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# **Pasture-Based Dairying in Michigan: Farmer Practices and Needs**

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**Abstract:** We report results of a survey designed to assess the information needs of Michigan dairy farmers currently using pasture as part of their management system. Differences were found among farmers in the extent to which they use conserved feed to supplement pasture. Similarities existed among farmers in challenges, information needs, and information sources. Findings suggest several initiatives, including website development, pasture walks, and workshops, that can be used by educators to reach this target audience.

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## **Introduction**

There is growing interest in pasture-based dairy systems in parts of the U.S. (Winsten, Kerchner, Richardson, Lichau, & Hyman, 2010). These systems often are promoted as an economically, socially, and environmentally sustainable production model for North American dairy farms (USDA -NRCS, 2007). Research has shown that pasture-based systems can be economically competitive with confinement systems (White, Benson, Washburn, & Green, 2002). With relatively low investment costs and high net incomes per cow, this model may be a good option for beginning and limited resource farmers (Conner, Heller, Cocciarelli, & Hamm, 2007; Gloy, Tauer, & Knoblauch, 2002; Dartt, Lloyd, Radke, Black, & Kaneene, 1999). Quality of life considerations are also important in the adoption of pasture-based systems. Dairy

farmers using Management Intensive Grazing (MIG) report higher quality of life than their conventional farmer counterparts (Taylor & Foltz, 2006; Ostrom & Jackson-Smith, 2000). Environmental benefits of well-managed grazing systems have been reported (Derner, Lauenroth, Stapp, & Augustine, 2009; Haan, Russell, Powers, Kovar, & Benning, 2006; Hubbard, Newton, & Hill, 2004; Lyons, Weigel, Paine, & Undersander, 2000).

Extension educators have been providing information to farmers interested in MIG and other pasture-based production systems for many years (Hanson, 1995). Parsons, Hanson, Luloff, & Winsten (1998) found differences in practices, outcomes, and outlooks among farmers using intensive grazing, confinement, and traditional production systems. They called for specialized Extension programs tailored for dairy farmers employing each method. Successful outreach efforts for pasture-based farmers have been to create opportunities to visit and learn from each other and share experiences in a variety of settings, including grazing councils, schools, and academies (Jensen et al., 2009; Penrose, 2001; Parsons et al., 1998; Bennett, Penrose, & Bartholomew, 1997).

In 2009, Michigan State University (MSU) established the Pasture Dairy Center (PDC) at the W.K. Kellogg Biological Station in southwest Michigan. To help guide education and outreach programs at the PDC, an understanding of pasture-based dairy farmers' current management practices, the challenges they face, and their preferred methods for accessing and acquiring information on management practices and markets was needed. Towards that end, a survey of pasture-based dairy farmers in Michigan was conducted during winter 2008 and spring 2009.

## Methods

In fall 2008, key informant interviews were conducted with five pasture-based dairy farmers in Michigan. On average, key informants were 55 years old and had been in the dairy industry for over 30 years, half of that time as pasture dairy enterprises. Herd size ranged from 30 to 215 lactating cows, and pasture area ranged from 80 to 210 acres. Key informants were not assumed to be a representative sample of pasture-based dairy farmers in Michigan. Results from interviews were used to develop the mail survey instrument.

In December 2008 surveys were mailed to 85 pasture-based dairy farmers in Michigan, followed by a second mailing to these same farmers in March 2009. Survey recipients had previously been identified by MSU Extension educators for a study evaluating the economic performance of MIG dairies (Taylor, 2009). Four surveys were also returned at a grazing workshop in February 2009. The survey reported here was broader than a study by Taylor (2009), including farmers using MIG and less intensive grazing management systems. A total of 53 of 89 (60%) surveys were returned.

The survey included questions to capture data in four broad areas related to pasture-based dairy production: (1) farmer demographics, (2) farm management and marketing practices, (3) challenges and information needs, and (4) current and preferred information sources. A copy of the survey can be found at <http://www.kbs.msu.edu/research/pasture-dairy/dairy-research/dairy-research-projects>.

