

Determining the Value of Standing Alfalfa in 2024

Kevin Jarek - UW-Madison Division of Extension - Regional Crops and Soils Educator

Scott Newell - UW-Madison Division of Extension - Alfalfa Outreach Specialist

Determining the sale value of standing alfalfa is challenging due to the absence of daily price reports, as exist for agricultural grain commodities. Recent hay market prices are the best available proxy and are available through the UW-Madison Extension website at <https://cropsandsoils.extension.wisc.edu/hay-market-report/>. The three most significant factors to consider when determining the potential value for any individual cutting of alfalfa, or the stand for the entire growing season include the following:

1. Expected dry matter (DM) yield in tons per acre
2. Estimated value of a ton of DM
3. Harvest costs

Ideally, producers would weigh all the forage harvested from each cutting from a particular field. This is the best way to ensure both parties are treated fairly in any formal arrangement in which standing alfalfa is bought or sold. Multiple forage samples should also be collected during the process of harvesting to determine an accurate value for the average dry matter (DM) content of the feed being sold. Once you have agreed upon a fair price or value for a ton of DM (may be with or without harvesting costs), simply multiply the harvested tonnage by the agreed upon value per DM ton then adjust for harvesting costs. Unfortunately, not all farms have access to drive-over scales. When an on-farm scale is unavailable, weighing at least one individual wagon or load with a state-certified scale at harvest will significantly improve the yield estimate accuracy relative to estimating without a scale.

Prior to harvest, or in addition to weighing wagons at harvest, expected dry matter (DM) yield can be estimated by measuring alfalfa stand density or by utilizing multi-year on-farm data sourced from the Wisconsin Alfalfa Yield and Persistence (WAYP) program. The project is managed by the University of Wisconsin-Madison/Division of Extension. The 2023 WAYP summary can be viewed at: <https://arlington.ars.wisc.edu/wp-content/uploads/sites/115/2024/03/2023-WAYP-Summary.pdf>. The 18 fields enrolled in the program in 2023 average 4.38 ton DM/A. While this provides a good estimate, take into consideration past production potential, remembering that 2023 may have been a lower production year for you due to drought conditions.

Factors to discuss to determine fair price for standing forage.

- 1) Stand Density
- 2) Average Yield per cutting
- 3) Expected total season yield
- 4) Weather risks and field losses
- 5) Determine Value per ton DM
- 6) Harvesting Costs

Greater detail on the specifics for these considerations and pricing information provided in subsequent pages.

- 1) **Stand Density:** Alfalfa stands with an **average of 55 stems per square foot** are defined as not being limited and have full season yield potential. Due to the high variability in alfalfa stem counts throughout many fields, it is wise for buyers and sellers to evaluate stands to determine realistic potential yield. WAYP project data can aid in estimating DM yield derived from on-farm data collected over the past 16 years. Local growing conditions, alfalfa stand condition after winter, age and composition of the stand, soil texture/series, and soil fertility drainage can all significantly impact alfalfa DM yields during any given growing season. It is not advisable to purchase standing alfalfa without taking each of these considerations into account before any final arrangement is agreed upon by all parties involved.

stand density (stems/sq ft)	action
>55	stem density not limiting yield
40-55	some yield reduction expected
<39	consider replacing stand

Source: Alfalfa Stand Assessment - Is This Stand Good Enough to Keep? - Dan Undersander, Forage Agronomist,

