Grass Clippings

pasture research you can use

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UW Extension • UW-Madison Center for Integrated Agricultural Systems and College of Agricultural and Life Sciences • UW Agricultural Research Stations

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Growing green

This week feels like we are finally going to shake winter's grasp on Wisconsin and get on with spring. Last night I checked some fences to see how they fared due to winter snows (and deer) and walked over several pastures. It was exciting to see grass and clover growing again after so many months of "the white stuff"!

This issue has several articles with interesting topics for your consideration. Meadow fescue is re-emerging in Wisconsin as a pasture species of interest. Astute farmer observations, Wisconsin's farming history and cutting edge DNA research all contribute to the research article series that geneticist Mike Casler of the Dairy Forage Research Center

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Pure live seed

Dan Undersander, Agronomy Department, University of Wisconsin Extension

We have paid little attention to Pure Live Seed (PLS) in the Midwest because we have generally had high quality seed (greater than 90 percent germ and 98 percent purity). But the short forage seed supply has caused some low quality seed to come on the market. To avoid being caught paying market price for low quality seed, take special care to check the seed tag and compare PLS among lots of seed to be purchased.

A bag of seed consists of inert material such as dust, chaff, and seed coating; weed and other crop seed; and PLS of the desired species. Since every seed lot has a different analysis, and only pure live seed will produce plants, it is important to calculate the PLS in a bag. This calculation will allow accurate price comparison and adjustment of seeding rate, if necessary.

Begin by checking the sample seed tag for the analysis. First, find the percent germination. This is the percent of seeds that germinated in a standard test. Most of our crops have been greater than 90 percent germination and we have seldom made any adjustments. But with some short forage supplies, some lots of seed may have germinations as low at 60 percent. Check the label so you are not caught off guard.

Next, find the percent purity on the seed tag. This is the percent of the weight in the bag that is actually seed. High quality seed lots will be over 95 percent purity, but seed coating, for example, may reduce the seed purity to 70 percent. Multiply percent germination times percent purity and divide by 100 to find the PLS. For example: (95% germ. × 70% purity)/100 = 66.5% PLS. This lot of seed only has 66.5 lbs actual live seed for every 100 lbs of material.

Use PLS to determine the best seed buy

Since PLS is what will produce plants in the field or pasture, with varying seed qualities, seed cost per pound must be adjusted for the PLS to accurately compare seed prices. To find out what you're really paying, first determine the PLS of seed you're considering, as described above, then divide the cost per pound by the PLS to get the cost per pound of PLS.

For example: $4.00 per lb/70% PLS x 100= $5.71 per lb of PLS or $4.00 per lb/90% PLS x 100 = $4.44 per lb of PLS.

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begins in this issue. Following up on his presentation at the 2008 Wisconsin Grazing Conference, Nick Schneider discusses recent pasture soil fertility research and Dan Undersander provides a quick guide to understanding the concept and economic importance of determining pure live seed content. I hope you enjoy this spring issue as well as those green pastures covering our state!

Regards,
Rhonda

Grass Clippings features grazing-related research news from the University of Wisconsin and beyond.

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Pure live seed *... from page 1*

The table below gives actual seed costs for 50 lb bags of seed with varying prices and PLS.

Table 1. Pure Live Seed Cost for 50 pounds of seed based on seed purity and cost per bag

	Sale Price of 50 Pound Bag								
% PLS	**$125.00**	**$137.50**	**$150.00**	**$162.50**	**$175.00**	**$187.50**	**$200.00**	**$212.50**	**$225.00**
95	$131.58	$144.74	$157.89	$171.05	$184.21	$197.37	$210.53	$223.68	$236.84
90	$138.89	$152.78	$166.67	$180.56	$194.44	$208.33	$222.22	$236.11	$250.00
85	$147.06	$161.76	$176.47	$191.18	$205.88	$220.59	$235.29	$250.00	$264.71
80	$156.25	$171.88	$187.50	$203.13	$218.75	$234.38	$250.00	$265.63	$281.25
75	$166.67	$183.33	$200.00	$216.67	$233.33	$250.00	$266.67	$283.33	$300.00
70	$178.57	$196.43	$214.29	$232.14	$250.00	$267.86	$285.71	$303.57	$321.43
65	$192.31	$211.54	$230.77	$250.00	$269.23	$288.46	$307.69	$326.92	$346.15
60	$208.33	$229.17	$250.00	$270.83	$291.67	$312.50	$333.33	$354.17	$375.00

Use PLS to adjust seeding rate

To determine needed seeding rate, check the seeding rate recommendations with the hay and pasture seeding rate calculator at www.uwex.edu/ces/forage/ or in UW Extension publication A1525, available at local county extension offices. If PLS seeding rate is less than 85 percent of those shown, you should adjust the seeding rate according the calculated PLS.

For example, if the PLS is 70 percent and you intend to seed 10 lbs per acre:
10 lbs/70% PLS x 100 = 14.3 lbs.

This is a significant difference. If you hadn't made this adjustment, you'd be about 40 percent under the target seeding rate.

Many times, purity and germination are high enough that a significant adjustment will not be necessary. However, even seed with 90 percent purity and 90 percent germination will have 20 percent less viable seed than you think if you don't consider PLS. Don't overlook PLS when you buy or plant forage seed.

Upcoming events

Wisconsin grazing schools
River Falls: June 10-11
Gleason: June 24-25
Fond du Lac: July 22
Richland Center: August 19-20

Includes sessions on economic considerations in grazing, agronomics, soil fertility, pasture monitoring and grazing systems layout and design. Registration fee: $75 per person ($35 for second person from same farm). Includes meals. Fond du Lac school is one day only and cost is $35. Contact: Dennis Cosgrove, UW-River Falls, 410 S. 3rd Street, River Falls, WI 54022, 715-425-3345, dennis.r.cosgrove@uwrf.edu

Lancaster field day
UW Lancaster Agricultural Research Station Profitable Pastures, August 15, 2008
To register: Contact Rhonda Gildersleeve, 608-935-0391, rhonda.gildersleeve@ces.uwex.edu or Arin Crooks, 608-723-2580, aecrooks@wisc.edu

Meadow fescue: the forgotten grass, part one

Michael Casler, U.S. Dairy Forage Research Center, Madison, WI; Edzard van Santen, Auburn University, Auburn, AL; Michael Humphreys, IGER, Aberystwyth, Wales; Toshiko Yamada and K. Tamura, Hokkaido University, Sapporo, Japan; Nick Ellison, AgResearch, Palmerston North, New Zealand; Randy Jackson, Department of Agronomy, University of Wisconsin, Madison, WI; and Charles Opitz, Hidden Valley Farms, Mineral Point, WI.

European settlement of Wisconsin began during the early 1800s. In particular, settlement in the driftless (unglaciated) region of southwestern Wisconsin (Paleozoic Plateau), largely dominated by the oak savanna ecosystem, focused on lead and zinc mining and the agriculture required to feed miners and their families. As cattle were brought into the region, grazing soon removed most of the oak savanna understory, which was gradually replaced by grasses introduced from Europe, one of which was meadow fescue.

Meadow fescue was commonly used for pasture and hay production in the United States during the 19th century and thought to have been introduced from Great Britain before 1800. As agronomic research gained momentum during the early 20th century, trials of new forage grasses soon identified tall fescue (Festuca arundinacea Schreb. = Lolium arundinaceum (Schreb.) Darbysh.) as having considerably higher forage yield and better disease resistance than meadow fescue, particularly in the southeastern United States. By the 1940s, USDA seed production statistics indicate that tall fescue had completely replaced meadow fescue in the livestock industry of the United States. This was largely due to the development of the variety KY-31. Meadow fescue did not appear again to any significant degree until the grazing movement of the 1980s, when it was recognized for superior forage production, livestock acceptance and utilization, and desirable grazing characteristics, largely from our on-farm grazing trials of the early 1990s.

During the 1990s, Charles Opitz discovered an unusual and unknown grass growing on a small part of Hidden Valley Farms near Mineral Point, Wisconsin. Recognizing that this grass was spreading across his farm, most likely from seeds ingested by grazing livestock, he began to bale hay from areas in which seed had been allowed to ripen. By feeding these bales of hay on other pastures during winter, he soon had established this grass onto several hundred acres during the 1990s.

The objectives of our work on the Opitz farm were to (1) identify the species of grass on this farm, (2) determine if pasture longevity is due to survival of individual plants

Cows graze near a remnant oak savanna on the Opitz farm—the original site where meadow fescue was identified

or to seed production and seedling recruitment, and (3) identify potential habitat differentiation within the population of plants on this farm.

In September 2002, we sampled 17 sites on Hidden Valley Farms. Sites were chosen to represent a range of habitats on the farm, ranging from stream bottoms to hilltops, with a maximum elevation range of 30 m, including hillsides with north or south aspects, and one site in the deep shade of a bur oak grove. Plants were sampled using a spoke-and-wheel design in which one center plant was identified and eight equidistant spokes were sampled at intervals of 1, 2, 4, and 8 feet from the center for a total of 33 plants. One tiller per plant was sampled within a radius of 2” of the each pre-determined sampling point.