Preliminary evaluation of survey data showed considerable variation in the degree to which dairy farmers supplemented pasture with mechanically harvested forages and/or concentrate feeds during the grazing season. Some farmers allowed cows access to pasture for a few hours a day while providing the majority of their feed as a total mixed ration (TMR). Others fed little or no supplemental feed to cattle during the grazing season and relied almost entirely on pasture forage for feed. It was assumed that the level of supplemental feeding during the grazing season would affect other management practices on the farm and result in different information needs for the farmers. Therefore, the extent to which farmers supplemented pasture with conserved feeds was used to categorize survey responses into three supplementation level groups (Low,

Medium, and High).

Farmers in the Low group (n=7) provided no grain to lactating cows during the grazing season. These farmers typically provided cattle with salt and mineral mix and some grass hay when available pasture was limited. The Medium group (n=18) provided grain and, in some cases, small amounts of forage supplementation to cattle during the grazing season, but grazed pasture was still a major portion of the diet. Concentrate supplementation in the Medium group ranged from 2 to 20 pounds of grain per cow per day. The High group (n=22) fed a mixed-feed to cows as a substantial portion of the ration while still allowing cattle regular access to pasture. Farmers in the High supplementation group provided cows with up to 40 pounds of conserved feed (hay, corn silage, grain) per cow per day on an as-fed basis.

Differences in producer demographics and farm management methods in relation to these three supplementation groups were analyzed with the surveymeans and surveyreg procedure of SAS (Cary, NC). Because of relatively small sample size,  $P < 0.10$  was used to report means that were significantly different.

## Results and Discussion

### Demographics and Management

Twenty-three of Michigan's 85 counties were represented in the returned surveys. Responses from farmers who reported that they had retired or left the dairy industry (n=5) were excluded from analyses. The average respondent was 50 years old, had worked in the dairy industry for 30 years, and used pasture for 17 years (Table 1). Most respondents (96%) were male. Over half (62%) of respondents had at least some post-secondary education, including vocational school, college or university, or post-graduate degree programs. The demographics of the responders were similar to that of Michigan dairy farmers as a whole (Bitsch, 2009).

**Table 1.**  
Farmer Demographics (n= 47)

	Mean (SE)*
Age, years	49.8 (1.7)
Years in Dairy Industry	29.8 (1.9)
Years in Pasture Dairy	17.0 (1.8)
Post-Secondary Education, %	62 (7)
*SE = Standard Error	

The average respondent had 121 acres of pasture and managed a herd of 99 lactating and non-lactating cows, plus 74 heifers (Table 2). Cows were moved to a new paddock at least once per day on 84% of the farms. The majority of dairy farmers (66%) practiced year-round calving. The remaining herds calved in the spring (17%) or used a split-season calving with a portion of the herd calving in the spring and the rest in the fall (17%). Twenty-three percent of respondents irrigated at least some of their pasture. On average, these farms employed two full-time and two part-time workers, including family labor.

**Table 2.**  
Dairy and Pasture Management (n= 47)

	Mean (SE)*
Pasture, acres	121 (25)
Herd Size - Cows, #	99 (13)
Herd Size - Heifers, #	74 (11)
Move cows to new paddock daily, %	84 (5.3)
Year-Round Calving, %	66 (7.0)
Irrigate some or all of pasture, %	23 (6)
Full-Time Employees, #	2.0 (0.20)
Part-Time Employees, #	1.9 (0.25)
*SE = Standard Error	

Most survey respondents (80%) marketed their milk through Michigan Milk Producers Association (MMPA) or Dairy Farmers of America (DFA). However, 11% of respondents sold milk as certified organic and 9% sold milk directly to consumers or operated as a cow share (Table 3). Over half of respondents (61%) have considered an alternative production/marketing strategy, including organic production, direct sales, "natural" label, and artisan cheese production.

**Table 3.**  
Dairy Marketing (n= 47)

	Mean (SE)*
Certified Organic, %	11 (4.7)
Direct Sales of Milk to Consumers,%	9 (4.3)
Interest in Developing an Alternative Marketing Strategy, %	61(7.4)
*SE = Standard Error	

## Challenges and Information Needs

Survey respondents reported two major issues challenging the sustainability of their farms: farm profitability and pasture management. The major challenges to farm profitability include balancing high and rising input costs with low and volatile milk prices, challenges not unique to pasture-based dairy farmers (Bitsch, 2009). Pasture management issues included forage selection, pasture establishment, and nutrient management.

