



Forage Quarterly

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

Plan to Attend 2008 MN Forage Days

Practical solutions for today's challenges and a vision for tomorrow's opportunities are the themes for the 2008 MN Forage Days. The Midwest Forage Association (MFA) and University of Minnesota (UMN) Extension Forage Team are partnering to bring you this program on February 12th at the Detroit Lakes Holiday Inn, February 13th at Joseph's in Avon, and February 15th at the UCR Heintz Center in Rochester.

Dr. Geoff Brink of the US Dairy Forage Research Center in Madison, WI, and Dr. Mike Murphy of the UMN College of Veterinary Medicine are this year's featured speakers. Dr. Brink, a UMN graduate, will share his latest research on alfalfa harvest timing effects on yield and quality trade-offs, and grass forage quality, species selection, and management. Dr. Murphy will discuss the importance of molds and mycotoxins in stored forage and when you should monitor them.

Dr. Paul Peterson, UMN State Extension Specialist, will present his latest research on alfalfa-grass mixtures, offering guidelines for grass species selection for mixtures with alfalfa.

Dr. Dwain Meyer, North Dakota State Univ. Forage Agronomist, will present his latest work on fall-harvest and fertilizer management of alfalfa at Detroit Lakes on February 12. Dr. Dan Kaiser, UMN's new Soil Fertility Extension Specialist, will team with Jim Salfer, Regional Dairy Extension Educator, to discuss forage nutrient management relationships with dairy cow feeding at Avon on February 13. Dr. Craig Sheaffer, UMN Forage Agronomist, will present his latest research on forage establishment innovations at Rochester on February 15, including an update on Roundup Ready alfalfa.

Regional Crops Extension Educators Lisa Behnken and Doug Holen will team with Local Extension Educators Vince Crary, Dan Martens, and Will Yliniemi to provide updates on local and regional forage projects. Jenna Larson, MFA's Local Council Director, will provide an update on MFA's productive year.

The UMN Extension Forage Team and MFA are grateful to the nine sponsors who are providing critical financial support for 2008 MN Forage Days. Those sponsors include DHIA Laboratories, BASF, Cargill, Croplan Genetics, Dairyland Seeds, Kemin AgriFoods North America, Monsanto, NK Brand Alfalfa, and Pioneer Hi-Bred International. Representatives of these industry partners will be at MN Forage Days.

Each meeting opens with registration at 9:30 am, presentations starting promptly at 10:00 am, lunch (included in registration fee) at noon, and adjournment at 3:00 pm. Proceedings, several publications, and other handouts will be provided as well.

Pre-registration is encouraged and appreciated, and will be rewarded with a discount. Registration for 2008 MFA members is \$15 in advance, or \$20 on-site. Non-MFA-members pay \$25 in advance or \$30 on-site. Participants are also encouraged to join MFA. Please pre-register with MFA staff at 651-484-3888 or midwestforage@comcast.net.

For more information, including detailed brochures and registration forms, visit www.extension.umn.edu/forages.

For location specific questions, contact Doug Holen at 218-998-5787 (Detroit Lakes), Dan Martens at 800-964-4929 (Avon) and Lisa Behnken at 888-241-4536 (Rochester). *Author: Paul Peterson, U of M Extension*

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Programs and Events

2008 Regional Forage Programs

February 12
Holiday Inn
Detroit Lakes, MN

February 13
Joseph's Restaurant
Avon, MN

February 15
UCR Heintz Center
Rochester, MN

Contact: Krishona at bjork026@umn.edu or 888-241-0719 for more information.

Northeast Forage Council Meeting

February 14
Savanna Portage
Floodwood, MN

Questions? Contact Russ at 218-327-4352

Forage Toxicity Issues for Livestock

The 2007 growing season proved to be a challenge for most farmers. As a result of drought and late season floods, some livestock producers are experiencing forage toxicity issues. Below are a few forage toxicity issues of which farmers should be aware.