Three soil cores, 8” in diameter and 8” deep, were collected from each sampling site. Each soil core was spread out in flats in the glasshouse and watered to encourage germination of seeds. All germinated meadow fescue seeds were counted after four weeks. Following the germination test, soil samples were washed and all seeds were collected and inspected for presence of meadow fescue seeds.

DNA was extracted from each plant and analyzed for several types of DNA markers. Control plants

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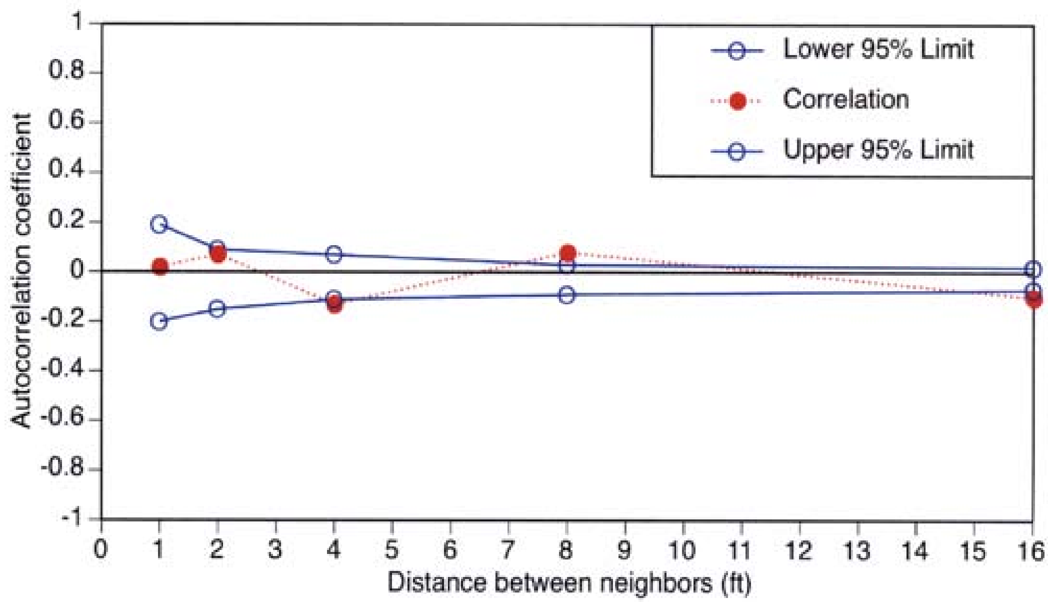
Fig. 1. Correlation coefficients of genetic relationships between neighboring plants, as a function of distance between neighbors. Values outside of the 95% band are significantly different from zero.



Meadow fescue... *from page 3*

representing 10 geographically diverse accessions of perennial ryegrass, Italian ryegrass, meadow fescue, and tall fescue were established at the same time.

The germination test and the soil screen revealed no meadow fescue seeds or seedlings, indicating that there was no seed bank of meadow fescue at Hidden Valley Farms at the time of sampling in September 2003. Autocorrelation analyses revealed no relationships between autocorrelation and distance between sampled plants within any of the 17 sampling sites (one of 17 sites shown in Fig. 1). Autocorrelations analyses were sufficiently precise to detect some significant correlation coefficients, but no relationships were detected. The small size of the correlation coefficients and the lack of relationship indicated that neighboring plants are no more related to each other than non-neighboring plants. These results all indicate that this population of plants has not been propagated by additional sexual reproduction since its initial establishment by on-pasture feeding with bales of seed-ripe hay during the 1990s. Sexual reproduction, followed by seedling recruitment, would lead to mothers and daughters in very close proximity, which was not observed for any of the 17 sampling sites. Thus, individual plants sampled on our survey have survived many years of intermittent drought, freezing stress, and grazing pressure and appear to be reasonably long-lived. Many of these plants are upwards of 8” in diameter, very healthy, and growing in a dense monoculture.

Cluster analysis based on DNA markers provided clarification of the identity of the unknown grass (Fig. 2 on next page). The cluster analysis provided three nearly discrete clusters: ryegrasses, including both species; tall fescue; and meadow fescue, including all 11 of the unknown plants tested. It is clear from these DNA markers, and supported by additional tests, that the unknown plants from the Opitz farm are meadow fescue. All counts of chromosome numbers confirm that they have the expected number of chromosomes for meadow fescue, the diploid number of 14.

