

How to Price Standing Forage

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Introduction

Sales of standing forage require agreement on price and a method of determining yield whether forage is sold by the bale or ton. This factsheet describes a method to help buyer and seller determine an appropriate price range for short term sales. This sheet is not intended to be used for long term contract purchases. The examples shown can be the basis for selling hay by the acre or by the ton.

What is a reasonable hay or haylage price?

Forage price reflects hay/haylage inventory, demand, and current season's yield potential and yield risk. Price also reflects cost of alternative feeds, including commercial hay purchases delivered in. Current hay prices can be found at: http://www.uwex.edu/ces/forage/pubs/hay_market_report.htm. Generally, prices show a seasonal decline at first cutting unless there has been significant loss of hay stands due to winterkill or other problems.

Haylage price is usually estimated by adjusting the hay price for the difference in moisture content between hay and haylage.

How do I estimate yield?

Yield can be estimated before harvest from historic records or from stand evaluations estimating yield potential. Actual yields will be less than this estimated potential depending on age of the stand, fertilizer program and weather. Sale based on actual yield is best, minimizing risk for both buyer and seller. Actual yield can be determined by weighing loads or estimated by weighing a few bales and counting total bales harvested. Table 1 can be used to estimate relative yield for individual cuttings.

Cutting	% of Total Yield	Cutting	% of Total Yield
1	40	1	35
2	30	2	25
3	30	3	20
		4	20

For example, if total yield expectation is 4 tons per acre for three cuttings, first cutting would be estimated at 1.6 ton per acre (40% of total yield).

If chopped for haylage, the moisture content of the haylage would have to be determined to convert haylage yields to

hay equivalent by the formula:

$$\text{Hay Yield} = \frac{\text{Haylage Yield} \times \text{Dry Matter (DM)}}{\% \text{ Dry Matter of Hay}}$$

For example, if 1st crop yield is 3 tons/a of haylage at 40% dry matter, this haylage could be converted to hay equivalent as follows:

$$\text{Hay Yield} = \frac{3 \text{ tons} \times 0.40 (\% \text{ DM})}{0.87 (\% \text{ DM of Hay})} = 1.38$$

What is the dry matter loss of forage in storage?

Dry matter loss in storage is loss attributed to respiration or the curing process after harvest and is approximately 2% for hay that is stored off the ground and covered and 10% for silage stored properly in a tube, bunker or upright silo.

What is the quality of the standing forage?

Timeliness of cutting and the percentage of alfalfa versus weeds in the stand will impact forage quality. A dense, clean stand of pure alfalfa or mixed with a high quality grass should be of higher value than an older stand with weeds and would deserve a premium in a competitive forage market. Forage sample analysis can better estimate harvested quality for ration balancing than visual inspection of the hay crop.

What are harvest costs of standing forage?

Approximate harvesting costs (\$/cutting) (labor \$12.00/hr., 3 cuttings, 4 to 4.5 ton hay/acre)			
Cut/Cond	\$13.00/acre	Hauling	\$8.00/ton
Raking	\$13.00/acre	Chop, haul, fill	\$48.00/acre
Baling	\$25-30/ton	Wrapping	\$6-7/bale

Harvesting costs are factored into the stand value when the seller does the harvesting, or should be a consideration when calculating forage value when a buyer harvests the forage. If forage needs to be transported some distance, hauling costs should also be factored into harvesting costs.

For contracts over an entire season, agreement may also be needed for other costs, such as insecticide or fertilizer applications.

Price determination can start with calculating the minimum price a seller would want to receive and the maximum price a buyer would be willing to pay. The first example is three

cuttings sold to a buyer who also harvests the forage (total 3-cut yield estimated at 4 tons per acre).

What is the fertilizer cost associated with standing forage?