Information needs reflected the on-farm challenges that pasture-dairy farmers face. All survey respondents desired information on ways to improve pasture management practices, including irrigation, forage species selection, and pasture establishment. Winter management/feeding and balancing pasture nutrients with other feeds to optimize milk production were also mentioned as areas where information was needed. Opportunities and ways to develop organic production and alternative marketing methods were also mentioned.

Information needs of pasture-based dairy farmers in the study differed from the information needs of a wider segment of the Michigan dairy industry reported by Bitsch (2009). Bitsch (2009) reported that information on grazing management and organic production methods were low priorities for dairy farmers, while in the study reported here, these topics were mentioned as important areas where information was lacking. It should be noted that when Bitsch (2009) divided respondents into small (less than 100 cows) and large (100 or more cows) dairies, small dairies were more likely to rank grazing management and organic production as higher priority topics than their larger counterparts.

## Information Sources, Current and Desired

Pasture-based dairy farmers rely on a variety of sources to aid in making management decisions for their farms. These include trade magazines, other farmers, Extension educators, Internet, and personal experience. For these farmers, the most common information sources are other dairy farmers (n=12) and magazines (n=30). The most commonly mentioned magazines were *The Stockman Grass Farmer* and *Graze*. Michigan State University Extension was listed as a source of information by several (n=8) survey respondents, as were Extension programs in other states (n=4). Respondents also reported traveling to other states to participate in grazing conferences and pasture walks.

Many respondents wished to continue accessing information from their current sources. Several wanted information from MSU (n=11) focused on issues specific to Michigan. The desired format for this and other information is in the form of bulletins and newsletters (n=6). Survey respondents would also like to see an increase in the number of pasture walks on Michigan farms and the formation of grazing groups to provide more opportunities for formal and informal discussion about issues important to their operation (n=8). There was also interest in obtaining information from the Internet and direct email (n=17).

In the study by Bitsch (2009), veterinarians were ranked as a very valuable information source for dairy farmers; this differed from the study reported here, with veterinarian not being mentioned as an information source by any of the respondents.

## Variation Among Supplementation Groups

Farmers in the High supplementation group were younger ( $P < 0.10$ ) and had less ( $P < 0.10$ ) experience with pasture-based dairying than farmers in the Low or Medium groups (Table 4). Acres of pasture did not differ between supplementation groups (Table 5). However, the High supplementation group had more ( $P < 0.10$ ) cows than the Low group, with the Medium group intermediate. Forty-three percent of the Low supplementation group irrigated at least some of their pasture area; this was greater ( $P < 0.10$ ) than the percent of Medium supplementation group. There was no difference between supplementation groups as related to organic certification, direct sales to consumers, or having an interest in developing an alternative market strategy (Table 6).

**Table 4.**  
Farmer Demographics by Pasture Supplementation Level

	Supplementation Level			P-value
	Low (n=7)	Medium (n=18)	High (n=22)	
	Mean (SE)*			
Age, years	60 (2.7) <sup>a</sup>	53 (1.9) <sup>a</sup>	44 (2.5) <sup>b</sup>	<0.10
Years in Dairy Industry	39 (5.6) <sup>a</sup>	32 (2.7) <sup>ab</sup>	25 (2.5) <sup>b</sup>	<0.10
Years in Pasture Dairy	26 (7.1) <sup>b</sup>	19 (2.5) <sup>ab</sup>	13 (1.8) <sup>a</sup>	<0.10
Post-Secondary Education, %	86 (13.4)	53 (12.2)	62 (10.7)	NS
*SE = Standard Error. <sup>ab</sup> Values within a row with different superscripts differ (P<0.10).				