Dicumerol: Yellow or white sweetclover (*Melilotus* species) that molds after baling has been associated with bleeding. Naturally occurring coumerol in the plant is converted to dicumerol by the mold. Dicumerol causes bleeding by reducing functional clotting factors in the blood. Cows may have abnormal bleeding at calving time, and may have weak calves.

Core sample hay to test for dicumerol.

Ergovaline: Tall fescue (*Festuca arundinacea*) infested with the endophyte *Neotyphodium coenophialum* produces the ergot alkaloid ergovaline. Ergovaline constricts peripheral blood vessels leading to fat necrosis, and “summer slump” in grazing livestock. Use only endophyte-free tall fescue.

Nitrate: Some undesirable broadleaf weeds can accumulate elevated amounts of nitrate. Corn stalks, some sorghum/sudan hybrids, and small grains may also accumulate nitrate. Nitrate reaches a toxic dose when the rumen microflora are no longer able to

reduce it all to ammonia. Sudden death and loss of late term feti are associated with nitrate toxicity.

Wild parsnip: In the last few years wild parsnip (*Patinaca sativa*) has been associated with sunburn, or photosensitization (both in dried hay and when eaten fresh). Wild parsnip may have a chemical in the plant (thought to be furocoumarins) that causes sunburn.

Dr. Mike Murphy is with the U of M Veterinary Diagnostic Lab and is a featured speaker at the 2008 MN Forage Days. Attend a 2008 MN Forage Day meeting near you to learn more. *Author: Mike Murphy, DVM, U of M*

Alfalfa Winter Damage & Seedling Diseases

As we look ahead to a successful year of alfalfa production in Minnesota, there are many things to consider that can affect how successful the crop will be. Among those factors are diseases that can damage established stands or seedlings.

Winter damage related to disease. At least two diseases can affect the survival of an established alfalfa crop over the winter in Minnesota, *Aphanomyces* root rot and brown root rot. *Aphanomyces* root rot can reduce nodulation, lateral roots, and winter survival in established alfalfa stands. Symptoms of this disease in adult plants include reduced nodulation, destruction of lateral roots, and stunting. A study in Wisconsin suggested that *Aphanomyces* root rot can increase winter root heave of alfalfa, and that planting *Aphanomyces* resistant cultivars may reduce this type of winter damage. This disease has been confirmed in southeastern and central Minnesota, but is likely to occur in many areas across the state.

Brown root rot is a fungal disease that kills and weakens plants in spring and fall and can increase winter kill. This soilborne fungal disease was first found in Minnesota in 2003, and has been confirmed in southeastern, southwestern, central, and northwestern Minnesota. Symptoms of brown root rot include root rot and stunted plants in 2-3 year old stands, and circular dark lesions on the tap root. Alfalfa cultivars with known resistance to brown root rot are not available.

Diseases during seedling establishment. Diseases that kill alfalfa seedlings can be a major concern for successful stand establishment. Three diseases of particular importance are *Aphanomyces* root rot, *Phytophthora* rot, and *Pythium* rot. *Phytophthora* and *Pythium* often kill seedlings rapidly before plants become severely discolored, whereas *Aphanomyces* tends to kill seedlings plants more slowly while causing stunting and yellow-purple discoloration. These diseases are favored by wet soil conditions and

may be reduced if slowly drained fields can be avoided. Treatment of seed with the fungicides metalaxyl (Allegiance) or mfenoxam (Apron XL) provides protection against *Phytophthora* and *Pythium*, however, fungicides are not available to manage *Aphanomyces* seedling blight of alfalfa. Many alfalfa cultivars have excellent resistance to *Phytophthora* and *Aphanomyces*. Cultivars with resistance to *Pythium* are not available.

Alfalfa diseases are an unwelcome challenge at any time of the year. It pays to choose the right varieties, follow good seeding and crop management practices, and to scout fields to determine which (if any) diseases are causing problems so that appropriate steps can be taken to maximize yield and quality.