We have three possible hypotheses regarding the origin and introduction of meadow fescue into this region of

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Sampling meadow fescue plants using the spoke-and-wheel design

Meadow fescue... *from page 4*

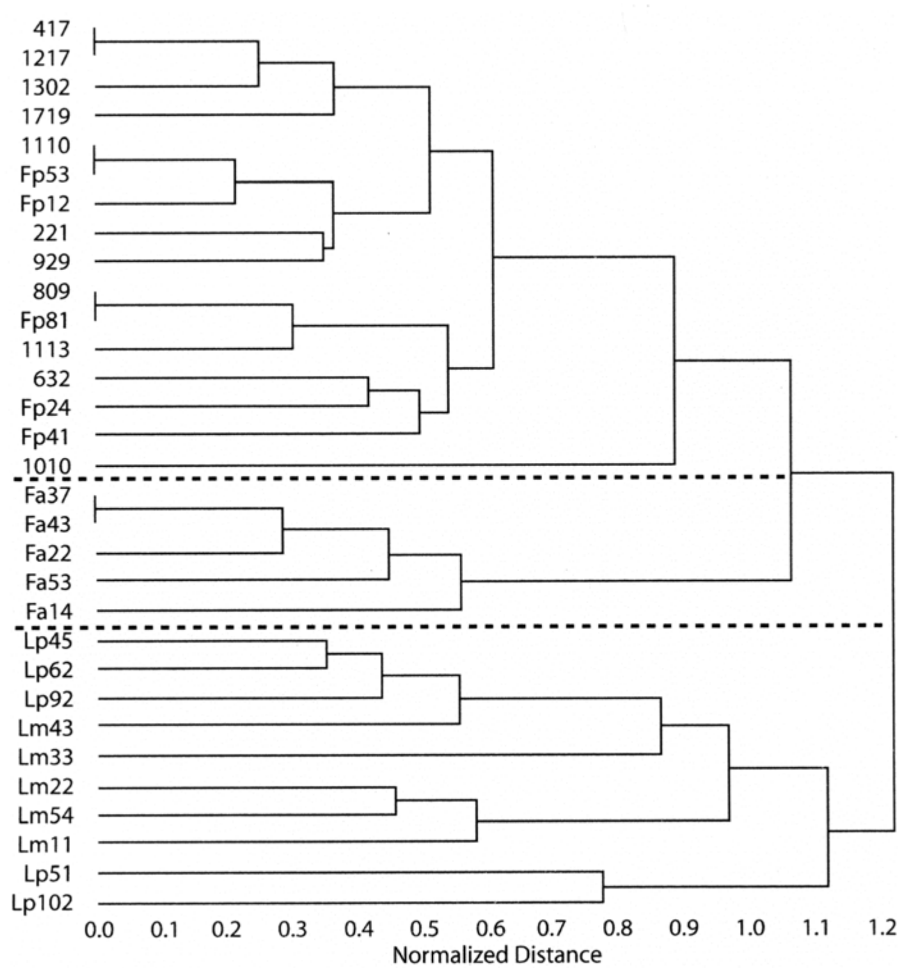
Wisconsin—the hypotheses are not mutually exclusive.

1. The primary immigration hypothesis involves direct immigration of Europeans to Wisconsin, including meadow fescue seed from their homeland, largely northern Europe or higher altitudes of southern Europe and southwestern Asia.

2. The secondary immigration hypothesis involves immigration of descendants from the original European immigrants, including meadow fescue populations that resided in the United States since the original immigration. Consistent with both of these hypotheses, our survey has determined that the highest concentration of remnant meadow fescue populations occurs in the region associated with the historic Military Ridge Road.

3. The summer/winter pasture hypothesis involves immigration of meadow fescue to the mid-South of the United States for autumn-winter-spring grazing, followed by shipment of cattle on railroads to southwestern Wisconsin for summer grazing. This practice was very common in the late 19th and early 20th centuries, leading to the possibility of multiple introduction events of meadow fescue seed ingested by cattle just prior to their journey to northern pastures.

Fig. 2. Cluster diagram of genetic relationships between perennial ryegrass (Lp), Italian ryegrass (Lm), tall fescue (Fa), meadow fescue (Fp), and unknown plants from Hidden Valley Farms (numbers 221 through 1719). The length of each horizontal line signifies the strength of the genetic relationship, with shorter lines indicating close relatives and longer lines indicating more distant relatives.



Using plants we collected on the Opitz farm, we established a seed production field at the UW-Madison Arlington Agricultural Research Station and produced Breeder's Seed of the new variety, Hidden Valley, in 2007. Charles Opitz named the variety after the farm from which it was collected. We are currently in the process of formalizing the release of this variety through the USDA-ARS and moving our Breeder's Seed into the seed multiplication process. We expect commercial seed of Hidden Valley Meadow Fescue to be available possibly as early as 2011 or 2012.

Further work on meadow fescue collections will be required to identify the more likely of these hypotheses, to identify the potential European origin of these meadow fescue populations, and to identify the distribution and range of adaptation of this "forgotten" meadow fescue population.

