University of Minnesota Extension Forage Program

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To improve and promote the economic and environmental value of growing forages in Minnesota

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Alfalfa Stand Management—Dead or Alive

Most springs find us looking at our alfalfa fields, hoping for thick stands and good winter survival. However, there are usually areas around the state where fields or parts of fields have suffered some winter (or spring) injury.

Check fields to determine if any action needs to be taken. Pull some plants to see if they can be easily removed from the soil, i.e. damaged taproot. Dig plants to check root condition. Healthy taproots are white and firm, not mushy. Damaged roots will have spots of decay, but time will be needed to see how they develop. If the plants grow more than 6-8 inches in height, they should survive. Brown, mushy roots are dead and dying.

Optimum yields require over 55 stems/ft^2. Stands with 40-55 stems/ft^2 may suffer some yield loss. Stands with under 40 stems/ft^2 will suffer significant yield limitations, and you should consider replacing.

What are my Options? It depends on your situation, and how much forage you need.

1. If you are short of feed, and there is grass present along with the alfalfa consider taking the first cutting, before renovating.

2. If the stand is 50% or more grass, an application of 50 to 75 pounds of nitrogen per acre will increase the grass forage.

3. If many alfalfa plants are damaged but continue to grow, delay the first cutting to 50% bloom or later to allow for recovery.

4. If you have extensive alfalfa damage, and you need alfalfa this year, consider re-seeding some alfalfa.

Re-Seeding Options:

1. If the stand is only 1 year old, no-till alfalfa in the thinned areas to thicken up and salvage the stand. Seed through the thinned or dead areas with about 8 - 10 pounds/ac, than harvest as usual. The new seedlings will be too small for the first cutting, but will catch up by the second cutting.

2. You may be able to thicken up two-year old stands, too, but once the stand is older than this, the risk of autotoxicity is too great.

3. If the stand is over two years old, take a first cutting, plow it down and plant corn for silage or plant another summer forage such as sorghum–sudangrass for forage this year.

4. Plow it down now, take the nitrogen credits and plant corn for silage.

5. Replant into the same field - Take first cutting, allow plants to regrow 6-8 inches and then apply glyphosate to destroy the remaining plants. Or, apply herbicide now to kill the existing stand. Plow the field and then seed in early August. Tillage is an important part of this method to help breakdown the remaining plants, control weeds, and minimize autotoxicity problems.

6. Direct seed a new field of alfalfa this spring to replace an injured field. Use herbicides to control weeds. This method will give you the maximum amount of alfalfa forage this season. The first cutting can be taken 60 to 70 days after emergence of the alfalfa.

7. If erosion is a problem, plant a companion crop with the alfalfa. Remove the companion crop early to minimize competition. This can be done with a herbicide or by harvesting as silage in the boot stage.

Author: Lisa Behnken, Extension Educator-Crops

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Programs and Events

Some 2008 Summer Forage Events

Central MN Forage Council Field Day
John Traut Farm
Sartell, MN
August 19, 2008
Contact Dan Martens
1-800-964-4929
marte011@umn.edu

Otter Tail Co. Corn Silage Plot Tour
Dan Dryer Farm
Ottertail City, MN
August 29, 2008
Contact Doug Holen
218-998-5787
holen009@umn.edu

Alfalfa First-Cutting Management in 2008

This task starts with knowing the needs of your livestock or market. Talk with your nutrition advisor and consider other feed resources you'll have, and past experience. Get equipment ready early.

Higher grain prices and higher protein costs put a premium on harvesting good quality alfalfa and higher forage digestibility. And it's still important to get good functional fiber. Some milk cow nutrition advisors like to work with alfalfa in the feed bunk between 160 and 200 RFV. Haylage at higher levels can create challenges with soluble protein levels.

Both in the feed bunk and in the hay market, it's just as important to get hay put up in a good physical condition as it is to catch it with favorable test levels.

For good dry hay, the North Central Extension Alfalfa Management Guide (AMG) recommends: cut early in the day to get a full day of drying, form a wide swath for faster drying, rake at 40-50% moisture content to save leaves, bale at 18% moisture for less leaf loss, and store hay under cover. Many large square baler operators would rather be at 15-16% moisture to avoid mold, or run at 18-20% moisture with preservative. Consider baleage at 40-50% moisture if the weather looks uncooperative.

For haylage, the AMG suggests: minimize drying time to reduce respiration loss (early in day, wide swath again); 3/8 inch theoretical length of cut; fill quickly to minimize oxygen; ensile at 30-50% dry matter to optimize fermentation (50-70% moisture); keep sealed for at least 2 weeks. Most people will not want haylage wetter than 50-60% moisture. Past experience counts. In bunkers, remember the key is to pack, pack, pack.

