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Evaluating the spring alfalfa stand

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Evaluating the spring alfalfa stand

Abstract

Extended periods of unseasonably warm temperatures during the winter months can lead to reduced winter hardiness and has been the most frequent cause of widespread winter injury to alfalfa and mixed forage stands in past years. Now is the time to check alfalfa stands and begin planning for harvest or reseeding. Three kinds of winter injury and winterkill can occur in Iowa. Ice sheeting can kill localized areas of alfalfa fields. Plants killed by long-term ice cover or in depressional areas in fields that collect and retain frozen snow melt will not green up and the taproots and crown will begin to deteriorate.

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Crop Production

Evaluating the spring alfalfa stand

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Extended periods of unseasonably warm temperatures during the winter months can lead to reduced winter hardiness and has been the most frequent cause of widespread winter injury to alfalfa and mixed forage stands in past years. Now is the time to check alfalfa stands and begin planning for harvest or reseeding.

Three kinds of winter injury and winterkill can occur in Iowa. Ice sheeting can kill localized areas of alfalfa fields. Plants killed by long-term ice cover or in depression areas in fields that collect and retain frozen snow melt will not green up and the taproots and crown will begin to deteriorate.

Heaving is a mechanical squeezing of alfalfa plants out of the ground during extended periods of early spring freeze/thaw cycles occurring in Iowa. Heaving can occur in stands of all ages. Plants that have heaved 1 inch or more may have additional cold injury. If they recover and produce good spring growth, they are still vulnerable to cutter bar damage at harvest.

Cold injury occurs on new plant regrowth tissue in temperatures less than about 24–25 °F. Plants that had developed full winter dormancy through autumn can tolerate temperatures as low as 5 °F without damage, but as plants lose cold hardiness during mid-winter warm periods, they are less winter hardy and can be damaged by temperatures in the teens and 20s. Like frost damage in fall or spring, regrowing plants that broke dormancy during the winter often have frozen shoots and still recover well from new crown buds. Of greater concern are late-winter or early-spring cold events, cold enough to freeze root and crown tissue below ground. These plants are often permanently weakened and often winterkill.

It is difficult to predict cold damage because soil temperatures are often warmer than air temperatures. You cannot determine cold injury and stand condition in early spring without digging plants and assessing crown and

taproot condition. Healthy taproots are creamy, white, and firm in texture. If the plants you dig have good taproots and there is still evidence of bud growth from the crown, then the plant may be recovering well or more slowly than normal but recovering. A taproot that is spongy in texture, or watery and beginning to take on a tan or yellowish color, is a bad sign. These plants are likely severely cold-injured and deteriorating. If you are seeing signs of this, check fields again in about a week to verify your first assessment.

Stands that are recovering normally can be managed with normal harvest planning. Slowly recovering, winter-injured stands will be weakened and recover under some stress. The best and most conservative management for these weakened stands is to allow the first growth to reach at least half bloom before first harvest to provide more plant recovery time.

Stands with less than four healthy plants per square foot will likely produce marginal yields this year. Plan to plant another field this year to start a replacement field. If you need the forage from the current, damaged field, consider taking only a first harvest, destroying the damaged stand, and establishing an emergency forage crop for needed forage.

An Iowa State University Extension publication, *Evaluating Hay and Pasture Stands for Winter Injury* (PM 1362) goes into more detail about spring evaluation procedures. The publication also identifies some concerns about reseeding and “thickening up” or “patching in” alfalfa into winter-killed or -injured alfalfa fields.

Stephen K. Barnhart is a professor of agronomy with extension, teaching, and research responsibilities in forage production and management.