UW Extension Grazing Teaching & Technology Conference Proceedings

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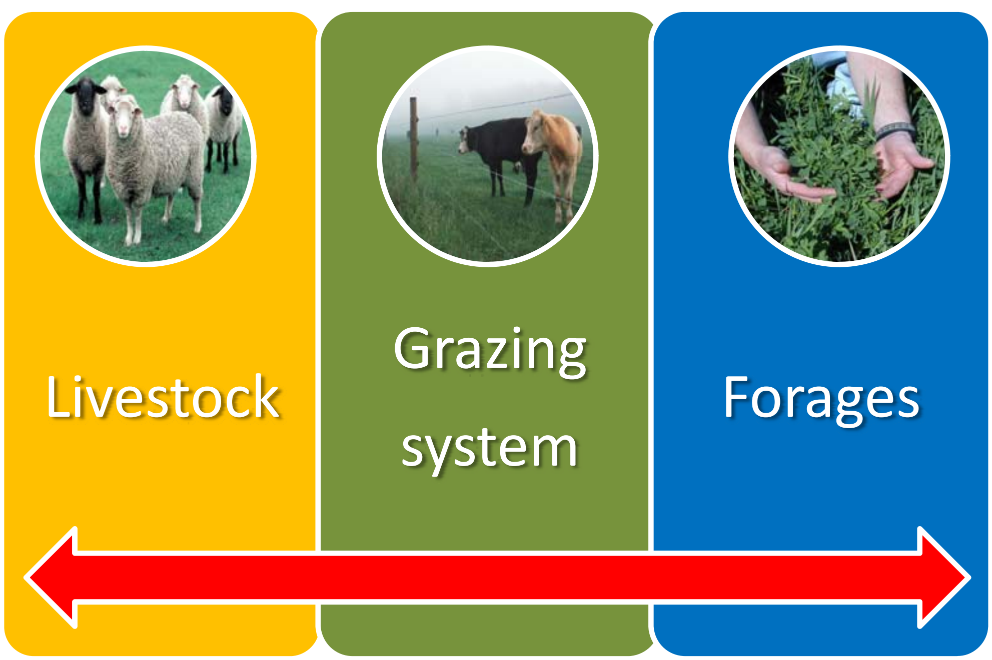
US Dairy Forage Research Center, rural Prairie du Sac



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GLCI Research Project Summaries

Ken Barnett, UW-Extension and Laura Paine, Grazing and Organic Agriculture Specialist,
Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP)

The Grazing Lands Conservation Initiative (GLCI) is dedicated to the protection and improvement of private grazing lands. The organization's mission is to expand the use of profitable, grazing-based livestock production systems that foster environmental stewardship. This is accomplished through high quality technical assistance to livestock producers, university and producer coordinated research, and educational programs.

Since 1999, the Wisconsin GLCI has managed a grant program focused on expanding the promotion, research and development of grazing systems on private lands. Over those years, almost $8 million has been allocated from federal and state sources to fund projects that expand the use of profitable, grazing-based livestock production systems that foster environmental stewardship. Each of these dollars has been matched with an additional $1.40 in partner contributions. Wisconsin continues to be a leader in fostering the development of grazing-based farm businesses built upon the foundation provided by the Wisconsin GLCI.

GLCI funded projects are engaged in by variety of agencies and non-profit organizations partnering with local dairy and livestock farmers to identify and address the grazing educational, research and technical assistance needs with in their community. These unique partnerships are doing their part to ensure that Wisconsin livestock agriculture remains profitable and growing while being friendly to our environment and our neighbors. Outcomes of these projects are documented in an annual GLCI program report that can be accessed at the DATCP website: http://datcp.wi.gov/Farms/Grazing/Grazing_Grants/index.aspx.

Approximately one-fourth of the GLCI grant funds each year have been set aside for research projects, amounting to more than $1 million since 2004. To help make the results of research projects more available for use around the state, an effort was started this year to develop short summaries of projects for use in newsletters, news releases, etc. To date, eight summaries have been completed. More summaries will be completed in the next year. These summaries can be found on the DATCP Grazing website: http://datcp.wi.gov/Farms/Grazing/Grazing_Grants/index.aspx.

Cover Crop Grazing Demonstrations in Iowa County

Gene Schriefer, Ag/Ag Business Extension Agent, UW-Extension Iowa County

Introduction:

Interest in incorporating cover crops into agronomic systems has been gaining attention. Research in North Dakota, Illinois, Ohio, Michigan and Pennsylvania is demonstrating consistent, quantifiable benefits to cover crops. A Midwest cover crop survey showed that slow adoption by producers is due to lack of familiarity, concern about seeds costs, time and in Wisconsin case, length of season.

A common cover crop in our region of southwest Wisconsin would be winter wheat or rye following corn silage harvest. Traditionally, we think about a "cover crop" as something that's planted to grow when land would otherwise be left fallow for a portion of the year. Frequently they are not harvested but left on the field to protect soil, and reduce soil wind and water erosion, or in the case of winter wheat/rye, harvested the following year. There are a variety of cover crops which can be seeded for different purposes, and can be planted at different times of the year.

Some of the benefits of cover crops include:

- Reducing fertilizer costs – deep rooting plants can scavenge nitrogen and access subsoil nutrients and hold them within the plant until they decompose. Leguminous cover crops capture and store atmospheric nitrogen.
- Improving soil health – deep roots improve water infiltration, break through compaction zones, increase nutrient cycling, adding to soil organic matter.
- Reducing herbicides – smother summer and winter annual weeds, produce compounds which reduce nematode populations and improve soil microbial life.
- Reduce soil erosion, scavenge excess soil nutrients and improve water infiltration, leading to improve water quality.

ARS research on cover crops in the Dakota's began with a variety of single species seedings, then began combining into simple then complex "cocktail" mixtures, the most complex had 8 different species. Their results demonstrated higher yields moving from single species to complex mixtures following wheat harvest.

In 2008 I submitted a SARE Farmer/Producer Grant and a in 2010 SARE Mini Grant to help fund this, I've also gotten a donations of seed from a few companies.

Cover crop mixes appear to offer some potential solutions for grazier's and possibly confinement dairies needing alternative times of the year to apply manure and still get quality forages.

Questions we've been trying to answer:

- ✓ Are complete mixes the best option, or should we have separate summer/fall mixes.
- ✓ Could incorporating a summer cover crop either early or late, with either warm or cool season species, provide some of the benefits of cover crops, provide feed for cattle, and give producers another window or two under more favorable conditions to apply manure?
- ✓ What if we planned to leave some acres in hay, took first cutting of forage, killed and then applied all manure we'd stored up to that point and seeded in a summer crop, harvest the summer crop, apply more manure in August and seeded in a 3rd crop for fall?
- ✓ What if we took an August cutting of hay, killed, applied manure and seeded a fall cover?

Project Descriptions

2009 - Seeded a 7 species cocktail of warm and cool season varieties in late July, grazed in October and stockpiled the rest into December.

2010 – Seeded a simple two species summer mix after 1st cutting hay in late June, and a second fall mix of 5 species in late August, and complex season long mix.

2011 – Continued with simple summer mixture and fall seedings.

Results and Discussion

2009 – Orchardgrass/Red clover - hayed in May, grazed in June, July, sprayed with Glyphosate and no-till drilled with 7 species. Too much residue left from grazing, germination initially very uneven. 5400 lbs dry matter by early October.

2010- June was wet, which delayed the first cutting at Site 1 until late in the month. With the late seeding date, only a single cutting was possible rather than the planned two cut. Forage yields were between 3-3.3 tons/acre within a 55 day period. Later seeding allowed producer to apply 10 tons of dairy manure.

Figure 1 - Sorghum/Sudangrass & Cowpeas – July, 2010

The cover crop mixture, Site 2 - Austrian peas/oats/crimson clover/annual ryegrass/tillage radish, was a cool season only species with the intent of growing later into the fall. Frost kills warm season forages such as a sorghum/sudan and cowpeas, yet southwest Wisconsin still has 30-45 days post-frost of cool falls in which cool season species can continue to accumulate dry matter.

Figure 2 - Site 2 Cool Season Cover Crop Mixture – late September, 2010

Rain and soil moisture limited development of this mixture, germination and establishment was excellent and all species in the mixture were present, but lack of rain restricted any significant development of this cover. An early seeding may have resulted in great forage dry matter. No-till seeding (Figure 3) would have conserved soil moisture but was not a viable option as Site 2 is an organic dairy.

Lessons learned:

Figure 3 - No till radish in 2010, limited moisture

Figure 4 - 2011 Peas/Oats/Pasja

1) Cover crops can produce quality forage.
2) Adequate soil moisture is essential to for higher yields.
3) Livestock utilization is exceptionally good (too little residue?)
4) We do have alternative cover crops beyond wheat and rye that can provide additional services in terms of improving soil quality factors.
5) July seeding dates produced acceptable yield for complete complex mixes.
6) Earlier seeding dates for both early summer and late summer seeding should have resulted in somewhat higher yields. This is very weather dependent.
7) Determining seeding rates for mixtures, needs to improve to keep seed costs reasonable for producers. I've adapted Dan Undersander's seeding rate spreadsheet to help with this.
8) Cover crops take a higher level of management.
9) Some cover that are supposed to die over winter, don't.