Two very different types of dairy farming yield equal satisfaction, UW-Madison survey indicates

College of Agricultural and Life Sciences, University of Wisconsin-Madison

What type of dairy farmer would you expect to be more satisfied with life?

One who owns a large confinement farm, milks hundreds of cows, raises hundreds of acres of row crops, hires many employees and invests heavily in field equipment, feed storage and waste management?

Or one who milks fewer than 100 cows and feeds them in large part on carefully managed pasture, moving them as often as twice a day, relying mostly on family labor and investing considerably less in equipment and facilities?

It turns out that both answers are right. Farmers who follow either of these divergent paths in modern dairy farming are equally satisfied with the quality of their lives. And they are more satisfied than those who operate smaller confinement farms or less intensive grazing operations, according to a survey of 1,300 Wisconsin dairy farmers by University of Wisconsin-Madison researchers.

Farmers who use different farming systems do differ somewhat in how they evaluate their own satisfaction, but not in the ways some might expect, according to the survey.

Managed graziers place more importance on hard-to-measure dimensions of life, such as opportunities for new challenges and creativity. Large confinement operators also valued such intangibles, but they gave similar weight to measurable achievements such as income, yields and property.

"Managed graziers are less concerned about material matters. They are more concerned with process and the harder-to-define aspects of what makes someone happy and prosperous in the fullest sense," says rural sociologist Michael Bell, a co-author of the study.

"But those things are also very important to the large-confinement farmers," he adds. "For both groups, satisfaction is about more than material things. It's not just about money. That may surprise some people (who) assume that (operators of large farms) are just motivated by material kinds of things. That did not show up in our survey."

The researchers learned this by providing a list of various activities and experiences — such as earning money, being creative, having outside interests, providing jobs and being a steward of the land — and asking respondents to numerically rate how important they found each to be.

The results do not explain why those operating large-confinement and managed grazing farms express more satisfaction than those operating smaller confinement or less intensive grazing operations. But based on what they heard from focus groups, the authors suspect that the greater satisfaction has to do with the activity of creating something new and different.

"You get the feeling that they are on the trajectory of positive change," says Sarah Lloyd, a research assistant on the project. "They're making a change; they're actively engaged in making their operations successful."

In contrast, she says, those with non-intensive pasture operations and small confinement operations may be farming much as their parents did and may feel stuck as input costs go up and milk prices fluctuate.

Both large-confinement and managed-grazing operators also have the support of organizations that are geared toward their type of farming, adds Lloyd.

"Graziers have grazing networks. Large confinement operators have organizations like Professional Dairy Producers of Wisconsin. They're getting positive feedback from these groups. I think that's part of satisfaction," she notes.

Understanding dairy farmers' life satisfaction is important — both for the farmers themselves and for policymakers — when making decisions about farming and farm systems, the researchers write in a report on their findings.

"Without offering a satisfying life, even the most profitable and ecologically sound forms of agriculture will not be sustainable," they write.

The report, called Milking More Than Profit, Life Satisfaction on Wisconsin Dairy Farms, is published by the UW-Madison Center for Integrated Agricultural Studies and available online at www.cias.wisc.edu.

Influence of fertility on pasture species diversity, yield and quality, part one

Nick Schneider, Winnebago County UW Extension Agriculture Agent

A Grazing Lands Conservation Initiative funded study was performed at the Marshfield Agricultural Research Station during 2006 through 2007 to better understand the influence of fertility on pasture species diversity, yield, and quality. Two locations of pasture forage mixtures were established. The high fertility location was planted on April 26th while the low fertility location was planted on May 19th in 2006. Soil samples were also collected at the beginning of the study and at the end of the growing seasons of 2006 and 2007. Manure was analyzed for nutrient content in 2006 and 2007, and then averaged. There were four replications of each fertility treatment at each location. All plots were planted with two pounds per acre (lbs/a) of white clover, eight lbs/a red clover, four lbs/a Kentucky bluegrass, and six lbs/a orchardgrass. This mixture represents a typical pasture sward on grazing farms in north central Wisconsin. Fertility treatments are based on recommendations from *Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin*, soil group D, low soil test category (Laboski et al., 2006). Nutrient application rates in 2006 were based on seeding year recommendations, while 2007 rates were based on established stand recommendations.