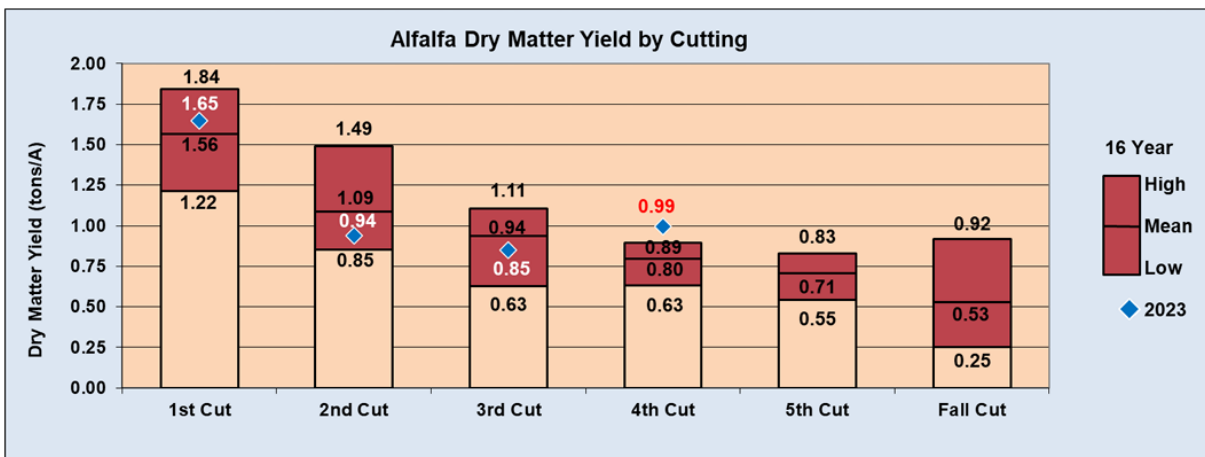
2) **Average Yield Distribution Per Cutting as Determined by the WAYP Program On-Farm Data:**

3 cut system – 46% (1st crop) – 28% (2nd crop) – 26% (3rd crop)

4 cut system – 36% (1st crop) – 25% (2nd crop) – 21% (3rd crop) – 18% (4th crop)

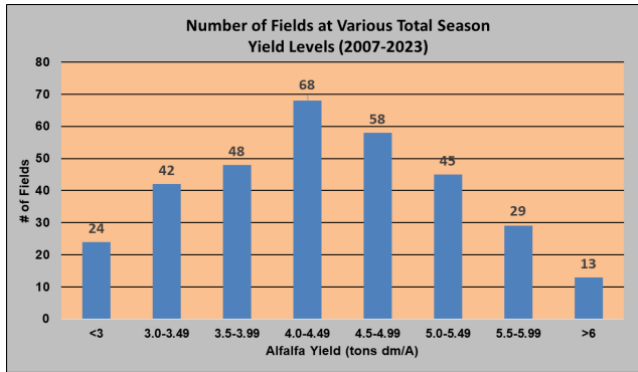
5 cut system – 32% (1st crop) – 21% (2nd crop) – 18% (3rd crop) – 16% (4th crop) – 13% (5th crop/fall cut)

WAYP data collection begins with the first full production year following new seeding. Fifth cutting (September) and late fall cutting (October/November) data were collected in years when available. It should be noted that four-cut systems represent the largest percentage of the data. The low, mean (average), and high values for DM yield over the life of the project are illustrated below. In addition, 2023 data is included for comparison to the other benchmark measurements established over the past 17 years.

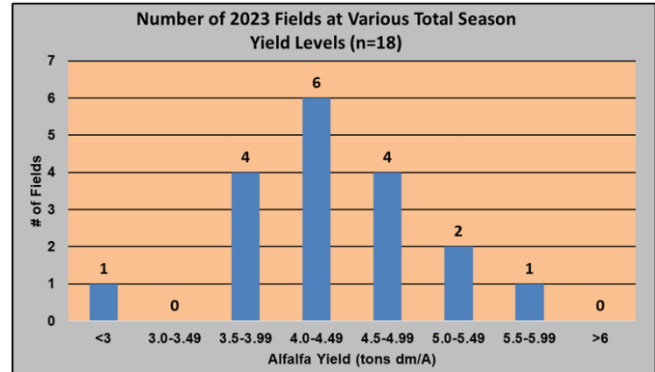


Source: Wisconsin Alfalfa Yield and Persistence (WAYP) Program Summary, 2023

3) **Historic Total Season Yield:** The WAYP program has an observed yield range from less than 3.0 tons to more than 6.0 tons DM per acre. The most frequently observed yield has been **4.0-4.49 Tons DM per acre per year**. The following chart illustrates the annually observed mean of alfalfa DM yield in tons per acre from 2007-2023. The average yield of first through fourth crops over the project is 4.37 tons DM per acre. The 2023 growing season data resulted in 4.38 tons DM yield/acre.