Factors Affecting Profitability on Wisconsin Dairy Farms

Marion Dutreuil*[1], Victor Cabrera[1], Rhonda Gildersleeve[2], and Claudia Hardie[1];
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A survey was implemented on 131 Wisconsin dairy farms to understand the impact of farm management practices on profitability. Farms were selected across 3 systems: conventional (C), grazing (G) and organic (O). The O farms were certified organic, the G farms were using pasture as the main source of feed during the grazing season, which was at least 120 days long, and the C farms were the non-organic, non-grazing farms. The objective was to characterize main factors associated with profitability. A cluster analysis using complete linkage was conducted on 20 farms as preliminary analysis: 4 O, 4 G and 12 C. The analysis resulted in 3 clusters. Cluster 1 included 1 O, 2 G and 6 C farms; cluster 2 included 4 C and 1 G farms; and cluster 3 included 3 O, 1 G and 2 C farms. Cluster 1 included farms with the largest land base (284 acres) but intermediate values for milk production (15,582 lbs/cow per year), milk composition (3.78% fat and 2.99% protein) and milk price ($16.73/cwt). Although estimated dry matter intake (DMI) during the winter was the highest (52.0 lbs of DMI/cow per day), percentages of each diet ingredients in winter were intermediate compared with farms in clusters 2 and 3 (20% grass silage (GC), 32% hay, 12% corn silage (CS) and 36% concentrates (CO)). Farms in cluster 1 can be defined as “intermediate farms” with an IOFC of $5.97/cow per day. Cluster 2 included farms essentially similar to cluster 1 in terms of number of cows (71) and land base (234 acres). The estimated dry matter intake during the winter was intermediate on those farms compared with farms in cluster 1 and 3 (44.8 lbs of DMI/cow per day). Milk production (23,731 lbs/cow per year) and percentage of concentrate in the diet (46%) were the highest, while milk composition (3.55% fat and 3.03% protein) and milk price ($15.82/cwt) were the lowest. Farms in this cluster can be defined as “*productive efficient farms*” with an IOFC of $8.09/cow per day. Cluster 3 included farms with the smallest land base (133 acres) and the fewer number of cows (48). Milk composition (4.36% fat, 3.25% protein) and price ($21.82/cwt) were the highest, while milk production (9,140 lbs/cow per year) and estimated dry matter intake during the winter (39 lbs of DMI/cow per day) were the lowest. Forages were the main constituents of the winter diet of the cows on those farms (17% GS, 54% hay, 5% CS). Farms in cluster 3 can be defined as ”*low input farms*” with an IOFC of $5.22/cow per day. Each cluster included farms from different systems. Farms in each cluster are more similar to those in the same cluster than to other farms with the same system in another cluster. Consequently, preliminary results suggest that the farm system is not a good predictor of profitability. Variables such as milk production, milk price, or feeding management practices play a more important role in describing dairy farms’ profitability.

Key words: Cluster analysis, farm profitability, farm management.

Stocker Cattle Growth Response when Grazing Fertilized Monocultures or Mixed Legume-Fescue Pastures

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Departments of Animal Sciences[1] and Agronomy[2]

Recent high corn costs have prompted a renewed evaluation of forages in beef cattle production systems. The role of beef cattle in human food production is to convert humanly indigestible cell wall biomass into a humanly digestible source of protein and energy, which is meat. Cost of forage is an important consideration in beef cattle production systems. Forage that is grazed by cattle is less expensive than forage which is mechanically harvested and then fed.

Stocker cattle are steers or heifers that have recovered from the stresses of weaning, castration, dehorning, and marketing. The aim for stocker cattle management is to inexpensively grow these cattle using forage diets. This kind of animal is ideal for evaluation of forage species in a pasture system because they do not have the confounding influence of lactation, which is the case for lactating beef cows, and their use in a rotational grazing system is free of the challenges associated with maintaining nursing calves within a paddock. In addition, stocker cattle typically weigh 500-700 lbs at the beginning of the grazing season which implies that they are immature animals with much remaining skeletal and muscle growth potential. With the exception of salt and mineral supplementation, adequate stocker cattle growth can be nourished by only forage biomass. Therefore, stocker cattle can be an effective bioassay for ruminant animal productivity based on chosen pasture forage plant species.

Rotational grazing systems have been shown to result in more forage productivity and cattle weight gain per acre. Forage species vary in their suitability for incorporation into rotational grazing systems. The purpose of this research project was to evaluate two grass species for their biomass productivity and nutritional quality when incorporated into a rotational grazing system.

Tall fescue is common to the southeastern U.S. and is the principal forage for beef cattle production in that region. It is productive in the spring and fall, and tolerates intense grazing pressure. However, its principal disadvantage is that it is infected with an endophyte that causes fescue toxicity when fescue seedheads are grazed by cattle in the summer months. From the ruminant perspective, cattle display an avoidance of tall fescue when given access to other cool-season grass species. Plant breeders have improved tall fescue by removing the fungal endophyte from tall fescue seed and by imposing selection pressure for a softer, less-serated leaf surface. Hence, soft-leaf, endophyte-free tall fescue is now available for seeding into pastures. Little research has been done to test the suitability for tall fescue in pastures found in latitudes as far north as Wisconsin.

Meadow fescue has been found to be extensively distributed in southwestern Wisconsin. It has flourished in intensively-managed, rotationally-grazed pastures. Much of the research conducted thus far in Wisconsin has examined the origin and geographical distribution of meadow fescue (Casler and van Santen, 2000) agronomic characteristics (Brink *et al.*, 2010) and ability to support milk production by dairy cows. Little research has been conducted with ruminants in which meadow fescue was the sole source of grazed energy and protein.

All swards populated by grass species benefit from the introduction of nitrogen. Nitrogen can be added to the forage system via application of nitrogen-containing fertilizer, e.g., urea, the interseeding of a leguminous species, or the provision of protein-containing supplemental feed to grazing ruminants which then excrete fecal and urinary nitrogen. The former two methods of nitrogen augmentation were employed in this project. Urea involves an energy-intensive production process, and has therefore become an expensive nitrogen-containing fertilizer. However, it is a standard against which legumes can be compared for the purpose of determining the relative economic value of legume interseeding.

White clover has benefited from improvement via plant breeding programs. Recent cultivars are more productive in grazing systems. Most research with improved white clover cultivars and similar weather as WI has been conducted in New Zealand. Our objective was to evaluate the productivity and persistence of white clover in a Wisconsin rotational grazing system.

The objective of this study was to determine total animal gain per acre while observing animal performance, and forage quality and productivity over three grazing seasons. Four pasture treatments with three replicates were established with either ‘Pradel’ meadow fescue (MF) or ‘Bariane’, soft-leaf, endophyte-free tall fescue (TF), with (C) or without (NC) ‘Alice’ white clover. Nine tester animals were allotted to each pasture treatment and were allowed to graze for 188 or 137 d (yr 1 and 2, respectively) following a rotational grazing management system. Monoculture grass pastures were supplied with 170 or 120 lbs N per acre (yr 1 and 2, respectively). Excess pasture production was utilized by the addition of put and take animals throughout the grazing season. The 12 pastures were maintained to allow similar forage allowances across treatments. Internal parasite control was accomplished with anthelmintics and confirmed via fecal sample observations over the grazing season.

Results from the 2010 and 2011 seasons show that grass type and inclusion of white clover in the sward had an effect on overall ADG ($P<0.05$), 2.24, 2.02, 1.86, 1.55 lbs/d (MF-C, MF, TF-C, TF, respectively). The percentage of clover in the sward decreased from yr 1 to 2, and averaged 36% across both years. Mineral intake was greater for clover pastures and greater for MF than for TF ($P<0.05$). Pounds of dry matter available was greater for TF than for MF (2640 vs. 2380, P <0.05) and decreased with the inclusion of white clover (2610 vs. 2410, $P<0.05$). Animal gain per acre was increased by the inclusion of white clover (759 lbs vs. 638 lbs, $P<0.05$). Carrying capacity (lbs/ac) was greater for TF than MF (1720 vs. 1490, $P<0.05$). Adding clover to the pasture sward increased percent CP, IVTD, Ca, Mg and decreased NDF in the available forage ($P<0.05$). It was also observed that 75% of tester pinkeye cases came from treatments with TF in the sward (data not shown). An evaluation of revenue and expenses revealed that the TF treatment in both years was associated with the highest revenue per acre, but MF-C had the highest profit per acre. The inclusion of white clover rather than urea supplementation improved profit per acre by $178 and $148 per acre for TF and MF, respectively. In summary, these results show that the inclusion of white clover with either TF or MF increased animal gain per acre by increasing animal growth rate during the grazing season, even though forage DM available was reduced by inclusion of clover.

This project was supported by Hatch funding administered by the College of Agricultural and Life Sciences, as well as in-kind support from Barenbrug USA Seed Co.

Literature Cited:
Brink, G. E., M. D. Casler, and N. P. Martin. 2010. Meadow fescue, tall fescue, and orchardgrass response to defoliation management. Agron. J. 102:667-674.
Casler, M. D. and E. van Santen. 2000. Patterns of variation in a collection of meadow fescue accessions. Crop Sci. 40:248-255.

Pasture Production

Treatment	DM Available[1]	Carrying Capacity	Gain per acre
	lbs	lbs/acre	lbs
Tall fescue	2760[a]	1820[a]	648[b]
TF-C	2530[b]	1630[a]	740[a]
Meadow fescue	2460[b]	1460[b]	628[b]
MF-C	2290[c]	1520[b]	779[a]
SEM	50	56	26

[1]Average of clipped samples collected weekly during wk 1-8 and biweekly during wk 9-26

Pasture Quality

Treatment	% Clover	% CP	% IVTD	% NDF	% P	% Ca	% K	% Mg
Tall fescue		16.1[b]	79.3[d]	56.6[a]	0.34	0.31[c]	3.02[a]	0.30[b]
TF-C	36.6	17.8[a]	83.6[b]	48.3[b]	0.34	0.60[a]	2.93[a]	0.35[a]
Meadow fescue		16.1[b]	81.6[c]	56.2[a]	0.34	0.43[b]	2.56[c]	0.24[d]
MF-C	36.5	18.4[a]	85.2[a]	49.1[b]	0.34	0.60[a]	2.78[b]	0.27[c]
SEM	1.2	0.3	0.3	0.4	0.01	0.01	0.04	0.01

Cattle Performance

Treatment	Start wt	Overall ADG	End wt	Min Intake[1]
	lbs	lb/d	lbs	Oz/d
Tall fescue	574	1.55[d]	817[c]	0.90[c]
TF-C	577	2.02[b]	898[a]	1.00[c]
Meadow fescue	573	1.86[c]	867[b]	1.20[b]
MF-C	564	2.24[a]	922[a]	1.50[a]
SEM	6	0.04	8	0.06

[1] Mineral intake only recorded in year 2.

[a,b,c] Within columns, means followed by the same superscript are not different (*P*>0.05).

Economic Evaluation of Treatments

	Values are Per Acre 2010				Values are Per Acre 2011			
	TF	MF	TFC	MFC	TF	MF	TFC	MFC
Total Income	$ 3,056	$ 2,652	$ 2,840	$ 2,845	$ 3,027	$ 2,391	$ 2,718	$ 2,558
Profit/loss	$ (224.69)	$ (78.58)	$ 27.68	$ 126.20	$ (93.87)	$ (30.71)	$ 10.33	$ 59.84
ROI	-6.8%	-2.9%	1.0%	4.6%	-3.0%	-1.3%	0.4%	2.4%

Characterization of certified organic Wisconsin dairy farms: Management practices, feeding regimes and milk production

Claudia Hardie*[1], Victor Cabrera[1], Marion Dutreuil[1], and Rhonda Gildersleeve[2],UW-Madison[1] and UW-Extension[2]

The purpose of this study was to characterize certified organic Wisconsin dairy farms and evaluate their feeding regimes during the course of 2010. Farms were identified by cross listing two separate directories: the Wisconsin Active Dairy Producers and the Wisconsin Certified Organic Producers. All resulting organic dairy herds from these lists were invited to participate (N=565) in this study. An on-sight survey containing sections on farm demographics, feeding, pasturing, cropping and nutrient management practices, sources of income, and farm satisfaction was conducted on 70 organic farms. Results from 66 farms are presented in Table 1 on the following page.

Based on this survey data, an average organic farm in Wisconsin has been certified organic for 6.65 years but grazing for twice as long. It operates 303 acres with one-third of the land being in pasture. Its herd consists of 69 cows and 59 female young stock. Its milk production is 13,798 lbs/cow per year with fat and protein contents of 3.98% and 3.15%, respectively. Cows in this average organic farm first calve at 26.1 months of age, calve every 390 days afterwards, and remain in the herd for 4.51 lactations. The estimated DMI is 43.5 lbs/cow per day with an estimated 69.3% of intake coming from pasture during the peak grazing season. As indicated by the ranges and SD displayed in Table 1, certified organic Wisconsin dairy farms varied widely in farm characteristics, feeding regimes, and animal production. Awareness of these extreme variations should help design extension programs and agricultural publications better suited to meet the educational needs of this growing dairy sector.

