Evaluating Alfalfa Stands for Winter Injury/Winterkill  
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Alfalfa stands are at risk for winter injury or winter kill each year in North and South Dakota, Minnesota, and Wisconsin. Winter injury/kill can occur from extremely low soil temperature, ice sheets, or heaving of the crowns. Many areas of the Dakotas had minimal snow cover this past winter, which can lead to winter injury/kill of alfalfa if soil temperature dropped below about 10°F. Therefore, be sure to evaluate your stand for potential winter injury/kill early this spring.

Once lawn grasses like Kentucky bluegrass begin growth in the spring, uninjured alfalfa should begin sending up little green leaves. If the alfalfa does not initiate growth at this time, dig some of the roots to see if they are winterkilled. A plant that has been winterkilled will have a root that appears yellowish, corky, and soft. Occasionally, winter killed plants will actually begin growth, but it dies quickly because the root has been damaged. If a plant is uninjured, the root will be firm and white.

Even if the root is firm and white, the alfalfa plant could have experienced winter injury. One form of winter injury is to kill the young shoots (leaves) that normally overwinter on uninjured plants. If this happens, the plants will be very slow to green up in the spring, but they will initiate new buds on the crown and recover. Be sure to permit stands that have been winter injured to go to the early bloom stage before harvest to allow the plants time to repair some of the damage.

Once winter injured stands have about 2 to 4 inches of growth, determine the yield potential by counting the number of stems per square foot, multiple by 0.1, and add 0.38. This gives a potential yield estimate, but many factors such as soil moisture, nutrient deficiency, diseases, insects, and harvest management affect the actual yield obtained. Generally, stem densities greater than 55 per square foot is adequate for near maximum yield, 40 to 54 may have some yield limitation, and less than 40 yields will be severely limited and consideration to replacing the stand should be given.

For more information on winter injury to alfalfa stands see the following web site:  
www.uwex.edu/ces/crops/uwforage/StandEvaluationFOF.htm