Table 1. Beginning and End Soil Nutrients

Low Fertility Location

	pH		Organic Matter %		Potassium ppm		Phosphorus ppm	
	S. 2006	F. 2007	S. 2006	F. 2007	S. 2006	F. 2007	S. 2006	F. 2007
Untreated	6.7	6.5	2.8	2.7	56	42 cd	31	26
N	6.5	6.5	2.9	2.9	54	33 d	33	25
N+P+K	6.9	6.6	2.9	2.9	52	55 ab	30	26
P	6.8	6.6	2.9	2.8	60	41 cd	31	28
K	6.8	6.5	2.9	2.8	53	55 ab	30	25
K+B+Ca+S	6.9	6.7	3.0	2.9	50	63 a	31	26
Manure	6.8	6.7	2.9	2.9	55	47 bc	31	27
Average	6.8	6.6	2.9	2.9	54	48	31	26
P-Value	0.0348	0.4126	0.3105	0.2171	0.8145	0.0001	0.1578	0.6209
LSD (0.05)		NS	NS	NS	NS	10	NS	NS

High Fertility Location

	pH		Organic Matter %		Potassium ppm		Phosphorus ppm	
	S. 2006	F. 2007	S. 2006	F. 2007	S. 2006	F. 2007	S. 2006	F. 2007
Untreated	7.0	6.8	3.1	3.1	158	115 bc	55	44
N	7.0	6.7	3.0	3.1	151	93 c	53	41
N+P+K	7.0	6.8	3.0	3.1	153	154 a	58	48
P	7.0	6.9	2.9	3.1	168	123 b	40	47
K	7.1	7.0	3.0	3.1	146	158 a	53	45
K+B+Ca+S	7.1	6.9	3.1	3.2	154	156 a	58	49
Manure	7.0	6.8	3.1	3.2	172	152 a	50	47
Average	7.0	6.8	3.0	3.1	157	136	52	46
P-Value	0.0405	0.1047	0.1682	0.3274	0.2489	<0.0001	0.741	0.3666
LSD (0.05)		NS	NS	NS	NS	23	NS	NS

2007 Treatments

1. Untreated
2. Nitrogen (N) = 50 lbs/a on April 18th, 40 lbs/a on June 19th and July 23rd for a total of 130 lbs/a.
3. A2806 Pasture, managed grass (N+P+K) = 50 lbs/a N on April 18th, 40 lbs/a on June 19th and July 23rd for a total of 130 lbs/a. 30 lbs/a P_2O_5 and 225 lbs/a K_2O on May 21st.
4. Phosphorus (P) = 30 lbs/a P_2O_5 on May 21st.
5. Potassium (K) = 210 lbs/a K_2O on May 21st.
6. A2809 Pasture, managed legume/grass + micronutrients (K+B+Ca+S) = 210 lbs/a K_2O, 28 lbs/a Ca, 25 lbs/a S, and 1 lb/a boron on May 21st.
7. Manure: 2 tons/acre after first four harvests. 8 total tons/manure per acre. 22 lbs/a N, 20 lbs/a P_2O_5, 68 lbs/a K_2O, and 4 lb/a S.

Results

Soil fertility

The pH, organic matter percentage, potassium, and phosphorus were determined for all samples at the beginning and end of the study (Table 1). Additionally, boron, calcium, magnesium, sulfur, and manganese were measured in the untreated and K+B+Ca+S treatments. When soil fertility of treatments was compared in the fall of 2007, the only nutrient clearly demonstrating differences was potassium. At the low fertility location, the

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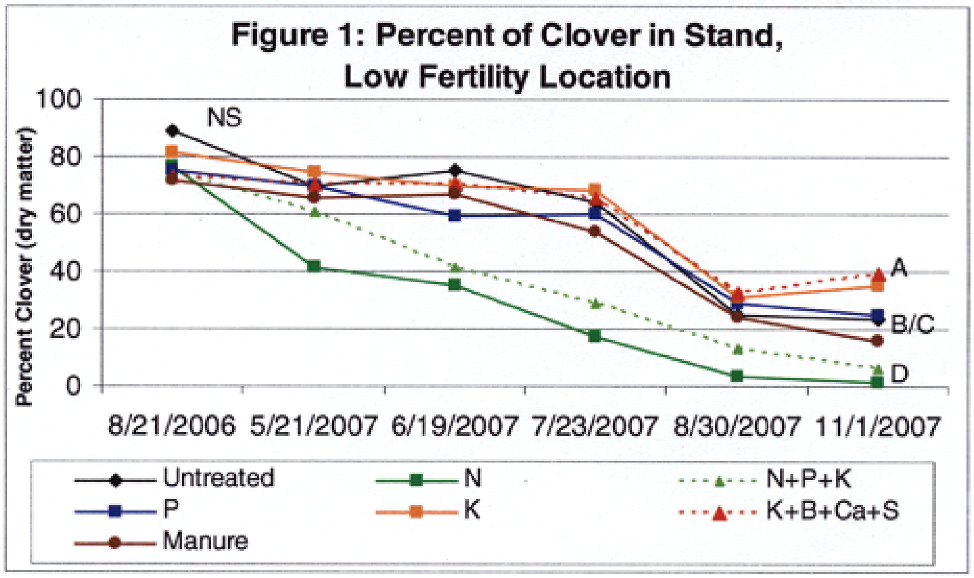

presented as the percent of clover (from weighed dry matter) in Figure 1. Starting in the spring of 2007, then throughout 2007, there was a decline in clover percentage when commercial nitrogen fertilizer was applied. This trend supports the widespread assumption that applications of commercial sources of nitrogen can contribute to displacement of clover through robust grass growth.

