

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 sold by the bale or ton. This fact sheet 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?

Price reflects hay/haylage inventory, weather and yield risk. Price also reflects the cost of alternative feeds that could include commercial hay purchases delivered in. Price fluctuates from year to year, depending on the previous year's harvest, demand, and current season's potential. 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 losses of hay stands due to winterkill or other problems during the previous growing season.

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. Stand evaluations estimate yield potential. Actual yields will be less than this maximum potential and will vary depending on age of the stand, fertilizer program and weather. Sales based on actual yield minimize 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 ton/acre for three cuttings, first cutting would be estimated at 1.6 ton per acre (40% of total yield).

If chopped for silage, the moisture content of the haylage would have to be determined to convert silage yields to hay equivalent. This step simplifies pricing and price comparisons.

Haylage can be converted to hay equivalent by the formula:

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

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

$$\text{Hay Yield} = \frac{3 \text{ ton} \times 0.40 (\% \text{ DM})}{0.87 (\% \text{ DM of hay})} = 1.4 \text{ ton (hay equiv.)}$$

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 covered and off the ground 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 samples can provide better estimates of harvested quality for ration balancing than visual inspection of the hay.

What are the harvest costs of standing forage?

Approximate costs \$/cutting (labor \$12.00/hr., 3 cuttings, 4-4.5 ton hay/acre)			
Cut/Cond	\$13.00	Hauling	\$8.00
Raking	\$6.75	Chop, haul, fill	\$45.00
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 or more than one year, agreement may also be needed for other costs, such as insecticide or fertilizer applications.

Example transactions that follow include the sale of all three cuttings, the sale of 1st crop only, and the sale of 2nd and 3rd crop.

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 in spring 2008 have soared. 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. With current fertilizer prices, each ton of hay removes about \$40 to \$45 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/4 Ton Yld)		180.00
Total Annual Cost of Established Alf.		\$302.00

What is the buyer's maximum price?

Buyer's Maximum Price (est. 4 ton per acre yield)		
Market value of hay	4 ton x \$120 per ton =	\$480
Subtracting harvesting expenses:		
Cut, rake, bale, haul (3 cuttings)		180.00
Weather risk \$10/cutting		30.00
Dry matter loss (2% for hay)		9.60
Breakeven cost for standing hay/acre		\$260.40

Finalizing the transaction

Both buyer and seller would like to gain in this transaction. In this example, however, the seller's annual cost is \$302 per acre is higher than the breakeven price per acre for the buyer of \$260 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 \$75.50 per ton price and the buyer a maximum \$65.10 per ton value.

Total harvest expense is approximately \$55 per ton for baled hay. Sale of standing 1st crop can also be based on estimated yield. Payment could be based on actual measured yield by weighing wagons.

The 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 (seed, lime)	\$45.00 per acre x 0.40	18.00
Maintaining stand (fertilizer)	\$180.00 per acre x 0.40	72.00
Total annual cost of est. hay (1st crop)		\$120.08

The 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	Each Cutting	65.00
Weather risk	(\$10/cutting)	10.00
Dry matter loss	(10 % for silage)	19.15
Breakeven price for standing (1st crop)		\$97.85

The buyer's breakeven price would be \$97.75 per ton. Sale of second and third crop can be used on the same approach with yield assumptions based on table 1. A simplified pricing arrangement could be a charge of \$120 per acre for 1st cutting or \$180 per acre for 2nd and 3rd cutting or \$300 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 ton/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 ton/acre would have a value that would cover the purchase prices above and harvest expenses.

Risk

Lower than expected yields or weather delays that lower forage quality can **greatly** reduce the net gain of purchasing standing hay. Producers need to adjust the numbers in these examples to reflect current market conditions, yield and harvest timeliness. Contracts signed well before harvest and full season contracts should reflect a lower price due to the level of risk that 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 \$10 per cutting.

Final Consideration

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

Revised by Mark Mayer, UW-Extension Ag Agent on 5/15/2008