For help with diagnosis of alfalfa diseases, contact or send samples to the University of Minnesota Plant Disease Clinic in St. Paul (612) 625-1275, or <http://pdc.umn.edu>. *Author: Dean Malvick, PhD, U of M.*

Alfalfa and Grass Yield and Quality Trade-Offs

Dr. Geoff Brink of the US Dairy Forage Research Center is a featured speaker at the 2008 MN Forage Days. The research information that follows is just a sampling of what he'll present. Attend a 2008 U of M Forage Day meeting near you to learn more.

ALFALFA. The trade-off between alfalfa yield and quality is greatest early in the growing season when alfalfa is growing rapidly, whereas quality of harvests made later in the growing season are less influenced by maturity. That's based on research with three alfalfa varieties harvested 4 times per year in Wisconsin (WI) and Pennsylvania.

On average, dry matter yield increased 100 lb/acre/day in May, 80 lb/acre/day during June and July, and only 20 lb/acre/day in September. Forage quality of early-season cuttings changed faster than later-season cuttings. Crude protein (CP) declined 0.3% per day in May compared to 0.2% per day in June,

July, and September; while NDF increased 0.4% per day in May and June, 0.3% per day in July, and only 0.2% per day in September.

In contrast, NDF digestibility declined more rapidly during summer (0.45% per day in June and 0.35% per day in July) than during spring (0.15% per day) or autumn (0.30% per day).

GRASSES. Among cool-season grasses, timing of cutting/grazing is most critical for Kentucky bluegrass, reed canarygrass, and tall fescue due to rapid rates of decline in their digestibility with maturation, particularly in spring and summer. That's based on research on 10 grass species harvested to a 4-inch stubble at two WI locations.

Leaf and stem yields were greater in northern than southern WI during spring and summer, but similar in autumn. In spring, Kentucky bluegrass and smooth brome grass were the most productive grasses,

averaging 1500 lb leaf and 800 lb stem per acre after 20 days regrowth. Perennial ryegrass had the least DM yield above 4 inches, averaging 800 lb DM/acre with little stem. Tall fescue produced the greatest summer and autumn yields (1000 to 2000 lb DM/acre).

During spring, leaf and stem CP were 3 to 5% greater in northern than southern WI. Leaf CP of all grasses except Kentucky bluegrass and tall fescue generally remained above 20% up to 20 days regrowth. NDF digestibility of all grasses was greatest in spring (average 70%) and least in summer (average 60%). Overall, greatest NDFD occurred in spring perennial ryegrass and autumn meadow fescue.

Authors: Geoff Brink, Mike Casler, Marvin Hall, Glenn Shewmaker, Neal Martin, Dan Undersander and Rick Walgenbach. US Dairy Forage Research Center, Penn State, Univ. of Idaho, and Univ. of Wisconsin

The Challenge of Feeding Dairy Cattle in 2008

Feeding your dairy herd in 2008 is going to be a challenge due to the high cost of supplementing the forage base in the diet. For that reason, the emphasis on high quality forage will be a key to reducing additional costs of feeding dairy herds in 2008.

In the original feeding pyramid, about 40-50% of the diet was based on forages. As we consider feeding cows in 2008, we would like to have as much forage in the diet as possible because forages tend to be the lowest cost per pound of the major ingredients (Figure 1). One key question needs to be asked: What do you need to add to the top of the pyramid to balance your cow's diets? Typically, grain, supplemental protein, minerals, and vitamins are fed.

As cows milk more per day, additional (but usually more

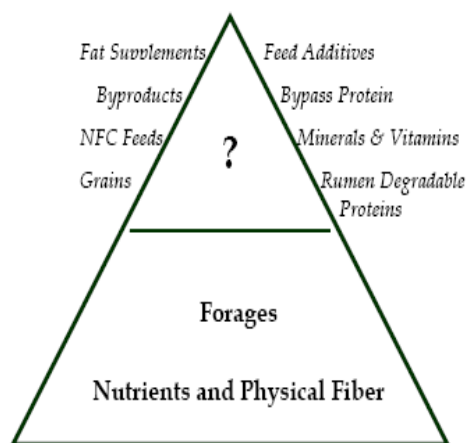


Figure 1. The 2008 Forage Feeding Pyramid for Dairy Cattle (Paulson, 2008).

expensive) feed ingredients are added to the diet to meet the demands of high production. These ingredients are toward the top of the pyramid. Home grown forages usually cost less than five cents per

pound even for high quality alfalfa. Forage from pasture may cost even less.

