

## Forage Freeze Damage Update – April 17, 2007

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*“Two of many lessons of the last week”*

1. Mother Nature bats last.
2. Forage plants don't read our books, otherwise more would be dead.

In our report on April 10 we indicated damage ranged from slight leaf tip burning on grasses to alfalfa fields with over 20 inches of growth about flattened. Since last Tuesday, we have seen a lot of forage fields and received many calls, e-mails, and visits from agents, farmers, industry personnel and media representatives. Today, we know much more than a week ago, but still won't be in a situation to accurately evaluate damage for some time.

We have been amazed with the amount of variation in damage. In one (most striking so far) situation, I observed an alfalfa field that had approximately 21 inches of growth before the freeze that was almost flat on the ground. In just over a half mile away, there was another alfalfa field that showed leaf tip burning and very little other damage (this is the only such field I have seen). We cannot explain this variation, but offer it as an example. With a fact that considerable variation exist, we want to give a brief summary of our “average” observations:

**Grasses:** Good news, very little damage on tall fescue, orchardgrass, Kentucky Bluegrass, and Timothy. In most cases, only leaf tip burning. We expect near normal growth with warming temperatures. Some damage on ryegrass but overall not as much as expected.

**White Clover:** A few areas in a small number of fields where leaves have turned black. More common are buckled or puckered leaves. Very little crown damage and we expect full recovery.

**Red Clover:** More damage on existing growth. Leaves have turned black on a lot of the above ground growth. We are optimistic about crown buds and next growth.

**Alfalfa:** A very high percent of all growth this spring has had the terminal buds killed by temperatures experienced on April 8 (our lowest at Princeton – official 19°F, 8 inches above ground 16°F). We have not observed dead crowns nor crown buds, so we are optimistic about future growth.

**New Seedlings:** We are VERY encouraged about new alfalfa and clover seedlings. Generally, these plants are tolerant of colder temperatures. Nebraska workers found that seedlings of alfalfa no older than the first trifoliate growth stage could tolerate

temperatures in the low 20's. While we have found a few dying/dead young seedlings, the number is MUCH less than expected. In addition, we have had new seedlings emerge in the past few days. We suggest you continue to monitor stands and hopefully they will thicken up.

**Evaluating New Stands:** How many plants are enough? This is a good question and one many will be asking and attempting to answer in the next couple weeks.

Industry standards suggest that a new stand of alfalfa should have from 25-40 plants per square foot thirty days after seedings (Table 1).

**Table 1. Evaluating alfalfa stands.**

<b>Plants per square foot needed for optimum yield</b>	
<b>Age</b>	<b>Plants/square foot</b>
New seeding	25-40
1 <sup>st</sup> year	12-20
2 <sup>nd</sup> year	8-12
3 <sup>rd</sup> year and beyond	3-8

SOURCE: Forage Crop Pocket Guide, page 27

If you have an average of 25 plants per square foot now or in the next week or so GREAT. We would feel comfortable with an average of 15-20 plants per square foot, uniformly distributed, under the circumstances this spring. With Roundup Ready where you can control weeds effectively, anything above 10-12 would probably be okay. Minimum stand density required will vary among producers with commercial hay producers requiring more plants per square foot than a beef cow-calf producer looking for supplemental grazing during summer.

If a stand is too thin and you are convinced the majority of seed has emerged, then it is possible to seed more alfalfa into existing stands using no-till (allelopathy is not a factor in these new seedings). This is not an option for Roundup Ready Alfalfa fields since there is an injunction on selling and planting Roundup Ready Alfalfa at present.

We will continue to monitor and evaluate and advise as we learn more. At present, we do not feel most of you will need to reseed alfalfa or clover, nor do we think you will have to "thicken" a lot of stands. There will also be a late summer option for adding grass or perhaps thickening stands if absolutely necessary.

## **Managing Old Growth**

Last week we discussed harvest options for freeze damaged alfalfa and red clover. As we mentioned, harvesting frost damaged forage will promote more vigorous regrowth than leaving the dead topgrowth in the field. Dr. Bruce Anderson from the University of

Nebraska confirmed this recommendation in last week's issue of eHay Weekly. He said, "We had a somewhat similar late freeze three years ago, and we had much faster recovery in fields that were cut off than in those that we just left." Dr. Anderson explained that "the alfalfa came back when we just left it, but it was much slower and the number of shoots per crown seemed quite a bit lower. Apparently, the above-ground (freeze damaged) growth inhibited the release of new shoots."

However, the weather has not been favorable for harvest during the last 7 days. The most common question we have received relates to when is it too late to harvest without injuring new growth. Fortunately, the same cool, cloudy conditions that have made hay harvest difficult have also limited new regrowth. Therefore, we believe that it will still be safe to harvest frost damaged forage through the week of April 16-20, as long as long as driving harvesting equipment through your fields does not cause stand damage. If recent rains have left you with wet fields, you are best to wait and hope for some drying conditions before harvest.

Cutting and ensiling is probably the best option, but remember that using a silage inoculum is still recommended. Grazing freeze damage alfalfa and red clover stand continues to be another good option, and although bloat risk has decreased as the material has dried down, you should always proceed with caution when grazing spring legumes. Remember that hungry animals should never be turned into lush legume pastures. Pre-filling livestock with dry hay, providing a bloat block, adding rumensin to your mineral; all are options to reduce the potential for bloat. Haying is still a consideration, but make sure to note the weather forecast in your area before laying hay on the ground.

Many of you may decide to simply mow frost damaged stands this week to remove the dead topgrowth. Remember that your goal is to mow to a normal hay cutting height and insure that mown material is chopped and scattered uniformly across the field. Mowing will not benefit your stand on wet field since slower regrowth is preferable to a rutted field.

## **Managing New Growth**

As soil temperatures continue to warm new growth will be initiated on these legume stands. Remember that all normal spring management considerations still hold. Continue normal scouting for alfalfa weevil. This insect has been a pest on alfalfa for many years and is adapted to occasional late freezes. We don't know if damage severity will be more or less than in past few years, but there have been years when spring damaged stands showed weevil damage early on. If your stand is recovering slowly, look closely because weevils could be chewing on new regrowth as it emerges. Make sure that you don't rush your first full forage harvest. It is all the more important to let stands reach at least a late bud stage, to make sure that root reserves have been replenished before harvesting.

## **Nitrate Toxicity**

Frost damage is often associated with increased nitrate accumulation in forage grasses, but actual nitrate toxicity in livestock most often occurs from heavily fertilized annual warm season forage grass crops. Severe frost damage to heavily fertilized cool season forage grasses can also lead to nitrate accumulation in the lower portion of the plant. Limited testing conducted by the University of Kentucky College of Agriculture Extension Specialists showed that spring fertilized wheat (100+ lb/A) showed medium to high levels in Lexington and low levels at Princeton. We are encouraged to see nitrate levels dropping as growing conditions improve. If you are cutting your wheat crop for forage consider the following: 1) ensiling reduces nitrates by at least 50%; 2) nitrates drop as active plant growth resumes and they are converted into protein; 3) nitrates do not decrease during hay drying; and 4) when grazing or cutting frost damaged forages for hay you may consider submitting a sample for nitrate analysis. For sampling procedures, safe nitrate levels and addresses for local testing labs look under the “Freeze Damage” section on the Forage Website [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage).