

MEASURE AND MANAGE

Higher Nitrogen Prices - Spring 2008 Let's be Proactive

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Increased fertilizer costs will impact pasture management decisions. Fertilizer prices are up 20 -35% over last spring making a pound of actual nitrogen worth approximately 64 cents. One possible solution to lowering the fertilizer input cost is to consider frost seeding legumes into existing pastures. Legumes have the capacity to fix 50 to 300 lbs plus per acre of nitrogen. Legumes can contribute to grass growth by “leaking” 20% of N fixing capacity to surrounding grass plants.

There is a double benefit to the grass in the stand as the transfer of nitrogen can be significant, and legumes also offer less competition to limited soil nitrogen supply.

Apart from the nitrogen fixing ability of legumes the success of stand establishment is enhanced with proper soil pH, phosphorus and potassium soil levels. Alfalfa has a higher nutrient requirement and a need for proper soil pH. Whereas red/white clover has lower requirement for optimum nutrient levels and a broader pH range for stand establishment.

The following table illustrates the optimum soil test levels to increase the odds of successful establishment

Forage	pH	Phosphorus Soil test ppm	Potassium soil test ppm
Alfalfa	7.0	20	150
Red Clover	6.0	15	120
White clover	5.5	15	120
Birdsfoot trefoil	5.0	10	100

Do not apply nitrogen after inter-seeding. The additional N will increase grass competition and decrease the legume establishment. Up to 60 lbs of actual nitrogen may be applied in August to enhance fall pasture growth.

Seeding rates for legumes are 4 lbs of red and or white clover, 6 lbs for birdsfoot trefoil, and up to 10 lbs per acre for alfalfa. Ideal seeding depth is quarter of an inch.

One of the characteristics of legume grass pastures is the slower start in the spring but a stronger mid spring season and early summer production. Legumes increase the nutritional value of the forage and hold the quality longer into the season.

Low soil test levels and improper soil pH will limit the success of inter-seeding. However up to 100 lbs of Nitrogen per acre can be saved. (\$53.00 / acre potentially)

Some of these savings can be used for increased phosphorus and potassium applications if indicated by an Agri-Food Laboratory soil test.

In the next 8 weeks (March to April 2008) there maybe opportunities to inter-seed on light frost conditions with appropriate equipment into existing stands. Be proactive in managing your Nitrogen cost and pasture gains this spring. Input costs are up and so is hay value.

Inter-seeding is not what you want to do? Then managing the higher cost of commercial nitrogen will be prudent. **Does the price of fertilizer really matter?** It can be argued that the cost of anything is irrelevant it is whether or not the investment makes you money; does it bring value to your operation?

The decision to use fertilizer is not tied to price. The principle of fertilizer purchase has not changed. You purchase fertilizer when you expect to receive an economic benefit from using it.

With urea trading at \$650 per metric tonne (Feb 2008) which is \$0.64 per lb of actual nitrogen it is important to know why you would use nitrogen. What the high price does is usually lower the economic rate of application relative to the value of the crop that is being fertilized.

In the case of pasture or hay management very little information exists on actual yields to allow for a good on farm cost comparison of Nitrogen to Hay price ratio. There is no substitute for good on farm records of forage yield and live weight gains per acre. This forms the basis to make farm specific assessments based on knowledge and facts.

However using the following scenario we can illustrate how to go through a decision process.

Assuming that 100 lbs actual Nitrogen is a normal practice on grass pasture and a typical, slightly above average forage stand can provide 230 lbs of live animal gain we can form an economic basis for discussion:

Using the current price of Nitrogen at \$0.64 per lb of actual N that brings the cost of N without application cost to \$64.00 per acre, 230 lbs of gain at \$0.90 per lb produces a value of \$207 per acre. Compared to last year in this same scenario the cost of nitrogen was only \$53.00 per acre and same gain value of \$207 per acre.

In 2007 the percentage of nitrogen cost to total value of live weight gain was 25% in 2008 it is 31%. This represents a 25% increase in fertilizer cost with no additional value in gain. Or on cost per lb of gain, 2007 was \$0.23 and 2008 it will be \$0.28. An increase 5 cents more per lb of gain based on higher cost nitrogen

In this scenario you either find cheaper source of Nitrogen or increase pasture yields and live weight gains per acre.

Higher cost of Nitrogen should encourage a higher level of management and decisions to increase forage utilization. If you could increase forage production to achieve 275 lbs of gain per acre, that changes the economics drastically. Using the current price scenarios it drops the cost of nitrogen to gain to only 25% instead of 31% a number comparable to 2007 figures.

The following table summarizes the 2007 and 2008 years Nitrogen costs and value of gain.

Year	Fertilizer Costs/ \$ /te	Cost per Lb actual N (Cents)	Cost per acre \$	Total Live Weight Gain Lb/ acre	Value of Gain \$	% Nitrogen Cost of Total Gain	Cost of N per lb of Gain
2007	537	0.53	53.00	230	207.00	25	0.23
2008	650	0.64	64.00	230	207.00	31	0.28
2008 enhanced yield	650	0.64	64.00	275	247.50	25	0.23

To increase pasture yields the implementation of intensive or rotational grazing is very effective. Not only are yields higher some researchers suggest that it is possible to lower Nitrogen rates by 20%. That represents a savings of \$12.80 per acre. In a related article on the website called Pasture Management Rotational Grazing, it shows an example of intensive compared to non intensive management. The opportunity to be more productive on pasture and hay management is huge.

To maximize fertilizer dollars only fertilize when you need the forage production. Take the time to assess feed inventory, proposed stocking rates and determine if you really need the extra production. If you do fertilize be prepared to take hay if the growth rates exceed stocking capacity to graze the rapid growth. Investing in nitrogen fertilizer then allowing pastures to grow rampant and mature into unwanted forage is wasteful and costly.

Manure applications may be an excellent source of nitrogen depending on availability and labor costs. Manure contains phosphorus and potassium as well as nitrogen. If your Agri-Food Soil Test is calling for additions of phosphorus and potassium this maybe a very economical source of nutrients to meet those needs. An Agri-Food Laboratories Manure Analysis will show the nutrient content and value for each tonne applied.

Higher fertility and nutrient costs make it worth while to examine and explore your options. Your efforts will be well rewarded with a more efficient system of forage production and live weight gains per acre.

References

University of Missouri. Integrated Pest Crop Management Bulletin Volume 18 Number 1
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