Table 1: Characteristics of the surveyed organic Wisconsin dairy farms.

Trait	n	%	Minimum	Maximum	Average	SD
GENERAL						
Number of years certified organic	66	-	0.67	20	6.65	4.74
Number of years utilizing grazing	63	-	0	90	14.7	13.4
Total land (ac)	66	-	44	1915	303	326
Total pasture (ac)	66	-	15	360	98.6	78.0
Number of decision makers	66	-	1	5	2.38	0.97
Age of the respondent (years)	65	-	18	74	49.5	13.3
Raised on farm (% of respondents)	64	84.8	-	-	-	-
Relied entirely on family labor (% of farms)	66	43.9	-	-	-	-
DAIRY HERD						
Number of cows	66	-	12	650	69.2	85.8
Number of heifers	66	-	9	600	59.3	80.5
Milk production (lbs/cow per year)	66	-	5,190	22,630	13,798	3,970
Fat content (%)	60	-	3.47	5.19	3.98	0.35
Protein content (%)	60	-	2.82	3.67	3.15	0.18
SCC (x1,000 cells/ml)	60	-	97.5	707	244	99.4
Number of lactations before culled	66	-	2	7	4.51	1.16
Length of dry period (d)	66	-	35	140	63.4	15.8
Calving interval (d)	66	-	300	608	390.0	37.5
Age of first calving (months)	65	-	23	36	26.1	2.72
Purchased dairy replacements (% of farms)	66	10.6	-	-	-	-
Used bulls (% of farms)	66	60.6	-	-	-	-
Used AI (% of farms)	65	72.3	-	-	-	-
Predominant breed was Holstein or Holstein+Holstein crossbreds (% of farms)	66	57.6	-	-	-	-
FEEDING/GRAZING						
Estimated total DMI (lbs/cow per day)	64	-	26	62	43.5	8.2
Estimated peak pasture intake (% of total DMI)	63	-	1	100	69.3	26.1
Grazing rotation frequency (d)	62	-	0.21	14.0	1.81	2.61
Length of grazing season (d)	65	-	122	244	184	29.0
Supplemented grain (% of farms)	66	81.8	-	-	-	-
Supplemented protein (% of farms)	65	12.3	-	-	-	-
Supplemented corn silage (% of farms)	65	35.4	-	-	-	-

Use of Mob Grazing and Other Control Options for Canada Thistle

Anders Gurda and Mark Renz
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Introduction:

Canada thistle (*Cirsium Arvense*) has been identified as a problem weed in Wisconsin pastures. It can reduce forage yield and utilization, both of which can have a negative impact on animal performance. Abatement typically involves the use of herbicides, an effective control that has been well-researched and documented. Though effective in controlling Canada thistle, herbicides also kill clovers, which are highly desired in Wisconsin pastures. Others have recommended grazing methods such as Mob grazing to control Canada thistle, but they have not been widely studied. Studies conducted in Canada have shown that two intense defoliations a year with an increased stocking rate (similar to Mob grazing) can control or eliminate CT populations within 2 years. Our research is designed to compare the effectiveness of rotational grazing with and without an herbicide to Mob grazing. It is our hope that these experiments will improve our understanding of the potential costs and benefits associated with different weed abatement strategies used to control Canada thistle populations and provide users with information on how to implement these strategies appropriately to maximize effectiveness in controlling Canada thistle.

Methods:

This research focuses on four treatments suggested by a focus group composed of farmers, researchers, Extension agents, and agency staff. We are assessing the efficacy and cost-effectiveness of a rotationally-grazed control, the application of an herbicide followed by rotational grazing, mob grazing for one year followed by rotational grazing, and mob grazing for two years. Research is being conducted on three separate pastures with four replications at each site. Our sites represent a diversity of topography, land use history, forage composition, and type of cattle used, from cow calf beef operations to replacement heifer herds. The research is being conducted at the US Dairy Forage Research Center (Prairie du Sac, WI), on the farm of a private producer, Rambr Emrich (Hollandale, WI), and Lancaster Agricultural Research Station (Lancaster, WI). They range in productivity and species diversity, from least to greatest, in the order listed. Prairie du Sac is primarily Kentucky bluegrass, Rambr's is orchardgrass, Kentucky blue grass, and red clover, and Lancaster is predominantly fescue and Kura clover. At each site there are 16 separate paddocks (four reps) that are arranged in a complete block design ranging from 750 $ft.^2$ to 1,500 $ft.^2$ depending on the size of the thistle population at each location.

