Since the heat wave of late March weather has turned more seasonable if not down right cold. There have been enough frosty nights and snow so the alfalfa crop is looking pretty ragged. Many fields have leaves that have turned a white/yellow as leaves have been frosted. Some stems have actually been killed as can be seen in the picture at right. The top part of the stem in the middle of the picture has been killed because the growing point is dead, The stem is white and wilted where it has been killed yet below that area the stem is actually still alive. That stem will not continue to grow but those stems that have damaged leaves and the growing point is still healthy should continue to grow.

I have included two articles which also talk about frost injured alfalfa. Please Note: These articles discuss conditions that are not exactly like ours, in one instance the alfalfa was much taller, but there are lessons to be learned for now and in the future.

**Frost Damage to Alfalfa**

*Dan Undersander and Paul Peterson*
*University of Wisconsin Extension*
One set of leaves must have escaped damage for recovery to be expected. Determine the number of living plants per square foot. If more than 20 plants per square foot remain, stand will survive in good shape. As stands are thinner than 15 plants per square foot consider top seeding alfalfa.

Established stands: Evaluate the stands to determine 1) if less than 30% stem tops are damaged, 2) if most or all stem tops are damaged, and 3) if the stems are frozen back to the ground. Damaged means wilting (usually visible in about 24 hours after frost) or yellow to brown discoloration (usually visible 3 to 5 days after the frost).

1) If less than 30% of stem tops show wilting/browning from frost, do nothing. Enough stems remain to provide good growth and yield of first cutting. Stand will have some yield reduction of first cutting but will recover completely on second cutting.

2) If most or all stem tops are damaged and stand is less than 10 inches tall, do nothing. The growing points have been killed but the alfalfa will form new buds at lower leaf junctures (axillary buds) and continue growing (first cutting might be delayed). Alfalfa may demonstrate some horizontal growth. Mowing existing top growth will not enhance recovery. If stand is over 12 inches tall, harvest and allow to regrow. None of the alfalfa that was frozen in the Midwest was over 12 inches when frosted to our knowledge. Note that frozen material may be high in nitrate.

3) If all stems on a plant are frozen back to the ground, the plant is dead. This extent of frost damage has not occurred in the Midwest to our knowledge. However, if observed and fewer than 5 plants per square foot remain, consider rotating to another crop and replanting alfalfa in another field to avoid autotoxicity.

Assessing freeze damage to alfalfa and management suggestions
Steve Barnhart, Department of Agronomy
Integrated Crop Management News
April 16, 2007 issue
http://www.ipm.iastate.edu/ipm/icm/2007/4-16/freeze.html

Established frost injured alfalfa stands
time of frost, don't attempt to cut or chop them down. Recovering, frosted plants are regrowing from a reduced state of physiological vigor, so they will develop more slowly than in a normal spring period. The recommendation that is best for the recovering plants is to harvest a week or so later than normal in late May or early June.

It is strongly recommended to dig some random plants several times over the next two weeks to evaluate the condition of the plant crowns and taproots. When looking at dug plants, first check for the presence of green, growing new stems. If no new regrowth is present, “pick” at buds on the crown to detect if they are still firm and appear to be living tissue. (They may just be slow to emerge.) Split the taproots. Healthy taproots are creamy-white in color with a firm texture. Freeze-injured taproots will begin to be “watery,” tan/brown in color and beginning to soften. Pay particular attention to the upper inch of the taproot that may have experienced the coldest temperatures.

If evidence of crown and taproot freezing is widespread in older stands, consider replanting a new alfalfa stand in an adjacent field.

New seedings Alfalfa and clover seedlings can survive tissue temperatures a few degrees colder than leaf tissue on stems of recovering plants. If new seedlings were permanently damaged, consider reseeding as soon as possible. Keep the good areas and drill into thin or damaged areas. Tillage may not be necessary. If a cereal grain companion crop is still present, will be too competitive, or will impede the reseeding, then tillage may be required.

Orchardgrass also can be frost injured. New growth is often slow and will be seen as new side tillers (leaves) growing on the outer edges of the orchardgrass plant clumps.

Monitoring first cutting quality… may now be more difficult!

In the past we have had a first cutting quality monitoring program where we reported predicted NDF content in the field based on alfalfa height. For those you not familiar, alfalfa height not only makes a good predictor of alfalfa NDF but also the NDF of mixed stands and grass stands. NDF or Neutral Detergent Fiber is considered to be a good measure of fiber content and energy in hay crops and can be related to animal dry matter intake; lower values indicate less fiber and higher energy.

Given the injury to the alfalfa and the fact that grasses seem to continue to grow to some degree we are working on how to offer some kind of program similar to the past even though the grass and alfalfa appear to be out of sync. The alfalfa height to predict alfalfa should hold up in most cases but we made need to switch to some predictions Dr Jerry Cherney at Cornell has worked on to allow predicting grass NDF from grass height. If you are interested in measuring yourself to predict NDF on your farm try out some spreadsheets he has developed at: http://www.forages.org/joomla/index.php/tools

I will be in touch in another week or two to describe this years project.
How soon to plant corn?

- Though the weather may have allowed you to till fields and get them ready to plant corn, I would offer that it still may be early to plant by 7-10 days in this area. As we move to the weekend of April 20-22 and you are in a valley with a well drained soil then it may be time to start. But there is little reason to start before that.
- All though there is much focus on a 50 degree soil temperature the focus probably needs to be on when we will hit that temp consistently enough and the corn will keep germinating. Corn seed will take in water at less than 50 degrees it just won't move through the germination and growth process below 50 degrees. Given modern hybrids and seed treatments that may not put the germinating seed at as much risk as in the past. However planting with border line soil temperatures for germination and growth you may see more uneven germination and plant height which is what we are striving to keep from occurring for optimum yields. Even if soil temperature is less than 50 degrees when you start you need to plant when there is the opportunity for getting corn out of the ground evenly by having temperatures consistently above 50 degrees. I also think this is where you need to rely on the ratings of your seed company to know which hybrids will have the early vigor promised or maybe where some caution should be taken.
- So there are several levels here to consider. If you want to plant on the early side, lets say April 20, because of the amount of spring field work to be done then do so realizing you probably won't have a crop failure but you may be trading off maximizing some yield potential. But if you are planting this early to get highest yields I think it has been pretty much documented planting earliest doesn't translate into highest yields.