Quality forage involves optimizing cutting, harvesting, and preservation, followed by testing. Digestibility of dry matter and NDF (Neutral Detergent Fiber) is greater in forages harvested at a younger maturity. Forages that test greater than 165 RFQ (Relative Feed Quality) enable farmers to feed more forage in the dairy cow's diet.

For additional information on feeding dairy herds in 2008, visit the U of M Dairy Extension web site at: www.extension.umn.edu/dairy. There you will find a spreadsheet to help calculate the cost/head/day to feed dairy cattle.

Author: Jim Paulson, U of M Extension.

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U of M Extension Livestock Programs

Livestock producers can attend several U of M Extension Programs in January, February, and March.

The 2008 **Regional Dairy Meetings** will be conducted in March at four locations. Locations and dates are Rochester (March 3), New Ulm (March 4), Detroit Lakes (March 11) and Sauk Centre (March 12). The Regional Dairy Meetings will be sponsored by the Minnesota Milk Producers Association in cooperation with the University of Minnesota Extension Dairy Team. For more information, visit the Extension Dairy website at www.extension.umn.edu/dairy.

The 2008 U of M **Beef Team Cow/Calf Days** will be conducted in February at ten locations. Locations and dates are Mora (February 4), Staples (February 5), Bagley (February 5), Greenbush (February 7),

Grand Rapids (February 8), Glenwood (February 12), Pipestone (February 13), Houston (February 14), Rochester (February 14), and New Prague (February 15). For more information, visit the Extension Beef website at www.extension.umn.edu/beef.

The 2008 **Regional Horse Owner Programs** will be conducted at five locations in February and March. Locations and dates are St. Paul (February 2), North Mankato (February 9), Morris (March 1), Bemidji (March 8) and St. Paul (March 15). Programs are sponsored by Nutrena and the Minnesota Horse Council. Pre-registration required. For more information, visit the Extension Horse Website at: www.extension.umn.edu/horse.

Alfalfa Varieties for 2008

Yield, more than anything, determines return per acre of alfalfa. Selecting alfalfa varieties with high yield potential is fundamental to harvesting high yields and profit. The yield advantage realized with good alfalfa varieties quickly trivializes their greater seed cost.

The University of Minnesota continues to test yield potential of alfalfa varieties marketed in Minnesota at six locations across the state. Most varieties can do well in one site and year, but true yield potential requires performance testing

across multiple sites and years. The 10 top-yielding alfalfa varieties in current tests, based on performance across six or more Minnesota site-years, are listed in Table 1.

For more information about alfalfa variety selection and performance, visit the U of Forage website www.extension.umn.edu/forages.
Authors: Paul Peterson, Craig Sheaffer, Joshua Larson, Doug Swanson, Lisa Behnken, Doug Holen, and Russ Mathison, U of M.

Table 1. Minnesota's Top 10 Alfalfa Varieties and their Averaged U of M Trial Yields for 2008

Variety	Hay (tons/A) 15% Moisture	Company	Websites
4S419	7.3	Dairyland Seed Co.	www.dairylandseed.com
Lightning III	7.3	Jung Seed Genetics	www.jungseedgenetics.com
Rebound 5.0	7.3	Croplan Genetics	www.croplangenetics.com
6415	7.1	Garst Seed Co.	www.garstseed.com
Genoa	7.1	NK Brand	www.nk-us.com
6420	7.0	Garst Seed Co.	www.garstseed.com
54V46	7.0	Pioneer Hi-Bred Int.	www.pioneer.com
54Q25	6.8	Pioneer Hi-Bred Int.	www.pioneer.com
53Q30	6.8	Pioneer Hi-Bred Int.	www.pioneer.com
Legendairy 5.0	6.8	Croplan Genetics	www.croplangenetics.com