

# **Getting More Out of Grass Hay and Pastures**

Keith Reid, Soil Fertility Specialist  
OMAFRA

Nitrogen (N) application on grass hay and pasture fields can significantly increase forage yields. Fertilizing grass hay and pasture is fundamentally different from fertilizing a legume-based forage.

In mixed forage stands, the legume provides the nitrogen, so the goal of fertilizing is to keep the legumes vigorous. This "free" source of nitrogen is not available in grass stands, so the focus changes from phosphorus (P) and potassium (K) to nitrogen. Generally, it is more economical in the long run to establish legumes in the forage stand. However, there are circumstances where this is not possible (a sudden increase in forage requirements, winterkill, specific quality requirements, etc.) and it will pay to fertilize the grass.

## **Pasture N Application**

How much nitrogen to apply will depend on the use of the forage (hay or pasture), and on the value of the forage to your operation. Healthy grass stands have a huge capacity to respond to nitrogen additions. However, if the result is pasture growing faster than the livestock can eat it then the nitrogen has been wasted. Also, nitrogen is recycled through the urine and manure deposited by the grazing animals, so optimum rates will be about one-third less than in stored feed systems. Increase nitrogen rates slowly over time, until the forage supply and stocking rate are in balance. There is also some opportunity to modify the timing of nitrogen application. Lower rates could be applied in the early spring than later in the season in order to match livestock demand. The success of this approach will be limited by the amount of rainfall during the summer.

## **Hay N Application**

Nitrogen applications on grass hay fields must be split to provide optimum response. The first and largest, application should go on early in the spring, just as the grass is starting to green-up. This provides for vigorous growth when temperature and moisture conditions are most advantageous.

This first application should be about 75 kg/ha of N where the hay value is around \$30/tonne, increasing to 140 kg/ha where the hay is worth \$70/tonne. The second application should immediately follow first cutting, and a third application may be made after second cutting if there is going to be a third harvest. Each application should be about 20% less than the one preceding it.

Perhaps the trickiest part of determining the proper N rate is to put a value on the forage. The simple approach, of determining how much the hay would be worth if you sold it, does not apply in most cases. The alternatives are to determine how much it would cost to replace the hay if you

had to buy it elsewhere and truck it home, or to determine the replacement value of the hay with corn and soybean meal. Either of these approaches is likely to give a high value for the forage.

### **Also Consider P & K**

With the importance of nitrogen, it is easy to forget that grass forages also respond to phosphorus and potash. Leaving those out of the mix will reduce the response to N. Soil tests are the best way to determine P and K requirements, which are the same for grass and legume based forages. P and K can be applied at any time of year, by blending them with the nitrogen fertilizer, but they do not need to be split applied. Applying P and K with the nitrogen immediately after first cut has the advantage of drier soil conditions and less compaction.