For Central Minnesota Scissors Cut information: call 1-800-525-8636 topic 971, listen to KASM 1150 AM about 6:30 a.m., or check www.extension.umn.edu/cropenews. Sampling will start around May 8-15. In 2007, some cutting started in southern Wright County ~ May 18.

Author: Dan Martens, Extension Educator-Benton/Stearns/Morrison

Forage Production for the Organic Market

The market for forages for the organic livestock market is growing. The organic food sector has grown nearly 20% per year over the past decade, and organic milk sales at Organic Valley have jumped 30% in the past two years. This increased growth is creating a greater need for organic forages and feed grains.

Organic forages have the same requirements as other organic crops. The land must go through a three-year transition period to become certified, during which no prohibited materials may be used. The most common prohibited products include most, but not all, commercial fertilizers, genetically modified seed or inoculants, fungicidal seed treatments, and most pesticides.

Given those restrictions, most organic crop products find forages far easier to produce than organically produced grain crops. Indeed, perennial forage sod crops have inherent characteristics that lend themselves to simplicity in organic production. Sod crops break weed, disease and insect cycles, making forages an ideal crop in organic production.

Weed management is typically the primary concern of new organic growers. However, since most forage crops are harvested multiple times each season, weeds become nearly a non-issue because the weed life cycle is constantly interrupted by clipping.

Crop nutrient requirements are similar for organic forage production. On most farms, manure is used to supply those nutrients. If manure is unavailable, phosphorus and potassium are available through conventional fertilizer sources, but must be OMRI-approved. Soft rock phosphate is often substituted for MAP or DAP, while potassium sulfate can be substituted for potassium chloride. Most liming products and gypsum are also OMRI-approved.

There are few readily accessible forms of N for organic production, so most organic crop rotations must include N-fixing legumes such as alfalfa, clover or soybean.

Since legumes utilize atmospheric nitrogen for plant use, this element does not become a yield-limiting factor. Thus, organic forage yields typically rival their conventional counterparts. The organic crops that tend to lag in yield are those with high nitrogen requirements, such as corn and wheat. This makes alfalfa an ideal crop in serving a dual purpose in organic crop rotations.

Complex forage mixtures may have advantages in organic forage production. Grasses in mixtures often have greater yield and reduce exposed soil which reduces weed pressure. Forage mixtures may also offer a market-driven benefit since most organic dairy producers prefer some grasses in alfalfa-based forages. However, it's important to include grass species and varieties that match the maturity of the legumes to maintain the highest quality RFQ values. Since most organic dairies feed a greater proportion of forages in the ration, forage quality is paramount.

Forage production offers organic producers many benefits. Well-managed forage crops offer the benefits of another potential cash crop, one that will enhance their farms by reducing pest pressure, provide a home-grown nitrogen source, spread the seasonal workload, and provide a crop that reduces the risk for soil erosion by wind and water. For those interested in organic conversion, forages may be the ideal entry crop.

Author: Jim Stordahl, Extension Educator-Polk/Clearwater

Reviving Drought-Stricken Pastures

This past year has provided many challenges to managing livestock grazing pastures. Some farmers were feeding livestock hay as early as July. This was very hard on the pocket book and, in many cases, very hard on long-term productivity of pastures.

Dr. Manske, a professor of Range Sciences for NDSU, collected data during and after the drought of 2002 on the short- and long-term effects on pastures. If rainfall is 25% below normal, we might expect that production should be 25% less. In most cases, however, they found that production was about 50% less due to abuse of how the plants were handled. This becomes more prominent when the drought is extended.

Both his conclusion and mine is that when we overgraze, i.e. shorter residual heights than recommended, the root system gets smaller and therefore doesn't have as much area through which to draw nutrients and water.

If you are like many of the producers in this area which overgrazed last fall, here are a few options for maintaining a healthy pasture:

- Reduce number of animals / pasture (stock density)
- Restrict early turnout (let the grass get a chance and be sure to remove the animals for regrowth)
- Apply fertilizer (make it easier for the plants to get off to a good start)
- Avoid overgrazing; remove animals early if needed
- Follow minimum grazing height recommendations
- Give pastures adequate rest
- Establish a sacrifice area in case you need to confine animals and dry lot them if pasture forage is lacking
- Control weeds (they are opportunists if they don't have competition)

Finally, in some cases where your pastures really took some abuse, I would suggest blending seed in with your fertilizer as some of the seed will actually establish faster than your grass will regenerate. The recommendation would be to apply the mixture and lightly drag the area to establish better seed-to-soil contact. Then let the plants get tall enough to be sure they have a good root system established. Species of choice would include annual ryegrass, orchardgrass, red clover and, in some cases alfalfa. Remember, these suggestions will benefit you all year long, as well as for years to come.