The untreated, phosphorus, potassium, potassium with micronutrients, and manure applied plots had similar percentages of clover from August 2006 through August 2007. By the fall of 2007, treatment differences were more apparent. Potassium-based treatments had the highest proportion of clover with 35 to 39% of the sward derived from clover. The phosphorus and untreated check treatments consisted of 25 and 24% clover, respectively. Clover in the manure only treatment dropped to 16% of the sward. It is possible the nitrogen cycling from the manure contributed to more aggressive grass growth; thereby displacing some clover. This may indicate manure on pastures may be a contributor to the decline of clover when pastures have a relatively large amount of manure. Further research is needed exploring this interaction.

Pasture fertility... *from page 7*

untreated, N, P, and manure treatments had soil potassium that was less than the K+B+Ca+S treatment. The other two treatments, which contained potassium fertilizer, had soil potassium equal to K+B+Ca+S. The high fertility location had similar trends with the untreated, N, and P treatments resulting in lower potassium. Lack of potassium supplementation contributed to declines in soil potassium.

Pasture species diversity

Nutrient treatments have the ability to influence pasture species diversity. Changes in species diversity are

July 23 '07, Low Fertility Location: Nitrogen Treatment (Left), Potassium Treatment (Right)

Watch for more results discussing yield and forage quality in the next issue of *Grass Clippings*.

References

Laboski, C.A.M., J.B Peters, L.G Bundy. 2006. A2809 *Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin.* University of Wisconsin-System Board of Regents. 34, 44, 48-49.

Wisconsin beef industry survey shows management strategies

Jeff Lehmkuhler, Extension Beef Cattle Specialist, UW-Madison
Jennifer Taylor, UW-Madison Center for Integrated Agricultural Systems

The beef industry in Wisconsin is growing. Beef cow numbers increased about 10 percent between 2000 and 2005, and there were approximately 245,000 beef cows in Wisconsin in 2005. Beef cows, beef heifers over 500 pounds, steers and other heifers (excluding dairy heifers) accounted for nearly 23 percent of the total cattle population in the state in 2005, according to the Wisconsin Agricultural Statistics Service. This growth appears to reflect an increase in the number of operations, along with the expansion of existing operations.

How do Wisconsin beef farmers manage their herds? A 2006 survey sheds some light on this and other issues including feeding practices, sales and income. This survey was conducted by CIAS in cooperation with UW Extension Beef Cattle Specialist Jeff Lehmkuhler. The questionnaire was sent to 400 likely beef farmers in Wisconsin chosen randomly from a list of 2,500 self-identified participants. The results of this survey are not statistically representative of the state's beef industry, as it was not possible to obtain a list of all Wisconsin beef producers. However, with a seventy percent response rate, the results provide good information about the practices used by many Wisconsin beef farmers.

The majority of beef cattle operations in Wisconsin in 2006 were cow-calf enterprises of about 45 cows, owned by the farmer-operator who ran the farm business. Sixty percent of survey respondents operating a beef farm had a commercial beef cow-calf herd. Some farmers had more than one type of beef enterprise: 34 percent of respondents ran a feedlot operation, 32 percent had a seedstock enterprise, 20 percent direct marketed their beef, 7 percent had stocker operations and 1.8 percent were organic. Stocker operations were typically running 30 head per year, while finishing beef cattle enterprises had about 40 head.

The size of beef farms in Wisconsin was similar to that of Wisconsin dairy farms. Apart from a few farms with thousands of acres of cropland and pasture, the typical beef operation owned 265 acres, leased an additional 47 acres and used about 180 acres for cropland and 60 acres for pasture. Pasture stocking density averaged one cow-calf pair or stocker per acre.

Most of the beef farmers participating in this survey fed raised or purchased hay for 150 to 180 days per year. Participating farmers with cow-calf herds raised their cattle primarily on pasture.

Nearly 8 out of 10 of these farmers supplemented their herds with zero to three pounds of grain per head per day. Another 13 percent of beef farmers fed their cattle three to six pounds of concentrate, while only a few farmers fed more. Less than 10 percent of farmers finished their beef cattle on pasture, though nearly two-thirds of those farmers used a grain supplement.

