

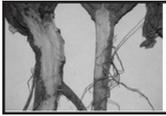


Will There Be Winterkill in 2009?

Submitted by Scott Banks, CCA

The fast snow melt, excessive rainfall and then flash freeze followed by a drop in temperatures this past March, has left a lot of farmers and agronomists speculating just how bad the winterkill on the forage stands will be. Assessing your forage stand's survival, or lack of, is important because you need to look at your options and what changes can be made to your crop plans for the upcoming season.

Winterkill can be caused by oxygen starvation to the plant due to flooding and in some cases ice sheeting. Although forage plants go into dormancy for the winter, they are still respiring, i.e., they need to breathe, albeit slowly. Ice sheets can cause less oxygen to reach the dormant alfalfa crowns and other forage species but wide scale stand losses are uncommon. The Ice Storm of 1998 in eastern Ontario is a good testimonial to this, as many remember the forage stands came through with flying colours in the spring of 1998.



On Left – soft tap root, early crown rot
On Right - healthy, firm, white to cream colour tap root

In the case of alfalfa, usually enough stems will stick out of the ice sheet and allow some oxygen to reach the crowns. Stand losses where there is severe icing generally shows up in patches. Either where the plants were already under stress or where the ice was deep enough to completely seal the area. Generally those areas are depressions where the water collects and the ice is deeper and stays for over one to three weeks.

A bigger concern is the constant freeze-thaw cycles that alfalfa can be subjected to, mainly in the spring. This is why it is often said that the real damage isn't done until late winter - spring. In areas that have high soil moisture holding capacity, the constant freezing and thawing can cause heaving. That is why we see more heaving damage on the clay and clay-loam soil types than the lighter sandy soil types. Heaved plants have their crown lifted above the soil surface and usually results in broken lateral roots. Severe heaving can break the taproot, subjects the crown to desiccation and the chances of survival is small. Slightly heaved plants can survive but their longevity and productivity are lessened.

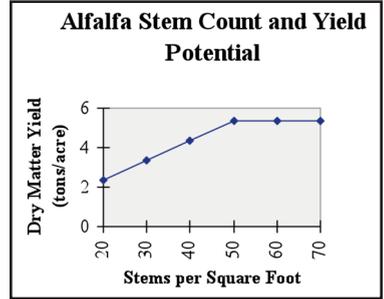
The decision to keep a reduced stand or replace it has to be one of the toughest decisions alfalfa growers face every year. Growers want to know early if the stand is worth keeping or not, but it is difficult to determine when the plants have not yet come out of dormancy. To properly assess forage stands you must inspect the field in several locations. This involves digging up plants and looking for leaf and bud vigour, resistance to bark peeling and a good internal root colour, i.e. white to cream colour. Research has found that the root's resistance to squeezing and the visual appearance of fungal growth on the root surface do not give as accurate an estimation of the alfalfa plant survivability and future yield potential. Roots with broken

lateral roots have poor chances of survival, particularly in a dry spring.

Estimating Yield Potential of Alfalfa:

Alfalfa has the ability to produce its maximum yield potential over a range of plant stand densities. Therefore plant density is a poor estimator of yield because individual plants range in the number of stems that they will produce. Stem density is the best indicator of yield potential from a stand.

The chart to the side gives an estimate of potential yield of an alfalfa stand relative to the number of stems assuming no additional yield contribution from other plants such as grasses.



The table at left gives the yield potential based on the number of stem counts per square foot (sq. ft.).

STEM COUNTS (#per square foot)	
Stems/sq. ft.	% Maximum Yield
55 or more	100%
40 to 50	75% to 92%
Less than 40	Stands too weak to keep

The table at left gives the minimum number of healthy plants per square foot for a desirable alfalfa stand.

PLANT COUNT (#per square foot)	
New Seeding	20 + plants/sq. ft.
Year 1	12 to 20 plants/sq.ft.
Year 2	8 to 12 plants/sq.ft.
Year 3 or older	5 plants/sq.ft.

Source: Undersander and Cosgrove, University of Wisconsin 1992

Assessing whether to keep an alfalfa stand or not, usually begins in the spring time, before the plants have had a chance to produce stems. At this time, you will need to count the number of plants to estimate the stand density.

The best time to do plant counts is in the spring after the plants have broken dormancy to assess the health of the plants in the stand.

Other factors to consider when deciding whether to keep a stand depend on the other forage species in the stand, your livestock's forage needs over the course of the summer, fall and winter, what alternative forage options, crop rotation, availability of equipment and/or custom operators in the area. In badly winterkilled situations, consider direct seeding a new forage stand in another field and take the nitrogen credit of the old forage stand to reduce the added nitrogen required to grow a corn crop. At today's nitrogen prices, that could be \$75 to \$100 per acre.

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Scott Banks is an Emerging Crop Specialist with the Ontario Ministry of Agriculture, Food and Rural Affairs.

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