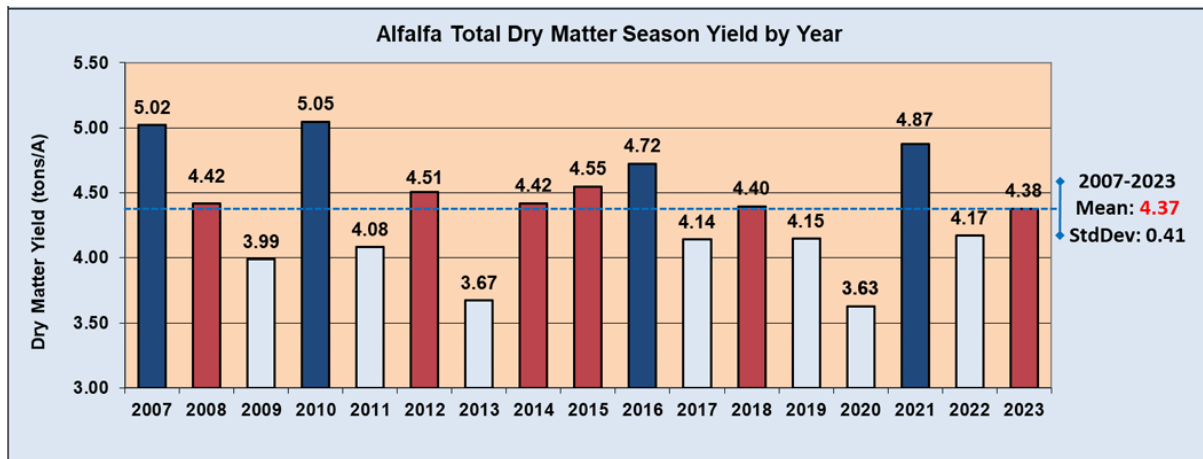


Dry Matter Yield Level Distribution 2007-2023



Dry Matter Yield Distribution 2023 Growing Season

Source: Wisconsin Alfalfa Yield and Persistence (WAYP) Program Summary 2023



Source: Wisconsin Alfalfa Yield and Persistence (WAYP) Program Summary 2023

4) **Weather Risk and Field Losses:** Management practices applied to the site by the buyer during the cutting and harvesting of alfalfa will influence final quality measurements. Purchased baled hay may have a known, measured quality from a forage test. Alfalfa purchased standing in the field has unknown quality until after harvest due to weather risk, insect or disease pressure, maturity at cutting, leaf shatter, and harvesting losses. These factors should be considered and accounted for when determining the final price. An adjustment of 25 percent to the value of the alfalfa standing in the field may be considered a reasonable method to further account for the buyer's risk. The buyer and seller can decide if they wish to use a factor other than 25%.



Merging alfalfa windrows before harvest

5) Determining the Value of a Ton of DM Alfalfa



Small square bales being harvested in Outagamie County

The Hay Market Demand and Price Report for the Upper Midwest is located at <https://cropsandsoils.extension.wisc.edu/hay-market-report/> on the UW-Madison Division of Extension Crops and Soils website. It is updated regularly. The **April 30, 2024** report indicates large square bales of Prime Quality (>151 RFV/RFQ) alfalfa averaged \$221.00 per ton. The value of a ton of DM is determined via the following calculations:

Price for a Ton of DM

As baled hay, assume moisture of 15 percent, which means it is 85 percent DM or 0.85

$$\frac{\$221.00}{\text{as fed ton}} \times \frac{\text{as fed ton}}{0.85} = \frac{\$260.00}{\text{ton DM}}$$

Using a value of \$260.00 per ton DM and applying a 25% risk adjustment, we end up with a risk-adjusted value for a ton of DM standing alfalfa as follows:

$$\$260.00 \times 0.25 = \$65.00$$

$$\$260.00 - \$65.00 = \mathbf{\$195.00 \text{ per risk adjusted ton of DM.}}$$

- 6) **Harvesting Cost:** Custom harvest operation can be used to estimate harvest operation expenses and can be found in the **Wisconsin DATCP Custom Rate Guide 2020** at <https://fyi.extension.wisc.edu/news/2021/05/12/2020-custom-rate-guide/> or the **2024 Iowa Farm Custom Rate Survey** at <https://www.extension.iastate.edu/agdm/crops/pdf/a3-10.pdf>. Examples from these sources for individual field operations are identified below:

<u>Mowing and Conditioning per acre:</u>	<u>Windrow Merging per acre:</u>	<u>Chopping, Hauling, and Filling per acre:</u>
\$16.61 per acre, statewide average (WI - 2020)	\$14.00 per acre, statewide average (WI - 2020)	\$60.00 - \$80.00 per acre, \$70.00 average *
\$14.00 - \$25 per acre, \$18.10 statewide average (IA - 2024)	\$16.00 - \$20.00 per acre, \$17.80 statewide average (IA - 2023) (No 2024 Value)	Visit the WI Custom Rate Guide for charges expressed in <i>dollars/hour</i> or <i>dollars/ton</i> to calculate costs using those posted values.