Pasture management approaches used in beef grazing tend to be less intensive than in dairy grazing. Labor inputs are also typically much lower in beef operations. Nearly 80 percent of the beef enterprises in this survey were part-time income activities. Eighty-five percent reported that they did not improve their pastures. The most commonly reported improvement was fertility enhancement through mechanically applied manure or chemical fertilizer. While about one-third of farmers continuously grazed their beef cows, 40 percent moved their cattle approximately every two to four weeks. Three-quarters started their grazing seasons between April 30 and May 15, 2005, and most ended their grazing seasons between October 30 and November 15.

In 2005, the respondents sold about 40 beef cattle on average, although this number ranged from 0 to 4,500. Over half sold their livestock at auction barns.

Nearly a third sold cattle directly off the farm, and ten percent direct marketed meat. Farmers received, on average, $101 per hundred pounds of liveweight in 2005. Prices were much higher for seedstock and show animals.

Since beef was a part-time enterprise for most of the responding farmers, half of them had non-farm jobs that

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Custom heifer raising on pasture: a viable option

UW-Madison Center for Integrated Agricultural Systems

Managed grazing offers an option for dairy producers who want their heifers raised in a cost efficient manner. But the primary clients for custom heifer raisers in Wisconsin are operators of larger confinement dairy farms. How do they feel about having their heifers raised on pasture? As it turns out, most feel positive about heifers on pasture.

This question was at the forefront of a 2006 Wisconsin dairy producer survey developed by a team including Pat Hoffman of the UW-Madison Dairy Science Department, Don Schuster of the UW-Madison Center for Integrated Agricultural Systems, and Arlin Brannstrom of the UW-Madison Center for Dairy Profitability.

Respondents to the survey identified their farms as grazing operations (100 responses), conventional operations (605 responses) or confinement operations (71 responses). Grazing operations were defined as those that attempt to harvest up to one-half of their herd's forage needs using a grazing system. A conventional dairy farm milks 50 to 150 cows using stored feed and primarily family labor. A confinement dairy farm milks cows in a parlor, houses cows in a freestall barn and relies primarily on hired labor.

The three farm types vary in their use of custom rearing for calves and heifers. Six percent of the grazing operations and over seven percent of the confinement operations had female calves custom raised, with no custom calf rearing for the conventional operations that responded to the survey. Three percent of the grazing operations, over three and one-half percent of the confinement operations, and one percent of the conventional operations used custom grazing for heifers.

How many farmers either used or had considered custom raising? This varied significantly by farm type. Eighty-eight percent of the confinement operations, 43 percent of the conventional operations and 21 percent of the graziers had either used or considered using custom raising services. "These results suggest that confinement dairy farmers consider custom rearing as a business option more so than graziers or conventional dairy farmers, indicating that confinement dairy farmers would be a more likely set of clientele for custom calf and heifer rearing operations," says researcher Hoffman.

When asked 'Do you think that feeding and managing heifers on pasture has positive or negative implications for the health of the animals?' nearly 90 percent of the graziers responded positively or very positively. For confinement dairy farmers, nearly 75 percent held positive or very positive views about pasture for heifers. And nearly 72 percent of conventional dairy farmers were either positive or very positive about heifers reared on pasture. This suggests that people wishing to develop a pasture-based custom heifer rearing business would not be limited by preconceptions about the effect of grazing on the health and productivity of dairy heifers.

But when dairy producers were asked if they were interested in having heifers custom grazed just over the growing season if it saved money, they gave a mixed response. Forty-two percent of the graziers were interested, but only 22 percent of the confinement farmers and 30 percent of the conventional dairy farmers were interested. Confinement operators are unlikely to use custom heifer grazing unless it is part of a single source, year-round operation.

Dairy producers' primary concern about custom calf and heifer raising was cost. Disease was also a concern, primarily for the confinement operators.

For custom calf and heifer raisers to appeal to most Wisconsin dairy farmers, they need to manage animals at one farm throughout the year. They must also control disease. If they can provide high-quality service at a competitive cost, they will be on track to build successful custom heifer raising businesses. For more information, contact Pat Hoffman, UW Extension Dairy Scientist, at the Marshfield Agricultural Research Station at 715-387-2523 or pchoffma@wisc.edu or Don Schuster, UW CIAS Economist, 608-262-7879 or djschust@wisc.edu.

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provided their main support. Another 27 percent derived most of their income from other farming enterprises, and about 12 percent lived mainly on retirement income.

Two-thirds of those surveyed had household incomes between $50,000 and $200,000 from all sources, and over 80 percent were satisfied with their quality of life. In addition, most had grown up on a farm and 40 percent had dairy farmed at one time.