



Agronomic Spotlight

Alfalfa Harvest Management

- The most important management practice to maximize yield potential, quality, and profitability of an alfalfa crop is timing of the cuttings.
- A late summer alfalfa cutting should occur early enough so plants can regrow, produce, and store carbohydrates in the roots and crowns before entering fall dormancy.¹
- New reduced lignin alfalfa products may help improve forage quality while maintaining or potentially increasing yield.

Alfalfa and Carbohydrate Reserves

Carbohydrates (CHO) in alfalfa plants are stored in roots and crowns to help develop cold hardiness and help plants survive winter temperatures. The stored CHO acts as “antifreeze” protecting plants from cold temperatures. In the spring the reserved energy is used to initiate and continue growth after each cutting. The depletion of the reserved CHO will slow down when plants reach 6 to 8 inches in height and are able to produce CHO during photosynthesis. At this stage, more energy is produced and stored in the roots and crowns than used for growth. Storing CHO will continue and reach its highest level at about full bloom.

During the growing season the CHO cycle of reserve depletion and storage is repeated for each subsequent cutting after the first cutting when plants are at the mid- to late-bud stage.

Timing Cuttings

Alfalfa cutting schedules may be delayed during the growing season due to environmental conditions and other challenges that may occur. When harvesting late it is important to follow best management practices for future success of the crop.

Setting a harvest schedule is not an easy task since so many factors must be considered when determining alfalfa harvest. The timing of a single cutting should not be made without consideration of cuttings for the entire season.

A late summer alfalfa cutting should take place either early enough so plants can regrow, produce, and store adequate CHO reserves or be cut so late that plants do not regrow and deplete the reserved CHO. This can help plants survive winter temperatures and use the stored

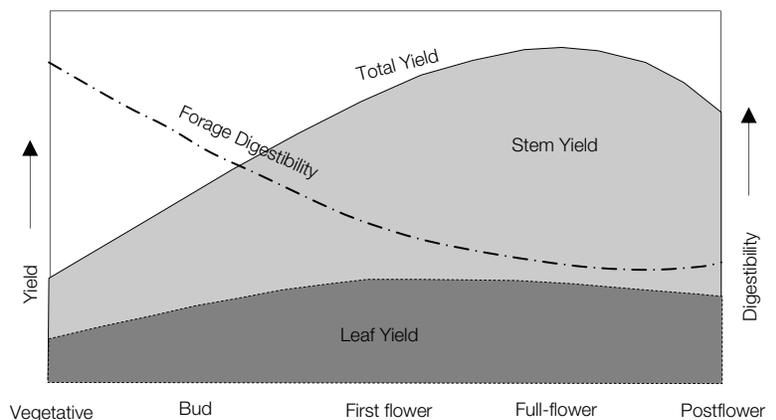


Figure 1. Relative alfalfa yield and quality at different growth stages. Orloff, S. and Putnam, D. University of California Cooperative Extension.

CHO to regrow in the spring. Research has shown that a late fall cutting can be done as long as there will be an accumulation of less than 200 growing degree days (GDDs) after the cutting to prevent regrowth and



Figure 2. Alfalfa plant nearing early flower stage.

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depletion of stored CHO; allowing plants to survive winter conditions.¹ Alfalfa plants will need 500 GDDs to provide sufficient regrowth if the plants are allowed to grow in the field and then survive the winter months. For the best alfalfa survival, allowing the plant to regrow and develop enough carbohydrates in the roots before cold temperatures and frost occurs is the best management practice.

The best overall approach to help determine how many alfalfa cuttings varies by environmental conditions, field location, alfalfa product selection, and other management considerations. Key factors to also consider when determining harvest intervals include total seasonal yield potential, forage quality, the price spread between different quality categories, marketability of the crop, and the impact of cutting schedule on stand survival.

The Tradeoff - Yield vs. Quality

Deciding when to cut alfalfa can be difficult and no single cutting schedule will fit all situations. Alfalfa yield and quality are almost always inversely related in a growth cycle (Figure 1).² Shorter cutting intervals result in low yield, but typically provides higher forage quality. Longer cutting intervals increase yield potential, but can reduce forage quality. As alfalfa matures, the quality decreases as the stem weight percentage increases and becomes highly indigestible with lignin component. Cutting alfalfa at immature growth stages can shorten the stand life and increase weed populations, reducing plant/stand health.²

Alfalfa tonnage versus quality may vary based on the grower's need. Higher quality may add additional nutritional value, while less cuttings could increase tonnage. If marketing alfalfa, yearly prices may also affect the decision process. Higher priced years may tend to suggest cutting more for yield over quality, while lower priced years may focus more on the quality. These decisions should be made based on the customer's need that are purchasing the product. Cutting management schedules should be flexible to market conditions.

Reduced Lignin Alfalfa - Alfalfa Technology

The first biotechnology-derived alfalfa products designed to ease the yield versus quality trade-off will soon be available to growers. This reduced lignin product is designed to improve forage quality over a longer period of time while maintaining the yield potential. The reduced lignin characteristic may allow longer intervals between cuttings to increase yield potential without causing a major reduction in forage quality. This technology may reduce workload for growers and allow greater flexibility for when cuttings occur.

For more information about reduced lignin alfalfa, contact your Monsanto representative.

Reduced Lignin Alfalfa Benefits

- Potential for fewer cuttings per year
- Grower management flexibility
- Higher quality alfalfa

Sources:

¹ Undersander, D. and Bland, B. 2012. Late Summer Cutting Management of Alfalfa. University of Wisconsin. <http://ipcm.wisc.edu/>

² Orloff, S.B. and Putnam, D.H. 2007. Harvest strategies for alfalfa. Irrigated Alfalfa Management for Mediterranean and Desert Zones. University of California. Publication 8299.

³ Orloff, S. and Putnam, D. Balancing yield, quality and persistence. Proceedings, National Alfalfa Symposium, 13-15 December, 2004 Sand Diego, CA, UC Cooperative Extension. University of California, Davis.

Web sources verified 07/08/2015. 150615162501

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development, & Agronomy by Monsanto.

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