**Table 5.**  
Dairy and Pasture Management by Pasture Supplementation Level

	Supplementation Level			P-value
	Low (n=7)	Medium (n=18)	High (n=22)	
	Mean (SE)*			
Pasture, acres	154 (52.1)	126 (51.3)	105 (24.0)	NS
Herd Size - Cows, #	53 (9.5) <sup>b</sup>	74 (14.1) <sup>ab</sup>	134 (21.6) <sup>a</sup>	<0.10
Herd Size - Heifers, #	37 (8.3) <sup>b</sup>	54 (8.5) <sup>ab</sup>	101 (20.7) <sup>a</sup>	<0.10
Move cows to new paddock daily, %	67 (19.5)	94 (5.5)	82 (8.3)	NS
Year-Round Calving, %	57 (18.9)	72 (10.7)	64 (10.3)	NS
Irrigate some or all of pasture, %	43 (18.9) <sup>a</sup>	6 (5.5) <sup>b</sup>	32 (10.0) <sup>ab</sup>	<0.10
Full-Time Employees, #	1.6 (0.57) <sup>ab</sup>	1.6 (0.14) <sup>a</sup>	2.5 (0.33) <sup>b</sup>	<0.10
Part-Time Employees, #	2.9 (1.16) <sup>b</sup>	1.1 (0.23) <sup>a</sup>	2.2 (0.26) <sup>ab</sup>	<0.10
*SE = Standard Error . <sup>ab</sup> Values within a row with different super scripts differ (P<0.10).				

**Table 6.**  
Dairy Marketing by Pasture Supplementation Level

	Supplementation Level			P-value
	Low (n=7)	Medium (n=18)	High (n=22)	
	Mean (SE)*			
Certified Organic, %	33 (19.4)	6 (5.8)	9 (6.2)	NS
Direct Sales of Milk to Consumers,%	17 (15.4)	6 (5.8)	9 (6.2)	NS
Interest in Developing an Alternative Marketing Strategy, %	40 (22.1)	50 (11.9)	76 (9.4)	NS
*SE = Standard Error. <sup>ab</sup> Values within a row with different super scripts differ (P<0.10).				

Despite differences in farm size, management, and experience, all three supplementation level groups noted many of the same challenges and needs. All listed profitability (balancing low and volatile milk prices with high feed costs) as their greatest challenge, and all desired more information on pasture management (forage species and variety selection, pasture establishment, irrigation). Farmers in the three supplementation groups primarily receive information from trade magazines and other farmers. The major difference among the three groups was in how they preferred to acquire information on pasture dairy management. Those in the Low supplementation group listed Extension as their preferred source, while farmers in the Medium and High groups rely more on Internet sources.

## Conclusions

Pasture-based dairy farmers in Michigan represent a broad range of ages and experience in the dairy industry. They differ in farm size and management practices: feed supplementation, stocking rate, use of irrigation, marketing strategy, and calving period are some of the factors that differed. Despite these differences, all the dairy farmers in the survey have common concerns and identified two major issues that challenge the sustainability of their farms: farm profitability and pasture management.

These dairy farmers expressed a need for information on pasture management, marketing of value-added products, and dairy nutrition, preferably specific to the needs of Michigan farmers through MSU Extension in the form of bulletins, newsletters, and emails. There is also interest in more pasture walks and grazing workshops in Michigan to give dairy farmers an opportunity to meet and discuss issues important to the management of their operation with other farmers, researchers and Extension educators on an informal basis.

## References

- Bennett, M. L., Penrose, C. D., & Bartholomew, H. M. (1997). Ohio pasture for profit schools: Designing a successful format for grazing courses. *Journal of Extension* [On-line], 35(2) Article 2IAW3. Available at: <http://www.joe.org/joe/1997april/iw3.php>
- Bitsch, V. (2009). *2008 Michigan dairy industry survey*. Michigan State University Dept. of Agricultural, Food, and Resource Economics - Agricultural Economic Report Series #637. Retrieved from: <http://purl.umn.edu/51842>

Conner, D. S., Heller, M. C., Cocciarelli, S., & Hamm, M. W. (2007). *Opportunities in grazing dairy farms: assessing future options*. East Lansing MI: C.S. Mott Group for Sustainable Food Systems at Michigan State University. Retrieved from:

<http://www.mottgroup.msu.edu/Portals/0/Opportunities%20in%20Grazing%20Dairy%20Farms.pdf>

Dartt, B. A., Lloyd, J. W., Radke, B. R., Black, J. R., & Kaneene, J. B. (1999). A comparison of profitability and economic efficiencies between management-intensive grazing and conventionally managed dairies in Michigan. *Journal of Dairy Science*, 82, 2412-2420.

