

Impact of feeding strategies on milk production and profitability on Wisconsin organic dairy farms

C.A Hardie*¹, M. Dutreuil¹, M. Wattiaux¹, R Gildersleeve², N. S. Keuler¹, V. E. Cabrera¹

¹Department of Dairy Science University of Wisconsin-Madison, ²University of Wisconsin-Extension, *hardie@wisc.edu

Introduction

- Limited research focuses on US organic dairy farming general herd management and feeding practices
- Implementation of the USDA National Organic Program pasture rule (30% DMI from pasture for at least 120 days in a year) requirements and natural phenomena create challenges for organic dairy farmers when making feeding management decisions

Objectives

- Group and describe WI organic dairy farms based on their general farm characteristics and feeding strategies
- Assess productivity and profitability of farm systems studied

Materials & Methods

Sampling

- Two Wisconsin's Department of Agriculture Trade and Consumer Protection directories were compared for a list of potential farm participants.
 - 2009 WI Active Dairy Producers list
 - WI Certified Organic Producers list
- All farms (N = 554) on the resulting list of Wisconsin certified organic dairy farmers received an invitation to participate in the project.

Surveying

- Willing farmers were surveyed on-farm, face-to-face, with a traditional paper questionnaire, by one of the project's two graduate students between January 2011 and January 2012.
- The 44-page survey contained sections on general farm characteristics, feeding, pasture management, and economics.

Clustering

- A non-hierarchical clustering method using nine variables related to general farm characteristics, feed supplementation, and grazing was applied to partition the farms into four clusters (Table 1).

Results

Table 3.1a. Cluster and total sample medians (interquartile ranges) for the clustering and evaluated variables

Variables	Cluster 1 (n=8)		Cluster 2 (n=5)		Cluster 3 (n=32)		Cluster 4 (n=24)		Total (n=69)	
	mdn ¹	(iqr) ¹	mdn	(iqr)	mdn	(iqr)	mdn	(iqr)	mdn	(iqr)
Clustering										
Cows per herd	129 ^a	(56)	50 ^b	(35)	41 ^b	(14)	43 ^b	(51)	45	(41)
Percent Holstein ²	90 ^a	(14)	0.0 ^b	(0.0)	89 ^a	(25)	6.0 ^b	(22)	71	(89)
Milking frequency ³	2.0 ^a	(0.0)	1.5 ^b	(0.43)	2.0 ^a	(0.0)	2.0 ^a	(0.0)	2.0	(0.0)
Cow feeding groups ⁴	2.0 ^a	(0.25)	1.0 ^b	(0.00)	2.0 ^a	(1.0)	2.0 ^b	(1.0)	2.0	(1.0)
Supplemented feeds ⁵	8.0 ^a	(2.3)	2.0 ^c	(2.0)	6.0 ^{ab}	(2.0)	6.0 ^b	(1.3)	6.0	(2.0)
Concentrates fed ⁶	5.7 ^a	(2.8)	2.7 ^{ab}	(2.7)	4.2 ^a	(1.4)	1.9 ^b	(2.6)	3.6	(2.6)
Land as pasture (%)	22 ^c	(20)	100 ^a	(0.0)	31 ^c	(14)	49 ^b	(28)	36	(24)
Occupancy period ⁷	1.25 ^a	(1.25)	0.50 ^b	(0.50)	2.00 ^a	(3.25)	0.50 ^b	(0.50)	1.00	(2.00)
Grazing season length (d)	203 ^a	(21)	216 ^a	(24)	176 ^b	(36)	199 ^b	(25)	189	(39)

¹mdn = median, iqr = interquartile range

²Percent of cows within each farm that were Holstein

³Weighted mean number of milkings per day

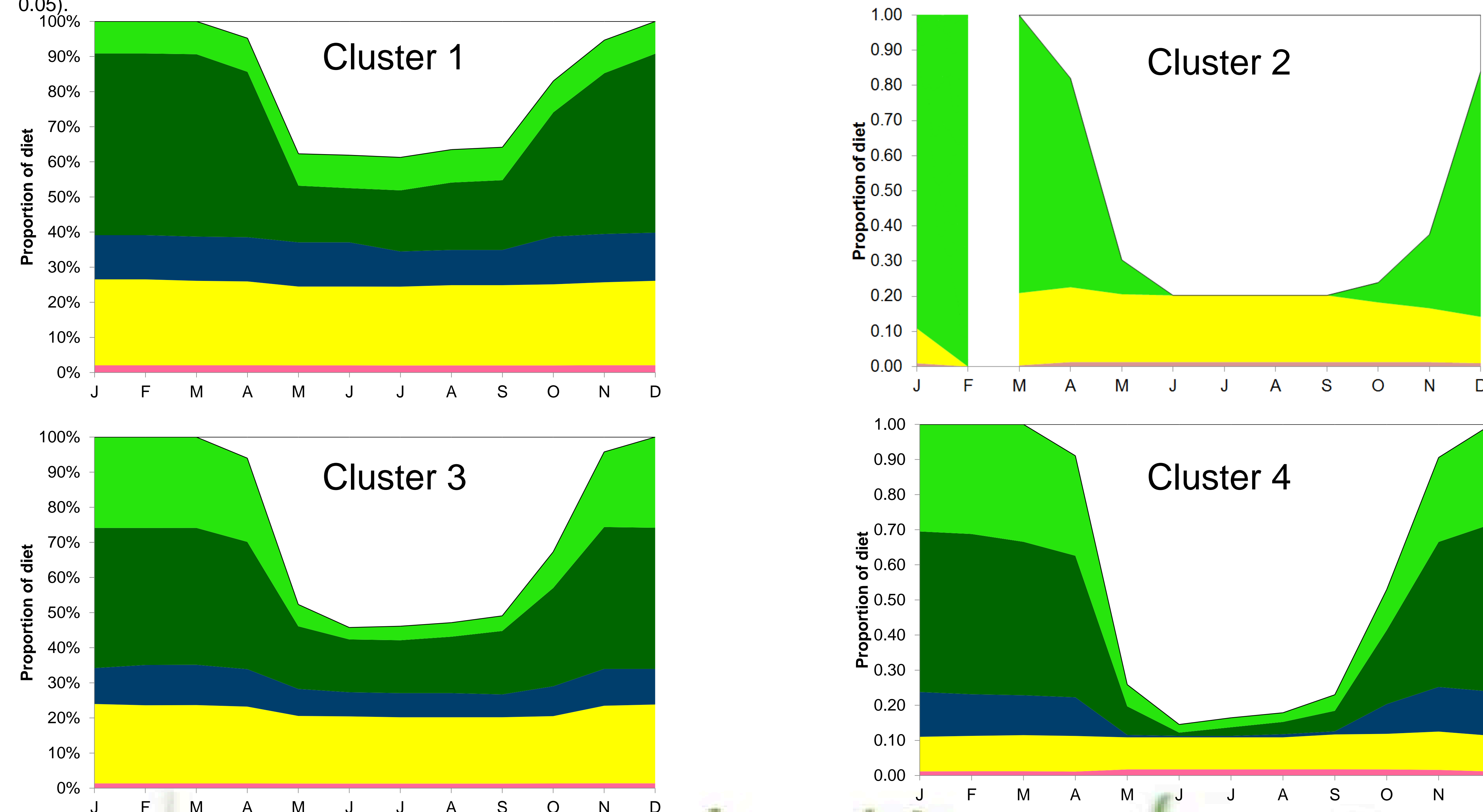
⁴Total number of cow feeding groups on the farm

