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Scouting for alfalfa winter injury

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Abstract

Mid- to late-March is the time producers should be inspecting alfalfa (and other perennial forage grasses and legumes) for spring recovery. The atypical weather this past fall and winter has led to considerable uncertainty about forage crop survival. Winter-dormant plants lose much of their cold hardiness during an extended period of warmer-than-normal air and soil temperatures, which is referred to as the January or February thaw.

Keywords

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Disciplines

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INTEGRATED CROP MANAGEMENT

Scouting for alfalfa winter injury

Mid- to late-March is the time producers should be inspecting alfalfa (and other perennial forage grasses and legumes) for spring recovery. The atypical weather this past fall and winter has led to considerable uncertainty about forage crop survival. Winter-dormant plants lose much of their cold hardiness during an extended period of warmer-than-normal air and soil temperatures, which is referred to as the January or February thaw. These plants regain some cold hardiness with the return of cold temperatures, but the magnitude of cold hardiness is lessened, leaving them vulnerable to tissue freezing at somewhat higher temperatures (teens and low 20s) compared with tolerance of 0 to 10°F soil temperatures of more normal "winterhardened" plants. Winterkill, winter injury, and slowed regrowth are more prevalent in alfalfa subjected to these "warmer" winters.

For the winter 2001-2002, I do not know how much cold hardiness the perennial forage plants achieved. In addition, extended warm periods all winter have contributed to what I have been seeing in the field as "green shoot tissue winter-long." Respiration rates have probably been high all winter, which may slow spring recovery. I am particularly concerned about the low-teen and single-digit temperatures during the last week of February, with no appreciable snow cover. Even a few inches of snow cover contribute to a more successful winter survival, regardless of the degree of winter hardening.



Healthy alfalfa taproot.

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Here are some tips for scouting alfalfa fields this March to determine the extent of winter injury.

- Visit alfalfa fields when temperatures begin to warm in mid- to late-March, and the legumes and grasses begin to regrow.
- Get a broad view of the field to determine whether regrowth appears to be uniform, or whether there are areas recovering differently.
- At several sites in the field (both good and bad areas), dig all of the plants in a 1-square foot area. Count the plants for an estimate of stand density.
- Look carefully at the buds and shoots. Look for evidence of new growth that has been recently frozen or damaged. Inspect the condition of both growing and dormant buds.
- Split the taproots to look for tissue condition and the relative degree of root and crown disease. Alfalfa taproots should be firm and creamy white. As alfalfa plants age, root

and crown rot (chocolate-brown discolored tissue area) is often present. The degree of root and crown rot affects plant productivity, vigor, and long-term survival.

- If roots look healthy but shoot recovery is slow, plan to revisit the field in a week or two, and repeat the inspection.
- If taproots are beginning to turn watery and tan-yellow, plan to revisit the field in a week or two to check the condition of these plants. Pay particular attention to the top inch of the taproot. Often, the late-winter freeze winter injury in alfalfa fields is freeze damage to these upper few inches of root and crown tissue.

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[1] <http://www.ent.iastate.edu/imagegal/plantpath/alfalfa/alfalfataproot.html>

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