Pricing Hay: Consider Plant Nutrient Value

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There are many variables involved in establishing a fair price for hay, oftentimes it may seem overwhelming. One way of establishing a fair base-level price is to consider only the value of the nutrients removed by the crop. For example, a ton (DM basis) of typical forage removes about 12-15 lbs of phosphate (P_2O_5) and about 50-60 lbs of potash (K,O). If the crop is mostly legumes (e.g., alfalfa, clover or trefoil) that have been properly inoculated at planting and the soil pH is appropriate for the species, producers should not worry about

		Hay/Straw Content (%DM basis)		Hay/Straw Value			
Nutrient	Fertilizer Cost (per ton)	Nutrient Content (%)	Nutrient Cost (per lb)	Average	Low	Average	Low
Nitrogen	\$1,200	82	\$0.73	3.0	1.5	\$41.90	\$21.95
Potash	\$850	60	\$0.71	2.6	1.0	\$36.83	\$14.17
Phosphorus	\$1,200	46	\$1.30	0.35	0.20	\$9.13	\$5.22
Secondary & Micronutrients				-	-	\$6.00	\$4.00
					Total	\$93.86	\$45.34

Table 1. Value of minerals in hay/haylage.

nitrogen. Legumes will generally require periodic liming to stay productive and (except for trefoil) require reestablishment every few years. Many grassy stands can stay productive for many years with minimal lime additions, but each ton of DM harvested will also require 30-50 lbs of N/ac.

The value of nutrients in the crop can be established without argument. Nutrients are being removed from the land and imported onto the farm that receives hay – someone is losing them and someone is gaining them. Considering the value of nutrients at the upper end of today's prices, Table 1 illustrates the cost of replacing these nutrients for a grassy stand.

Table 2 illustrates fertilizer cost to grow a ton of forage. If the forage is legume (such as alfalfa), add lime cost and no nitrogen cost. If the forage is a grass, add nitrogen cost and no lime cost. The cost estimate for the lime will vary, but it is reasonable to estimate that around $\frac{1}{2}-\frac{2}{3}$ of a ton of lime/ac/year is necessary to maintain pH.

While these nutrient costs are for purchased fertilizer, manure may also be used to supply nutrients. The value of nutrients in hay is the same as in fertilizer or manure. Whether the nutrients are applied as fertilizer or manure they produce the same yield result of the fertilized crop.

If one considers these costs as part of the production costs contributing to the yield taken off the land, one can calculate a fair value for the nutrients being removed. (Since the figures in this example are based on DM yields, remember to adjust for moisture when doing these calculations. For dry hay, a harvest moisture between 10-20% is typical and for haylage or baleage the moisture will vary between 50-65%.)

To summarize, there are many factors that owners and buyers should consider when calculating the price of standing hay, but most of these factors only affect one party. The value of the nutrients in the hay can be calculated quite reasonably and should form the starting point for negotiating a price that is fair to both the buyer and seller.

Table 2. Total	fertilizer	cost/ac	and cos	t to p	produce	a ton	of fo	orage
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Fertilizer/Lime							
Nutrient	Cost/ac	Lbs/ac	Total Cost				
Nitrogen	\$1,200	0	-				
Phosphorus	\$1,200	60	\$36.00				
Potash	\$850	220	\$93.50				
Secondary & Micronutrients	\$1,300	25	\$27.08				
Lime ¹	\$43.00	1400	\$30.10				
Total fertilizer cost/ac	\$186.68						
Yield Estimate 4 ton/ac							
Fertilizer cost to produ	\$46.67						

¹ Estimated at ³/₄ ton/ac/year