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Stephen K. Barnhart

Iowa State University, sbarnhar@iastate.edu

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Abstract

Rain in May and early June this year put most alfalfa producers behind two to three weeks for their first, and correspondingly their second, third, and sometimes fourth cuttings. Now in mid-November, producers can look back on the season, determine if there are still some management decisions to make and guess about winter survival.

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Integrated Crop Management NEWS



Fall and Winter Management of Alfalfa

Steve Barnhart, Department of Agronomy

Rain in May and early June this year put most alfalfa producers behind two to three weeks for their first, and correspondingly their second, third, and sometimes fourth cuttings. Now in mid-November, producers can look back on the season, determine if there are still some management decisions to make and guess about winter survival.

This November checklist updates a one published in the Integrated Crop Management newsletter article Sept. 22. Use it to review how summer and fall management has been relative to alfalfa stand vigor and overwintering potential.

Late-season checklist and factors which improve alfalfa winter survival

- Managed insects (potato leafhoppers) during the growing season
- Maintained good levels of available potassium in the soil
- Established a variety with winter/cold tolerance suitable for your climatic conditions
- Established a variety with good resistance traits to the diseases and insect pests present in your area
- Harvested a three summer cut harvest system and provided good regrowth intervals between cuttings
- Provided five to six weeks of uninterrupted growth during September and October (a fall rest period)
- Left all of the last growth of the season in the field (no cutting or grazing) – if you did take a late fall cut or grazed, you left a 5 to 6 inch stubble.
- Winter survival is better when soils have average soil moisture or slightly drier during fall and winter
- Plant crown insulation is more consistent if you can maintain four inches or more of winter-long snow cover
- Young stands (first or second production year) tend to be less susceptible to winter injury; we see more consistent winter injury in older stands (third production year and older)

In response to shorter days and cooler average daily temperatures of fall, alfalfa plants progressed through their gradual “cold hardening” process. The genetics of the variety determines how cold tolerant the plant crown and taproot can be during the winter months. Most winter hardened alfalfa plants can withstand soil temperatures in the crown area of 0 to 4 degrees F without crown tissue damage. At lower soil and crown temperatures, varieties and individual plants will vary in the degree of cold damage they may experience.

What can still be done?

If you made a late cutting in September or October, or left the last growth uncut, it is best for the stand to leave all regrowth and capture or hold snow cover. This will help break up any ice sheeting that might occur through the winter.

If the field will be managed for hay or haylage harvest next year, avoid grazing of the frosted, dormant alfalfa. If the field will not be kept as an alfalfa

production field next season you can graze the alfalfa residue. If the frosted top growth is removed there will likely be only slight reduction in N that can be credited to next crop.

If fields were not fertilized in the summer, topdressing any needed K this late in the season may not contribute much to cold hardiness this winter. Realistically, topdressed fertilizer applied now should be counted toward next season's fertilization program. While manure is a good source of fertilizer nutrients, late-season manure applications will contribute toward additional soil compaction and damage to alfalfa crowns.

Some additional – uncontrollable – winter injury risks

Even though the alfalfa plants are dormant, they still use a small amount of their root and crown nutrient 'reserves' during slow rates of winter respiration. As the plants break dormancy next spring, root and crown nutrient 'reserves' will decrease for a week to ten days while new growth is starting. If a week or two of unseasonably warm weather occurs in January or February, the plants will sometimes 'break dormancy' prematurely, and use up some of their stored reserves in their attempt to establish new spring growth.

Subsequent cold conditions can then be more damaging to plant crowns, and force the plants to draw on their remaining lower level of 'reserves' for continued winter respiration and a second regrowth attempt at a more normal spring time. Under these conditions, any fall harvest mismanagement that left the plants on the short side of the adequate range of nutrient reserves will put the stand at a higher risk of winter injury and more subject to slower spring recovery and stand vigor later in the spring.

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

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