Frost Injury to Alfalfa – Issues and Concerns
Mark Sulc

The early alfalfa growth from late March has been killed back by the frigid early April temperatures across most of the state. Some fields still show green leaf material in the lower canopy, but the taller stems have collapsed from the cold injury.

I really don't expect that we will see permanent damage to established, healthy alfalfa stands from this late freeze. Back in 1992 we had similar conditions of alfalfa breaking dormancy early in March, followed by cold temperatures that killed the shoots back to the crown. Alfalfa re-initiated growth that year and first-cutting yields were near normal, although the first harvest was delayed by 7 to 15 days.

Established stands of adapted varieties will initiate new growth with the warming temperatures, especially if the fields have good drainage and adequate fertility. If fertility is below optimum, make corrective applications as soon as soils are firm and dry enough to support traffic.

For late summer 2006 seedings, the frost injury may cause more significant problems depending on extent of seedling establishment and growth achieved last fall. Plantings made in late July to early August 2006 will likely have less long-term damage than those made in late August to September. Plant roots should be observed later this week. If the inner root tissue is soft, spongy, and possibly discolored, then severe injury has occurred. Those plants will or already have died. In contrast, healthy root tissue will be firm and white.

Weak stands, especially those under waterlogging stress, will likely have a more difficult recovery this spring and yield levels will be lower than normal. Keep a close eye on fields in that condition during the next two weeks.

I've been asked three questions related to managing frost-injured alfalfa: Should the frosted alfalfa growth be cut? If not clipped, won't the dead alfalfa stems interfere with new shoot development? Will forage quality at the first cutting be harmed by the dead alfalfa stems?

My answer to all three questions is "No". I say this even though reports are circulating from other regions that cutting is recommended if more than one-third of the top growth has been wilted by frost. But I think cutting at this stage will be an added stress that will further drain the vigor of the plants and do more harm than good. In addition, any surviving stems in the lower canopy could get clipped off, setting the plants even further behind.

The frost-killed stems will have negligible or no effect on the growth of new shoots. The dead stems will also have negligible effect on forage quality at first cutting. They probably won't even be picked up during harvesting operations, and will be decomposing by that time. Because most of the frosted material has already collapsed to the ground, I

doubt a mower would even do much good at this point in time. Furthermore, soils are wet and soft, and the risk of crown damage from equipment traffic is high. So I think we should save the fuel and be patient for the plants to recover on their own.

My best guess is that we will have to delay our first harvest by 7 to 15 days this spring. We will know more as the crop develops. A delayed first harvest will give the crop time to recover and produce higher yields. Forage quality should follow the normal changes in relation to crop maturity.

The delay in first harvest this year will mean that only three cuttings will be possible for stands where four cuttings are normally taken. Later this summer, the alfalfa should also be allowed to mature to 40 to 50% bloom stage, which will help the stand regain full vigor.

Despite the potential for one less cutting (3 rather than 4 cuts) this year, overall yields could still be near normal provided weather conditions favor good alfalfa growth the rest of the growing season. Research has shown that alfalfa cut three times is often higher yielding than when four cuts are made. Forage quality is usually lower with three cuttings as compared with four; however, it is usually acceptable for dairy animals, provided the stand is pure alfalfa and not mixed with grass.

For mixed grass-alfalfa stands, the tricky management issue may be that the grass will recover more rapidly and be ready for harvest much sooner than the alfalfa. So should grass-alfalfa mixtures be clipped to slow down the grass growth? Again, I don't think so. By the time one could get on the field to clip them, some young alfalfa shoots may be growing again. Removing those stems could do more harm than good to the alfalfa.

Stand Establishment Problems in Late Summer Seeded Alfalfa
Mark Sulc

I've heard reports of stand establishment problems in alfalfa planted last summer. This is particularly true in northwest Ohio where standing water reduced stands over the winter. The question is what can be done about it?

If the thin spots are not too numerous and are relatively weed free, alfalfa can be interseeded with a no-till drill to thicken up the stand as soon as soils are fit. Alfalfa planted just last summer (2006) will not yet be old enough to cause problems from autotoxicity.

Interseeding to thicken up the 2006 summer seedings will only be successful if the surviving plant density is very low and will provide minimal to no competition to new emerging seedlings. Use careful judgment before attempting to interseed where there is surviving alfalfa stand.

If winter annual weed populations are high in the areas with stand loss, a glyphosate treatment to eliminate that competition will be important before trying to interseed. Raptor and Pursuit are not an option where alfalfa is to be reseeded. The waiting period for alfalfa seeding is 3 months for Raptor and 4 months for Pursuit application.

If stand thinning is severe throughout the field, and especially if winter annual weeds are a concern, then it will be best to start over. Kill the entire stand (with glyphosate, and possibly tillage) and replant as if it were a completely new seeding.

I realize that precipitation has been well above normal during the past 6 to 8 months, but it will likely happen again in Ohio. So do your best to pick fields for alfalfa that have good internal and surface drainage to ensure productive and persistent stands.

Boosting Forage Production After Winter Damaged Alfalfa
Mark Sulc

Interseeding alfalfa is an option to thicken up stands if the alfalfa was seeded last summer. In stands that are 2 years old or older, interseeding alfalfa into alfalfa to thicken up the stand usually does not work. New alfalfa seedlings may emerge and look good early on, but they often die out over the summer due to competition, diseases, and autotoxicity present in the existing alfalfa stand.

To extend the life of winter damaged alfalfa stands beyond this year, consider interseeding red clover or a grass species such as ryegrass or orchardgrass. The yield benefit from these perennial species may not be great until the second year, because they do require some time to establish. Perennial ryegrass would most likely provide an earlier yield boost because of its rapid establishment. The disadvantage of perennial ryegrass and red clover is that they are slower to dry, so curing times will be lengthened compared with orchardgrass-alfalfa mixtures.

If forage supplies are very critical for this year, consider interseeding with a cereal grain (oat, beardless barley, wheat, spring triticale) or annual ryegrass into alfalfa. All these annual grasses are quick to establish and will compete well in a thin alfalfa stand. The forage may need to be put up as silage or balage rather than as hay, but yields will be high and forage quality can be very good if cut in late boot to very early heading stage.

There are numerous annual species for boosting forage supplies for this year alone, corn silage being one of the best. The following are excellent sources of information on annual forages and managing alfalfa where winter injury is an issue:

The Ohio Agronomy Guide, Chapter 7 (section on Annual Forages)
http://ohioline.osu.edu/b472/0008.html

Articles on Univ. of Wisconsin Website:
http://www.uwex.edu/ces/forage/news/current/winterkill2005.htm