkalinity of soils, and nutrient balance in the soil. Fertilizer application is necessary to help alleviate weather patterns, and plant deficiencies due to reduced nutrient uptake throughout the growing season.

Soil sampling will help estimate the soils nutrient supplying capacity and help make better recommendations. Cropping history, scouting records and past field experience will also help determine nutrient requirements. Remember that forage production removes the whole crop, which takes up much more plant food from the soil than any other cash crop.

**Under applying fertilizer during production of forages sacrifices potential yield and quality of hay and also depletes your soil bank for rotational crops.**

	<i>N</i>	<i>P2O5</i>	<i>K2O</i>	<i>Mg</i>	<i>S</i>
Plant food removal for high % Alfalfa ( per /mt as dry hay )	<b>60</b>	<b>14</b>	<b>50</b>	<b>5</b>	<b>5</b>
( Legumes produce 50 to 90% of their own nitrogen from the air by rhizobia fixation )					

**General Rule of Thumb:** Apply fertilizer at 100 lbs / acre for every mt. of forage harvested.

Replacement and build up of soil nutrients is vital for quick forage re-growth as well as total volume and quality production. Adequate fertility will help provide disease and insect resistance, crop stresses due to temperature and moisture fluctuations, and winter hardiness.

The weather scenario this spring has been cold and wet. Some well drained alfalfa fields will produce mass amounts of high quality forage. Above average amounts of nutrients will also be harvested with the first cut. Replacement of these nutrients should be addressed with additional fertilizer to maximize 2<sup>nd</sup> cut yield potential. Grass species are now in head and alfalfa may be 3 weeks from 1<sup>st</sup> flower in some cases. Dry hay quantity from these fields will likely be reduced and quality will be marginal. The cool and wet month of May hasn't provided lower topography land with adequate growing climates, but be prepared for the later part of June and early July to provide a better environment for above average quantity of 2<sup>nd</sup> cut hay. Fertilizer applied to these fields following 1<sup>st</sup> cut will give crops a boost for 2<sup>nd</sup> cut yield potential.

**Increased nutrient management of your forages will put \$\$ green \$\$ in your pocket and keep \$\$ green \$\$ in your soil bank for future transactions.**

To maximize yield potential, ensure secondary and micronutrient requirements are addressed as required. A balanced supply of nutrients is essential for sustainable forage production, even on marginal soils.

**Nitrogen:** Grass stands of 50% or greater will benefit greatly from application of N following first cut. Apply N based on perceived 2<sup>nd</sup> cut yield potential. Any form of nitrogen will supply nutrient requirements, but consider Ammonium Nitrate or Ammonium Sulphate if loss potential is high due to volatilization. The effectiveness of N applied will increase with moisture to move the N into the root zone. Although alfalfa will manufacture up to 90% of its total N requirements from rhizobia produced N, in high production areas ( greater than 8 mt / acre / season ), 20 lbs of nitrogen fertilizer applied after 1<sup>st</sup> cut will help re-growth during high N demand conditions.

**Phosphorous:** Adequate P levels in soil will help sustain persistence and longevity of alfalfa plants. Soils may show levels of adequate P, but availability is reduced due to phosphorous fixation, especially on high pH soils where calcium phosphate is formed, or acid regions which form iron and aluminum phosphates. The alfalfa plant can absorb phosphorous at the crown, and in season application will build soil available phosphorous. Although it is important to maintain phosphorous levels in all forage fields, alfalfa has a greater requirement and amounts of up to 15 lbs P<sub>2</sub>O<sub>5</sub> / mt. of harvested hay should be applied as re-build nutrients.

**Potassium:** Potassium is required in large quantities by all forage crops for healthy growth and development. Potassium regulates water balance, protein production and nitrogen uptake in the plant. Adequate soil potassium increases disease resistance and increases longevity of legumes. Due to the high potassium removal rate, both grass and legume crops benefit from potash applications. Apply potash at a rate of 60 lbs of K<sub>2</sub>O / mt of harvested hay as re-build nutrition. Potash is best applied as split applications 2 or 3 times throughout the season, after each cut. Split applications are common and help balance availability of other nutrients throughout the season such as Calcium, Magnesium, and Nitrogen.

**Magnesium:** All crops rely on Magnesium as a key element of photosynthesis and chlorophyll production. Forages will benefit from Magnesium in the broadcast mix when: Mg levels are low and/or the K:Mg base saturation ratio is out of balance. The ideal ratio is 0.30 to 0.40.

**Sulphur:** Sulphur is a building block of proteins, enzymes, vitamins and a key ingredient to the formation of chlorophyll. Inadequate sulphur will restrict the yield potential and effective use of other nutrients. Continual removal of above ground plant material quickly depletes soil nutrient reserves. If soil sample results indicate less than 25 ppm of Sulphur, a yield response is likely from adding sulphur in your broadcast applications. Improved uptake of nitrogen has been noted with the addition of Sulphur in topdress applications.

**K-Mag is a unique 3-in-1 combination of potassium, magnesium and sulphur. K-Mag is 100% soluble and provides immediate availability (sulphate form) of K, Mg and S. The best boost for regrowth of forages, is a K-Mag boost.**

**Boron:** Alfalfa is very responsive to Boron. Boron deficiency stunts plant growth, affecting production of the growing point and younger leaves, ultimately terminating bud development. If Boron levels are not maintained in the soil, significant quantity is jeopardized and quality diminishes. Boron availability is reduced in dry weather. Boron is mobile in the soil and hence works great in a broadcast situation in conjunction with other materials. Improved plant availability of potassium will be recognized with adequate Boron levels. Soil tests, soil conditions and field scouting will help determine proper application rates but in general, the following is suggested. In a two cut system application of up to 2 lbs B / acre after 1<sup>st</sup> cut is recommended. In high production system where 3 or 4 cuts are desired, I recommend 1 lb B / acre after each cut.

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