Pricing standing hay: Consider plant nutrient value

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If you're a farmer who rents cropland or a landowner owns cropland that you intend to rent out regularly, it's best to enter into a written lease agreement. Even so, there are situations that come up from time to time where farmers and landowners have questions about the value of standing hay that they'd like to sell or buy on a one-time basis. The question about what this hay is worth can be answered from a number of angles, but the bottom line is standing hay is worth whatever price the buyer and seller agree is fair!

There are a lot of factors to consider when determining a fair price for harvesting an established crop of forage (see http://www.uwex.edu/ces/crops/uwforage/Pricingstandhay-FOF.pdf). Prospective buyers also need to consider the value of the crop to be harvested, the distance from the farm, the cost of being able to use land through a different means (owning or renting more land), and the cost of harvesting the crop.

If you're the landowner, you need to consider what you would do with this crop if you didn't sell it. Is there another potential buyer for the crop, or can you use the crop yourself if the person who is interested in buying decides not to? If no one makes the hay, are you prepared to pay the additional property taxes when the land is assessed at a rate different than agricultural use value?

There are so many variables involved in establishing a fair price for standing forage that it can sometimes seem overwhelming. One way of establishing a fair "basement level" price for standing hay is to set aside all the variables that only affect one party or the other (property taxes, ownership costs, feed value, harvesting costs, etc.) and consider only the value of the nutrients removed in the crop. For example, a ton (dry matter basis) of typical forage removes about 12 to 15 pounds of phosphate ($P_2O_{5)}$ and about 50 to 60 pounds of potash (K_2O). If the crop is mostly legumes (alfalfa, clover, or trefoil) that have been properly inoculated at planting and the soil pH is appropriate for the species, you don't need to worry about nitrogen, but legumes will generally require periodic liming to stay productive, and (except for trefoil) generally require reestablishment every few years. Many grassy stands can stay productive for many years with minimal lime additions, but each ton of dry matter harvested will also require 30 to 50 pounds of nitrogen per acre.

The value of the nutrients in the crop can be established without argument. They are definitely being removed from the land, and they are definitely being imported onto the farm that receives the hay--someone is losing them, and someone is gaining them. If we consider the value of these nutrients at the upper end of today's prices, here's an example of what the cost of replacing them would be for a grassy stand:

Value of Nutrients in One Ton (dry matter basis) of Grass Hay or Haylage	
Potash: 60 lb K_2O (100 lb 0-0-60 at $600/ton) =	$30.00
Phosphorus: 15 lb P_2O_5 (33 lb 18-46-0 at $1000/ton) =	$16.30
Nitrogen (grass stands)[a]: 35 lb N minus 6 lb N applied with 18-46-0 = 29 lb of applied N (64 lb of 46-0-0 at $600/ton)=	$19.30
Secondary and micronutrients	$ 5.00
Total nutrient cost (per ton of dry matter) =	$ 70.60

The next example is for a legume stand in northcentral Wisconsin. Legume stands don't require nitrogen, but they do typically need periodic liming. The cost estimate for the lime will vary, but it's probably reasonable to estimate that around one-half to two-thirds of a ton of lime per acre per year is necessary to maintain pH. Based on a three ton/acre dry matter yield and lime cost of $43/ton, this would equate to about $7 to $10 per ton of dry matter yield.

Value of Nutrients in One Ton (dry matter basis) of Legume Hay or Haylage	
Potash: 60 lb K_2O (100 lb 0-0-60 at $600/ton) =	$30.00
Phosphorus: 15 lb P_2O_5 (33 lb 18-46-0 at $1000/ton) =	$16.30
Lime: 0.5 to O.7 ton/acre at $43/ton, divided by 3 t/a (mid range)	$8.50
Secondary and micronutrients	$ 5.00
Total nutrient cost (per ton of dry matter) =	$ 59.80

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

If you consider these costs as part of the production costs contributing to the yield of hay taken off the land, you can calculate a fair value for the nutrients being removed. Knowing the number of bales or loads of forage removed and the weight of each will allow you to get a good idea of the yield. (Since the figures in this example are based on dry matter yields, remember to adjust for moisture when you do your calculations. For dry hay, a harvest moisture between 10 and 20% is typical, and for haylage the moisture will vary between 35 and 50%.)

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's fair to both the buyer and seller.

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