



## Fall Management of Alfalfa

Management decisions made in the fall have significant influence on the longevity and future yield potential of an alfalfa stand. Timing of late-season harvest and soil fertility practices are important to the risk associated with winter injury and plant death loss. Autumn is also an opportune time to assess stand health and density for consideration of rotating fields into a different crop the following spring.

### Late Season Cuttings

In efforts to maximize total annual alfalfa yield, fall harvesting of alfalfa has become a very typical farm practice. Increasing popularity of higher fall dormancy scores among alfalfa varieties reflecting more late season growth has provided opportunity for even more yield to be gained with late season harvests. However, caution must be used when timing the fall cutting. The timing fall alfalfa harvest demands consideration due to its influence on the winter survivability of alfalfa plants.

The first approximately six inches of alfalfa regrowth, whether in the spring or after a cutting, is entirely dependent upon energy stored in the plant's root system. It is not until regrowth has reached an approximate height of ten inches that the plant has replenished root reserves from the regrowth process. If alfalfa enters winter dormancy with inadequate root reserves, it is much less likely to achieve adequate spring regrowth for survival.

Recommendations of when or when not to cut alfalfa in the fall should revolve around the estimated date of a first killing frost. For alfalfa a killing frost is defined by temperatures dipping to the mid to upper 20s for a minimum of two or three hours.

Ideally, fall cut alfalfa is completed under one of two scenarios:

1. Adequate GDUs for regrowth of at least ten inches in height (>500 GDUs base 41) before the killing frost. Thus root energy reserves are likely fully replenished when entering winter dormancy.
2. Limited GDUs such that regrowth does not exceed six inches in height (<200 GDUs base 41) before the killing frost. Thus root energy reserves are likely not depleted and are adequate entering winter dormancy.

The average date of the first killing frost along with typical GDU base 41 accumulation varies by geography. For this reason, the time period to avoid cutting alfalfa in the fall also varies by geography. The traditional northern dairy areas including southern Minnesota, central Wisconsin, central Michigan, southern Ontario and western New York typically experience the first killing frost near October 1. This suggests the greatest risk of winter injury or kill due to fall harvest would be approximately from September 15 to October 15. Cutting alfalfa should be avoided during these four weeks.



Zones to the north of these latitudes would expect the four week period of risk to shift a week or more earlier. As one moves south of the described regions, it may be possible to harvest alfalfa later into September while maintaining manageable risk of winter injury.

### Soil Fertility

Soil fertility in the fall has significant influence on winter survivability of an alfalfa stand. Both macro and micro nutrients as well as soil pH are important to plant health; however, potassium fertility is viewed as most critical to winter survival. Potassium functions like an anti-freeze in the alfalfa plant, increasing tolerance of extreme winter weather conditions.

Unfortunately, fall application of fertilizers may not provide adequate time for the benefits of the nutrients to be realized prior to plants entering dormancy for winter. Therefore, it is most advantageous to manage soil fertility the entire growing season for maximum yield and stand life.

### Stand Evaluation

Fall is an excellent time to evaluate stands to determine if they need taken out of production. Counting stems per square foot is the preferred method of stand evaluation. If a stand is found below threshold for economical yield performance (<40 stems/ft<sup>2</sup>), it can be burnt down with herbicide in the autumn and ready to be rotated into another crop immediately the following spring. Stands that are marginal (40-55 stems/ft<sup>2</sup>) can be identified for re-evaluation in the spring for improved decision making at that time as well.

Stems/ft <sup>2</sup>	Predicted Yield Potential
>55	Stem density not limiting yield
40-55	Some yield reduction expected
<40	Consider replacing stand

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