While dependent on environmental conditions, we expect six to eight grazing events throughout the season for the control and herbicide treatments at 60,000 lbs. of cattle per acre. The rotational plots are grazed when forage reaches 10 to 14 inches and grazed down to a 4 inch residual. The mob grazing treatments are grazed twice, once in the spring and once in the fall at 400,000 lbs. of cattle per acre. Plots are grazed when >75% of the grass has reached inflorescence and the CT is just beginning to flower. A 4 inch residual is also our aim for the mob treatments though much of the forage is trampled and not utilized.

Measurements are taken before and after each grazing event from 3-4 2.69 ^{ft2} (.25 m^2) quadrats, depending on the site. Data is collected on total forage available, total forage utilized, percent utilization, plant height pre and post graze, and CT cover pre graze. Biomass is separated into four categories: Canada thistle, grass, clover, and ‘other’. Forage quality analysis on pre samples will be conducted using NIRS at the end of each season. This experiment will be conducted from 2011-2013.

Results:

Results presented are from the 2012 field season. In this season we have had two rotational grazing events at Prairie du Sac and Hollandale, and three at Lancaster. All sites have had one mob grazing event. Below are results from the most productive site (Lancaster) and least productive site (Prairie du Sac). This comparison illustrates the site-specific nature of this study and illuminates the potential differences among treatments. At Lancaster total forage available was similar between the rotationally grazed control and mob treatment while the herbicide treatment had less forage (Figure 1). In contrast, at Prairie du Sac the Mob treatment had higher forage available than both rotationally grazed treatments (Figure 3). Utilization of Canada thistle was greater with the mob treatment compared to the other treatments; however, grass utilization differed. At Prairie du Sac the mob treatment utilized the most grass whereas the mob treatment utilized the least at Lancaster. We believe these differences are related to pasture composition and productivity. While we will be assessing effectiveness of treatments on Canada thistle control this fall we have observed that the herbicide treatment eliminated Canada thistle and clovers at both sites and resulted in nearly all-grass pastures.

Figure. 1: Total forage available from grazing treatments conducted through July at Lancaster, WI.

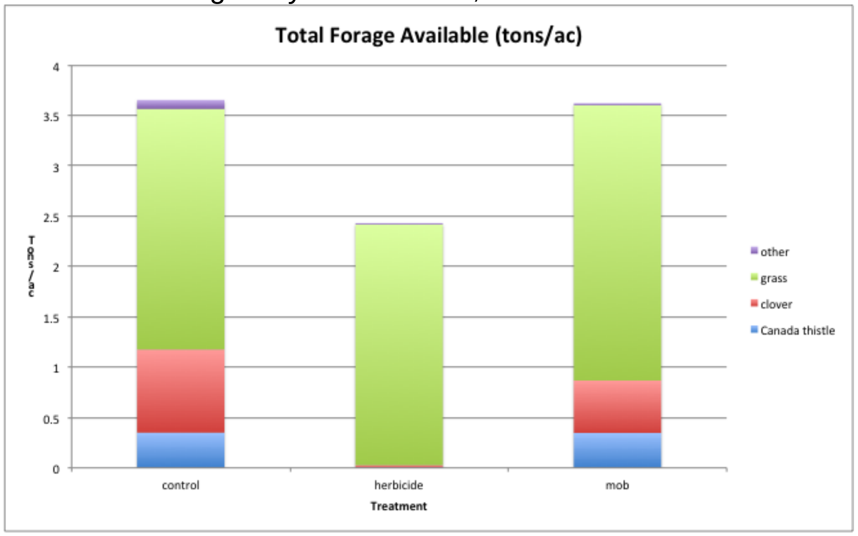


Figure. 3: Total forage available from grazing treatments conducted through July at Prairie du Sac, WI.

