

THE FORAGER

Agronomics with livestock in mind!

Tips to Minimize Winter Damage to Alfalfa

During the fall, winter hardy alfalfa plants develop cold resistance in response to shortening day lengths and cooling temperatures. This process, known as hardening, involves reduced leaf/stem growth and increased carbohydrate storage in the roots. Carbohydrates are produced in green alfalfa leaves/stems, so any harvest during this time will disrupt carbohydrate storage. After cutting, carbohydrates are removed from the root until 6 to 8 inches of new growth is present, at which time carbohydrates begin to accumulate once again. Winter survival of the alfalfa plants and spring re-growth are dependent on adequate carbohydrate storage before cold temperatures kill the top growth of plants in the fall. It is commonly acknowledged that fall harvesting can stress the alfalfa plant and increase the potential for winter injury; however, management practices and planning, outlined below, can minimize this potential.

- Young stands are less susceptible to winter injury due to fall harvesting than older stands.
- Length of harvest interval during the growing season is more important than date of fall harvest in determining alfalfa stand survival. Taking at least one harvest during the growing season at 50% bloom reduces the risk of fall harvest compared to taking all harvests at late bud or first flower. (Note: This does not really "fit" with maximizing quality during the season, but warrants consideration.)
- Maintaining soil fertility levels is extremely important in reducing risks associated with fall harvesting, especially potassium.
- Use of disease resistant and winter hardy alfalfa varieties will greatly decrease the risk of winter injury due to fall harvesting.

Environmental conditions will moderate or aggravate the effects of fall harvesting. These include:

- Temperatures of 5 – 15°F will injure alfalfa crowns and roots. Fortunately, soil and snow cover generally insulate the crown and root from dangerously low temperatures.
- Amount of snow cover determines the amount of crown and root protection from cold temperatures. Snow cover that is greater than 6 inches is usually adequate to insulate the crowns and roots from low air temperatures.

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- Soil moisture is important because water is a better conductor of heat than is air. Wet soils cool faster than dry soils, which may lead to lower soil temperatures. In addition, wet soils will freeze and thaw more extensively, which increases the potential for frost heaving.

Summer drought stress of alfalfa will reduce the risk of harvesting during the 4 to 6 week dormancy.

There is little to worry about with standing hay left in the fall suffocating out next year's crop. This is a concern that is often mentioned, but really has no known negative effects on yields the following year. Alfalfa stubble left in fields has the potential to catch and hold snow, which serves to insulate the crowns and roots from extremely low air temperatures. The stubble may also serve to reduce the incidence of freezing and thawing, and disrupt ice sheets, which may smother alfalfa plants.

There is nothing we can do to control the weather, but we can review our management practices when it comes to alfalfa stands each year. Some years we may see alfalfa kill regardless of how we manage our stands. However, being proactive may save both time and money as it relates to our entire forage program.

(Edited from an article by Marvin Hall, Forage Agronomist with the Pennsylvania State University; 2010)



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