Fertilizer prices have soared in spring 2008. Before a seller makes a contract with a buyer, make sure that the fertilizer costs per acre are known. Otherwise, the seller may not be charging enough to cover the annual costs for the established alfalfa stand. At current fertilizer prices, each ton of hay removes about \$45 to \$50 worth of nutrients.

What is the seller's minimum price?

Seller's Minimum Price (annual costs in \$ per acre):		
Land charge		72.00
Taxes & Insurance		5.00
Stand establishment (seed, lime)		45.00
Maintaining stand (fertilizer)		190.00
Total Annual Cost of Established Alf.		\$312.00

Note that land charge is less than a full season rental rate because these arrangements are assumed to be after normal planting season.

What is the buyer's maximum price?

Buyer's Maximum Price (est. 4 tons per acre yield)		
Market value of hay	4 tons x \$120 per ton =	\$480
Subtracting harvesting expenses, risk and storage loss:		
Cut, rake, bale, haul (3 cuttings)		212.00
Weather risk (15% of hay value)		71.82
Dry matter loss (2% for hay value)		9.57
Breakeven cost for standing hay/acre		\$186.61

Finalizing the transaction

Both buyer and seller would like to gain in this transaction. In this example, however, the seller's annual cost is \$312 per acre is higher than the breakeven price per acre for the buyer of \$186 per acre.

The final sale value could be based on actual measured yield. With expected yield of 4 tons per acre, the seller has a minimum \$78.00 per ton price and the buyer a maximum \$46.65 per ton value. Total harvest expense is approximately \$73 per ton.

If only one cutting is involved buyer and seller can use the examples in the following tables to calculate value with information from above tables.

Seller's expected minimum value for first cutting, based on total annual cost determined in the first example:		
Land Cost	\$72.00 per acre x 0.40	\$28.80
Taxes & Insurance	\$5.00 per acre x 0.40	2.00
Stand establishment	\$45.00 per acre x 0.40	18.00
Maintaining stand	\$190.00 per acre x 0.40	76.00
Total annual cost of est. hay (1st crop)		\$124.80

Buyer's maximum or breakeven price paid for silage would be calculated on a hay equivalent basis as follows:		
Market value of hay	1.6 ton x \$120 per ton	\$192.00
Cut, chop, haul, fill		74.00
Weather risk	(15% of hay value)	28.80
Dry matter loss	(10 % for silage value)	19.15
Breakeven price for standing (1st crop)		\$70.05

The buyer's breakeven price would be \$70 per ton. Total harvest expenses for haylage in this example are estimated at \$76 per ton of hay equivalent.

Sale of the 2nd & 3rd crop can be based on the same approach with yield assumptions based on table 1. A simplified pricing arrangement could be a charge of \$130 per acre for 1st cutting or \$190 per acre for 2nd and 3rd cutting or \$320 per acre for all three cuttings. These are net prices paid to the landowner. These prices may be acceptable to a buyer if expected yields are greater than 4 tons per acre and the agreement is made in time to allow harvest of 1st cutting at a RFV of 170 or greater. In this price range, yields greater than 4 tons per acre would have a value that would cover the purchase price above and harvest expenses.

Risk

Lower than expected yields or weather delays lowering forage quality can **greatly** reduce the net gain of purchasing standing hay. Producers need to adjust numbers in these examples to reflect current market conditions, yield and harvest timeliness. The value of risk is difficult to estimate, but can be based on a typical value of the desired hay quality. Contracts signed well before harvest and full season contracts should reflect a lower price due to greater risk the buyer is assuming. In contrast, an agreement made close to harvest would be much closer to the current hay price because the buyer knows the status of the crop being purchased. A rule of thumb is to value risk at 15 percent of hay value per cutting.

Final Consideration

A written agreement prior to start of harvest is recommended and should include price, when payment is due, who is paying insecticide expense, method of determining yield when selling by the ton, and other factors entered into. A written contract clarifies the sale agreement for all parties and provides a record to eliminate differing memories of what was agreed to.

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