Derner, J. D., Lauenroth, W. K., Stapp, P., & Augustine, D. J. (2009). Livestock as ecosystem engineers for grassland bird habitat in the western Great Plains of North America. *Rangeland Ecology and Management*, 62, 111-118.

Gloy, B., Tauer, L., & Knoblauch, C. (2002). Profitability of grazing versus mechanical forage harvesting on New York dairy farms. *Journal of Dairy Science*, 85, 2215-2222.

Haan, M. M., Russell, J. R., Powers, W. J., Kovar, J. L., & Benning, J. L. (2006). Grazing management effects on sediment and phosphorus in surface runoff. *Rangeland Ecology and Management*, 59, 607-615.

Hanson, G. D. (1995). Adoption of intensive grazing systems. *Journal of Extension* [On-line], 33(4) Article 4RIB3. Available at: <http://www.joe.org/joe/1995august/rb3.php>

Hubbard, R. K., Newton, G. L., & Hill, G. M. (2004). Water quality and grazing animals. *Journal of Animal Science*, 82(E. suppl.), E255-E263.

Jensen, K. S., Cheyney, C., Hawkins, J., Gray, C. W., Shewmaker, G., Williams, S., Griggs, T., & Gerrish, J. R. (2009). Lost Rivers Grazing Academy: Building sustainability in livestock production. *Journal of Extension* [On-line], 47(1) Article 1IAW4. Available at: <http://www.joe.org/joe/2009february/iw4.php>

Lyons, J., Weigel, B. M., Paine, L. K., & Undersander, D.J. (2000). Influence of intensive rotational grazing on bank erosion, fish habitat quality, and fish communities in southwestern Wisconsin trout streams. *Journal of Soil and Water Conservation*, 55(3), 271-276.

Ostrom, M. R., & Jackson-Smith, D. B. (2000). *The use and performance of management intensive grazing among Wisconsin dairy farms in the 1990s*. PATS Research Report No. 8, Program on Agricultural Technology Studies, College of Agriculture and Life Sciences, University of Wisconsin-Madison, Madison, WI.

Parsons, R. L., Hanson, G. D., Luloff, A. E., & Winsten, J. R. (1998). Extension outreach opportunities among segmented dairy producers. *Journal of Extension* [On-line], 36(4) Article 4FEA2. Available at: <http://www.joe.org/joe/1998august/a2.php>

Penrose, C. D. (2001). Developing leadership skills with grazing councils. *Journal of Extension* [On-line], 39(3) Article 3IAW5. Available at: <http://www.joe.org/joe/2001june/iw5.php>

Parsons, R. L., Luloff, A. E., & Hanson, G. D. (2004). Can we identify key characteristics associated with grazing-management dairy systems from survey data? *Journal of Dairy Science*, 87, 2748-2760.

Taylor, J., & Foltz, J. (2006). *Grazing in the dairy state. Pasture use in the Wisconsin dairy industry, 1993-2003*. Madison WI: UW- Madison Center for Integrated Agricultural Systems and UW-Madison

Program on Agricultural Technology Studies.

Taylor, P. E. (2009). *Methods of change and financial performance of dairy farms before and after a switch to management intensive grazing* (Master's thesis). Retrieved from: <http://purl.umn.edu/56008>

United States Department of Agriculture Natural Resources Conservation Service (USDA- NRCS). (2007). Technical Note 1. Profitable grazing-based dairy systems. Retrieved from: [ftp://ftpfc.sc.egov.usda.gov/GLTI/technical/publications/tn\\_rp\\_1\\_a.pdf](ftp://ftpfc.sc.egov.usda.gov/GLTI/technical/publications/tn_rp_1_a.pdf)

White, S. L., Benson, G. A., Washburn, S. P. & Green, J. T., Jr. (2002). Milk production and economic measures in confinement or pasture systems using seasonally calved Holstein and Jersey cows. *Journal of Dairy Science*, 85, 95-104.

Winsten, J. R., C. D. Kerchner, A. Richardson, A. Lichau., & Hyman, M. (2010). Trends in the Northeast dairy industry: Large-scale modern confinement feeding and management-intensive grazing. *Journal of Dairy Science*, 93, 1759-1769.

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