*Estimated range based on farm data, 2020 WI Custom Rate Guide does not provide per acre cost.

Using the most recent values from Iowa State one may spend \$18 per acre mowing and conditioning alfalfa, \$18 per acre merging, and \$70.00 per acre chopping, hauling, and filling an upright silo or a bunker silo (**adjust your costs as needed**) resulting in \$106.00 per acre invested for each cutting. **Your harvesting costs may be higher or lower than those cited here.** If you harvest four (4) cuttings, total harvest costs are \$424.00/acre for the season (\$106.00 X 4 cuttings = \$424.00



Harvesting 1st cut alfalfa haylage in Outagamie County

Using the yield per cutting data presented above from the WAYP project, we can estimate the value of each cutting over the course of a season, based on total estimated DM yield.

Net Forage Value for Total Season and Individual Cuttings

Expected Yield (Tons DM/A)	Total Season (\$/A net)	Individual Cutting (\$/A net)			
		1st (36%)	2nd (25%)	3rd (21%)	4th (18%)
4.0	\$356.00	\$174.80 (1.44)	\$89.00 (1.00)	\$57.80 (0.84)	\$34.40 (0.72)
4.5	\$453.50	\$209.90 (1.62)	\$113.38 (1.13)	\$78.28 (0.95)	\$51.95 (0.81)
5.0	\$551.00	\$245.00 (1.80)	\$137.75 (1.25)	\$98.75 (1.05)	\$69.50 (0.90)
5.5	\$648.50	\$280.10 (1.98)	\$162.13 (1.38)	\$119.23 (1.16)	\$87.05 (0.99)
6.0	\$746.00	\$315.20 (2.16)	\$186.50 (1.50)	\$139.70 (1.26)	\$104.60 (1.08)
6.5	\$843.50	\$350.30 (2.34)	\$210.88 (1.63)	\$160.18 (1.37)	\$122.15 (1.17)

Assumptions: Risk adjusted price per DM ton = \$195, Harvest cost = \$106/A Value in () is DM in tons

Example Calculation:

Harvesting 4.0 tons DM total value of \$780 (4x\$195) less harvesting costs \$424.00 (4x\$106) = \$356 net

1 st Cutting = 4.0 tons x 36% total yield (1.44 tons DM) x \$195 = \$280.80 - \$106 harvest cost = \$174.80 net
2 nd Cutting = 4.0 tons x 25% total yield (1.0 tons DM) x \$195 = \$195.00 - \$106 harvest cost = \$89.00 net
3 rd Cutting = 4.0 tons x 21% total yield (0.84 tons DM) x \$195 = \$163.80 - \$106 harvest cost = \$57.80 net
4 th Cutting = 4.0 tons x 18% total yield (0.72 tons DM) x \$195 = \$140.40 - \$106 harvest cost = \$34.40 net

Maximizing yield potential

If full alfalfa yield potential is to be realized while optimizing stand persistence, a soil nutrient management plan should be implemented beginning with current soil tests. Following UW recommendations for applying nutrients will optimize money spent on fertilizer. Every cutting of alfalfa removes a significant amount of potassium (K) from the soil. A one-hundred-pound application of potash fertilizer (0-0-60 or 0-0-62) provides 60 or 62 lbs. of K2O per acre. Manage soil test K levels accordingly.

Alfalfa DM Yield Tons/Acre	LBS of K2O Removed Per Ton of DM Yield	Total LBS K2O Removed	Cost Per Unit of K2O	Expense to Replace Removed K2O
4.0	60	240	\$ 0.43	\$ 103.20
4.5	60	270	\$ 0.43	\$ 116.10
5.0	60	300	\$ 0.43	\$ 129.00
5.5	60	330	\$ 0.43	\$ 141.90
6.0	60	360	\$ 0.43	\$ 154.80
6.5	60	390	\$ 0.43	\$ 167.70

Pest management also needs to be considered. Guidelines for treatment thresholds for potato leafhoppers are at <https://fyi.extension.wisc.edu/forage/cut-bale-scout/>.