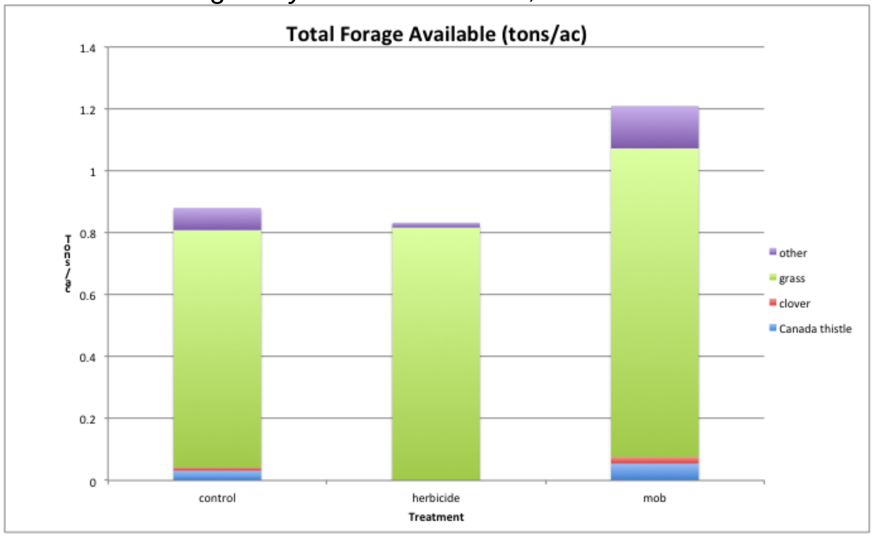


Figure 2: Estimate of forage utilized from grazing treatments conducted through July at Lancaster, WI.

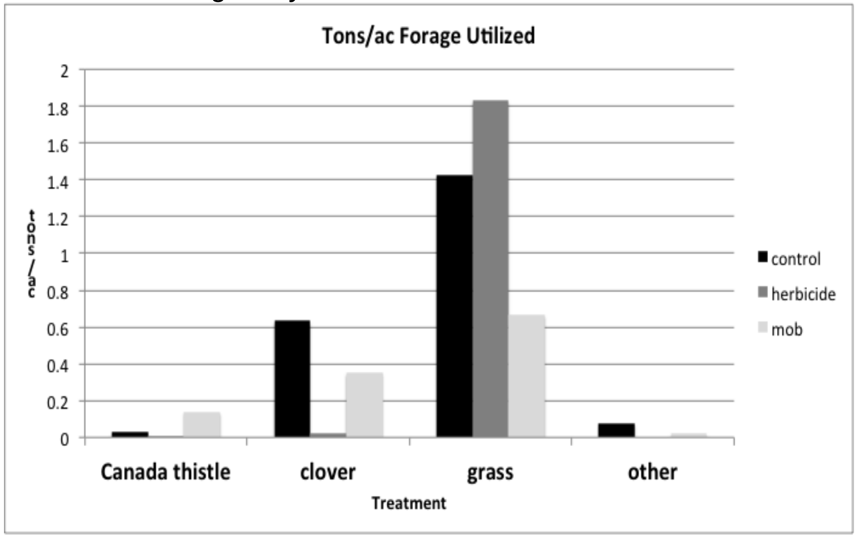
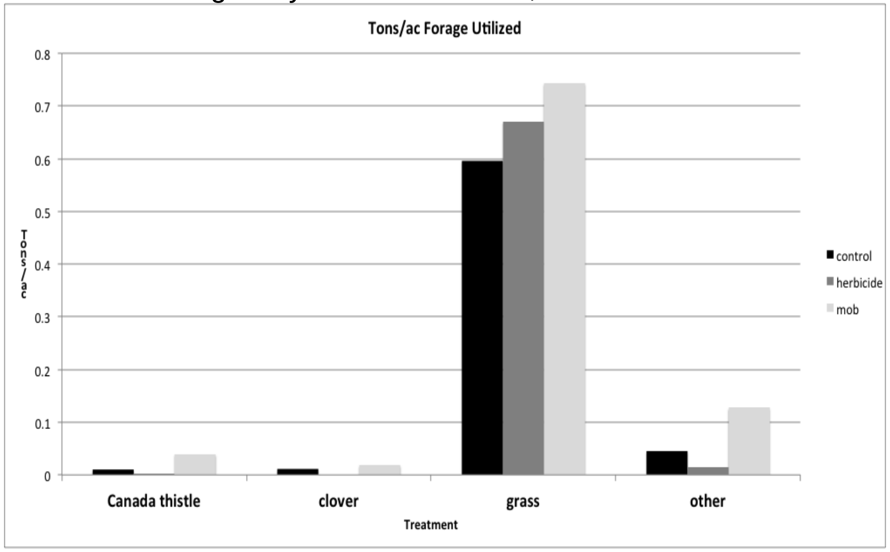


Figure 4: Estimate of forage utilized from grazing treatments conducted through July at Prairie du Sac, WI.



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