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## Evaluate Forage Stands for Winter Injury

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# Evaluate Forage Stands for Winter Injury

## **Abstract**

What an unusual winter – warmer than most; not much snow cover. Our perennial forage plants have experienced the same conditions.

Perennial forages respond to the cooling days of autumn and “cold harden” to their genetic winter hardiness limits. As long as temperatures in the crown area, or upper few inches of the soil, remain between near 0 degrees F and 35 degrees F the plants remain dormant. Snow cover and residual vegetative cover help to insulate the soil and stabilize soil and crown temperatures. Under ideal conditions, as spring temperatures warm through March, the plants break dormancy and regrow normally into the spring. Winter injury and winter kill can occur if crown temperatures go much below 0 degrees F, and when mid-winter warm spells cause the plants to break dormancy early and become more susceptible to late-winter cold crown temperatures. Freezing of ponded water in low-laying areas frequently causes localized spots of winterkill in fields.

## **Keywords**

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## **Disciplines**

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### Evaluate Forage Stands for Winter Injury

By Stephen K. Barnhart, Department of Agronomy

What an unusual winter – warmer than most; not much snow cover. Our perennial forage plants have experienced the same conditions.

Perennial forages respond to the cooling days of autumn and “cold harden” to their genetic winter hardiness limits. As long as temperatures in the crown area, or upper few inches of the soil, remain between near 0 degrees F and 35 degrees F the plants remain dormant. Snow cover and residual vegetative cover help to insulate the soil and stabilize soil and crown temperatures. Under ideal conditions, as spring temperatures warm through March, the plants break dormancy and regrow normally into the spring. Winter injury and winter kill can occur if crown temperatures go much below 0 degrees F, and when mid-winter warm spells cause the plants to break dormancy early and become more susceptible to late-winter cold crown temperatures. Freezing of ponded water in low-laying areas frequently causes localized spots of winterkill in fields.

This winter, the crown temperatures have likely not been cold enough for direct cold injury, even without snow cover. While day temperatures have been warmer than normal through February, night temperatures have, hopefully, been cold enough to prevent the plants from breaking dormancy. How well did they handle this winter? It is time to go find out.

#### Stand Evaluation

When evaluating alfalfa in late winter for winter injury, consider both the number of plants per square foot, and for alfalfa, the age of the stand. Crown and root diseases also have a major effect on stand reduction of legumes, so plants should be checked for dead, dying or diseased crown and root tissue. Winter-injured plants may survive satisfactorily, but are often slow to recover in spring, so a quick decision to destroy a winter injured stand is not recommended.

1. Wait until the spring regrowth is about three to four inches high.
2. Select random stand count sites. Check at least one 1-square-foot site for every five to ten acres.
3. Dig up all of the plants in the 1-square-foot area. Pick at the crown and buds with a knife to determine if the tissue is still alive.
4. Then count the number of live plants per square foot. Use Table 1 to begin your rating of the stand.
5. Next, split the taproots and evaluate their general health. The core of a healthy taproot is firm and creamy-white. Damaged or dying taproots are yellowish-brown to chocolate-brown in color and watery or dry and fibrous in texture. Only healthy plants will contribute significantly to yield, so if the taproots are more than 50 percent diseased, reduce your initial stand count accordingly.

**Table 1. Age of stand and rating of winter survival**

	<u>Good</u>	<u>Marginal*</u>	<u>Consider Reseeding</u>
	<b>Plants per square foot</b>		
<b>Year after seeding</b>	+12	8 to 12	less than 8
<b>2</b>	+8	5 to 6	less than 5
<b>3**</b>	+6	4 to 5	less than 4
<b>4 and older **</b>	+4	3 to 4	less than 3

\* Healthy alfalfa plants in thin stands often produce more individual stems per plant and compensate some in yield potential

\*\* If 50 percent or more of the plants have crown or root rot, consider reseeding.

Plan your management this season, based on your stand evaluation.

- If stands are winter-injured, but will be harvested this season, allow plants to mature to 10 to 25 percent bloom or later, before cutting.
- Increase cutting height to three to four inches
- Maintain good fertilizer and insect management
- If stands are severely winter injured, and you have incurred a significant loss to planned stored forage, plan to reestablish a new hay field this spring, and begin to plan for any needed supplemental harvested and stored forage needed until the new seeding becomes adequately productive.

Assess red clover stands similarly.

Perennial forage grasses often survive better than winter hardy legumes. However, orchardgrass and ryegrasses are more susceptible to winter injury. Visual evaluation of grass regrowth and vitality of crown tissue is suggested when evaluating winter survival of pastures.

#### **Reseeding in hayfields or pastures might be needed**

Reseeding more alfalfa into or immediately after a 2-year old or older stand is not recommended. Overseeding or drilling grasses or red clover into thin or winter damaged stands should be done from now through April. Delaying seeding increases the risk of weed and surviving forage plant competition and seedling loss to increasingly dry and hot soil surface conditions of early summer.

Additional Iowa State University Extension and Outreach publications for further information:

[Evaluation for winter injury](#)

[Selecting forage species](#)

[Establishing new forage stands](#)

[Interseeding and No-till renovation](#)

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