Author: Troy Salzer, Extension Educator-Carlton Co.

Forage Establishment on Winter Feeding Areas

Winter feeding areas represent an often under-utilized resource on many beef cow-calf operations. Once cattle are turned out on pasture in the spring, the winter feeding area is often abandoned the rest of the growing season. Significant amounts of plant nutrients and forage production potential are untapped.

Establishing forages on winter feeding areas may be a useful way to utilize these resources; however, they are different from traditional forage seedbeds, so there are unique things to consider. Winter feeding areas are likely salty from cattle manure, nutrient distribution is uneven, and soil organic matter content is high from unconsumed feed and manure deposition, so soil is probably in an oxygen deficit.

Forage species best suited for seeding in winter feeding areas should have rapid germination and high seedling vigor, able to compete with weeds. Annual crops are likely better suited to seeding conditions on winter feeding areas than perennials, germinating and developing a competitive canopy faster. Annul forage seed is usually less expensive than perennial forage seed, and perennial forages usually don't survive the heavy winter animal traffic anyway.

While there are many annual crops to choose from, annual ryegrass has established well on winter feeding areas at the North Central Research and Outreach Center in Grand Rapids. Sorghum-sudangrass and turnips also germinate and develop a competitive canopy quickly. The advantage of these species over annual small grains is they regrow after grazing; potentially allowing several grazing cycles, and will grow well into the fall.

Producers desiring to try establishing perennial forages could try red clover or orchardgrass, among the most vigorous of perennial forage species.

Another consideration is seedbed preparation and seeding method. There is more potential for stand establishment failure than on traditional forage seedbeds, so inputs should be kept to a minimum. Inter-seeding, or broadcast seeding followed by a light disking or harrowing to achieve seed/soil contact are two potential methods.

These methods would also help somewhat with manure distribution, breaking up many of the larger pats. Seeding should be done as soon as possible after cattle are removed to try and stay ahead of the weeds.

Author: Russ Mathison, Agronomist-North Central Research & Outreach Center

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Native Grassland Species for Bio-energy

Native perennial herbaceous grassland species have been identified as a potential feedstock for energy production. Prairie plants are ideal candidates because they are adapted to low nutrient environments, generate significant biomass, and provide a plethora of ecological services. There is much research regarding the productivity of perennial prairie species in natural and restored ecosystems, however there are insufficient data on the energy conversion potential.

We selected switchgrass, big bluestem, Indiangrass, Canada wild rye, Canadian milkvetch, maximilian sunflower, and yellow coneflower for chemical composition analysis. Samples were collected from research plots at Lamberton, Waseca, St. Paul, and Becker, MN and analyzed separately by location. Ethanol yield was estimated using the NREL calculator.

Results from the establishment phase of this experiment show that the energy content of native perennial prairie species varies according to species type and location but is influenced primarily by biomass yield. Canada wild rye cultivated at Lamberton, MN had the greatest overall potential ethanol yield (412 gallons/acre) and maximilian sunflower at St. Paul had the lowest ethanol yield (6 gallons/acre).

Authors: Maggie Mangan, Craig Sheaffer, Don Wyse, Peter Graham, Ulrike Tschirner, and Sandy Weisberg, U of MN

Species	**Estimated Ethanol Yield**	
	Highest	**Average**
	Gallons/acre	
Switchgrass	394	193
Big Bluestem	157	82
Indiangrass	156	67
Canada wildrye	412	194
Candian milkvetch	167	109
Maximilian sunflower	55	52
Yellow coneflower	251	88

Buying Horse Hay in 2008 - Plan Ahead

The USDA has reported reduced hay acreage in 2008, and short existing hay supplies. This combined with higher input costs and higher grain prices will likely lead to increased hay prices. Average hay prices at the 2007-08 Sauk Center Hay Auctions have been $100 per ton higher than the previous 5-year average.

To prepare for higher hay prices, horse owners should:

1. Remember that quality forage is the backbone of your horse's diet, and should provide at least 2/3 of their nutrients.
2. Have a good working relationship with a hay supplier to ensure a consistent and reliable source of hay.
3. Considering adding hay storage space to reduce the effects of price and seasonal fluctuations (i.e. hay is sometimes more expensive in the winter vs. the summer).
4. Buy hay early. Don't wait until late summer or fall to buy.
5. Plan in advance. Budget for the price increase and re-evaluate how many horses you can afford to feed.
6. Finally, try to keep you hay type (i.e. grass or alfalfa) consistent. Constantly changing hay types can lead to horse health problems, specifically colic.

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