



Cooperative Extension
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To: Waupaca County Farmers and Agribusinesses

From: Greg Blonde, Waupaca County UW-Extension Agriculture Agent

Alfalfa Monitoring - Enclosed is a form for recording PEAQ stick results for first crop alfalfa. With strong grain prices, this management tool is more important than ever to help dairy and livestock producers control feed costs and improve profitability by maximizing forage yield and quality through improved timing of first crop alfalfa harvest. If you need a PEAQ stick, give me a call (715-258-6230) or stop by the Extension office.

Be sure measure the tallest stem after removing the leaves from the tip. Measurements should be taken from a pure stand of alfalfa in the same location each time using the appropriate side of the stick based on plant development (vegetative, bud or bloom). Use the enclosed data collection sheet to track the progress and calculate a projected cutting date (begin cutting when RFQ is in the 165-185 range depending on your goals and the time it takes to complete cutting).

Several members have agreed to share their results from around the county (Doug Behnke, Clintonville; Mike Kiddy/Bleck's Farm, New London; Paul Knutson & Lee Larson, Weyauwega; Nate Nysse & Fietzer's Farm, Manawa; Paul Onan, Iola and Scott Seward, Waupaca). Results will be posted at <http://cf.uwex.edu/ces/ag/scissorsclip/> and a voice message summary will also be updated (715-258-6261) each Monday and Thursday afternoon.

Pricing Standing Hay – Enclosed is a new fact sheet on pricing standing hay. It would appear a good stand of alfalfa is worth \$250-\$350/acre for the entire year (35-40% or \$85-\$140/acre for first crop) assuming good yield and quality with the buyer doing the harvesting. Needless to say, the right price is whatever the buyer and seller agree on. A simple spreadsheet is also available for calculating your own price (send an Email to greg.blonde@ces.uwex.edu and I will send you a copy).

Pre-Sidedress Soil Nitrate Test (PSNT) - The pre-sidedress soil nitrate test (PSNT) is a tool for improving the efficiency of their nitrogen (N) fertilizer applications. Not to be confused with routine soil tests, a PSNT soil test allows N fertilizer recommendations to be adjusted for field-specific conditions helping save fertilizer dollars and eliminating over applications of N.

The PSNT is most useful for confirming legume and manure N credits particularly when information is not available for manure application rates (or nutrient analysis), and when stand density of a previous alfalfa crop is unknown. Another situation where the PSNT is useful is when abnormal weather impacts nitrogen mineralization rates (cool weather) or loss of inorganic N (excessive rainfall).

The Waupaca County Forage Council is offering one free PSNT test for each member (\$6 value). See enclosed sampling instructions and then call or Email me on how/where to submit your sample.

2008 Waupaca Co. Forage Council First Crop Alfalfa Monitoring Program

| Date | Stage | RFQ | Height | Comments |
|---------|-------|-----|--------|----------|
| May 19 | | | | |
| May 22 | | | | |
| May 26 | | | | |
| May 29 | | | | |
| June 2 | | | | |
| June 5 | | | | |
| June 9 | | | | |
| June 12 | | | | |

...measure between 8-10 a.m. (pick a pure alfalfa stand and use the same field and same location each time).

...Local summary available 24hrs a day (715-258-6261)

...or statewide summary online at <http://cf.uwex.edu/ces/ag/scissorsclip/>

Utilizing First Crop Alfalfa Monitoring

- 1) **Set harvesting goals.** Match forage quality to animal needs. Target alfalfa/grass forage quality of 150 RFQ for milking dairy herds and 120 to 130 for heifers, stocker cattle, and lactating beef cattle (red clover should be about 10 points higher in RFQ).

- 2) **Adjust for field losses.** Under the best conditions 15% (points) of the dry matter will be lost during harvesting. Therefore it is necessary to cut a field at 165 to 170 RFQ to end up with harvested forage of 150 RFQ.

- 3) **Adjust for total harvest time.** Begin earlier to **average** 150 RFQ for all fields. For planning purposes, expect an average rate of decline of 3 to 4 RFQ points per day. Thus, if it takes ten days to harvest first cutting and you want to average 150 RFQ, begin harvesting five days earlier at a RFQ of 170 (see step #2...five days times 3 or 4 point change in RFQ per day equals a 15 to 20 point decline in RFQ). Thus, harvesting for this farm should begin when results indicate standing forage quality is 180 to 185 points (165 to account for normal harvest loss, plus 15 or 20 points more to account for the decline in quality over the time it usually takes to harvest first crop).

- 4) **Adjust for local field conditions.** Results are based on alfalfa forage quality. This means grassy fields will reach the target forage quality earlier than pure alfalfa stands. Unless moisture is limited, fields with lighter soils will tend to begin growing earlier and mature faster. South slopes will also mature earlier than north slopes. Further, if you have planted some of the newer, high quality varieties, these should reach the desired forage quality two to three days later than standard varieties.

How to Price Standing Forage

by Ted Bay, Rhonda Gildersleeve, Ken Barnett, and Dan Undersander

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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Pre-Sidedress Soil Nitrate Testing

Soil samples for the PSNT are taken after planting when corn is 6 to 12 inches tall. By this stage of the growing season most of the conversion of organic N sources to plant-available forms of N has usually occurred. PSNT soil samples are collected to a depth of 1 foot at a sampling density of 15 soil cores collected randomly over 20 acres. Cores are mixed to obtain a 1-cup composite subsample for submitting to the soil testing laboratory. PSNT samples should be kept cool until taken to the lab. If samples are to be stored overnight, freeze them to prevent changes in nitrate content during storage. Note, this test is not recommended for sandy soils.

Because of the rapid growth of corn at this stage of the growing season, it is imperative that PSNT soil sampling and lab analysis is completed when corn is 6-10 inches tall, allowing enough time to respond with sidedress application if necessary.

Results of the PSNT are interpreted using a critical value of 21 ppm nitrate-N. Fields testing above 21 ppm N are not likely to respond to additional N. The amount of N credit against the N application rate recommended for corn at various PSNT values is shown in the table below.

| Table 2: Nitrogen Credits for Corn Based on the Pre-Sidedress Soil Nitrate Test (PSNT)¹ | | |
|---|--|-------------------|
| <u>PSNT Result</u> ppm N | <u>Soil Yield Potential ²</u> | |
| | <u>Very High/High</u> | <u>Medium/Low</u> |
| | — N Credit, lb/a — | |
| ≥ 21 | No additional N is needed. | |
| 18-20 | 100 | 80 |
| 15-17 | 60 | 80 |
| 13-14 | 35 | 40 |
| 11-12 | 10 | 40 |
| ≤ 10 | 0 | 0 |

¹ Subtract these N credits from the target N application rate. The target N application rate can be determined using the Maximum Return to N (MRTN) approach outlined in <http://uwlab.soils.wisc.edu/pubs/MRTN.pdf>.

² To determine a soil's yield potential, consult UWEX publication Soil test recommendations for field, vegetable and fruit crops (A2809), or contact your agronomist or county agent.

Note:
This test may underestimate the N contributions from organic N sources such as manures and previous legume crops when temperatures during the six weeks before sampling are below the long term average.
For first year corn following alfalfa, the minimum N credit is 120 lb N/a for all PSNT results less than 21 ppm N.
PSNT cannot be interpreted on sand and loamy sand soils