⁵Total number of non-pasture feeds incorporated into the farm's lactating cow diet

⁶Mean amount of concentrates fed to lactating cows (kg/cow per d)

⁷Number of days lactating cows remained in a paddock before being rotated to new pasture

^{abc}Kruskal-Wallis test ($P \leq 0.05$). Medians within a row not sharing a common superscript are statistically different based on Wilcoxon test with Bonferroni correction ($P < 0.05$).



Conclusions

- Wisconsin organic dairy farms differed tremendously in structure and feeding strategies.
- The average diet for each cluster met the requirements set forth by the pasture rule.
- Farms that supplemented more feed had greater RHA and higher IOFC.
- Research evaluating other farm costs needs to be conducted before assessing farm profitability at the whole-farm level.

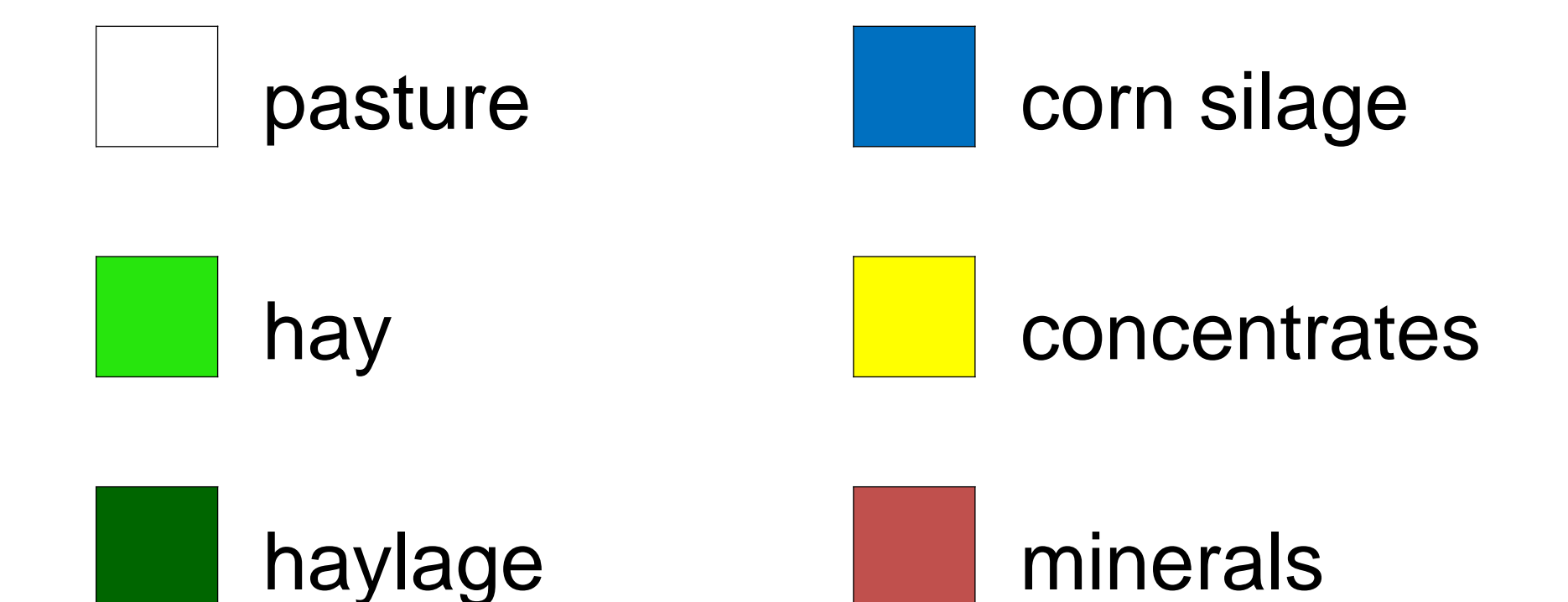
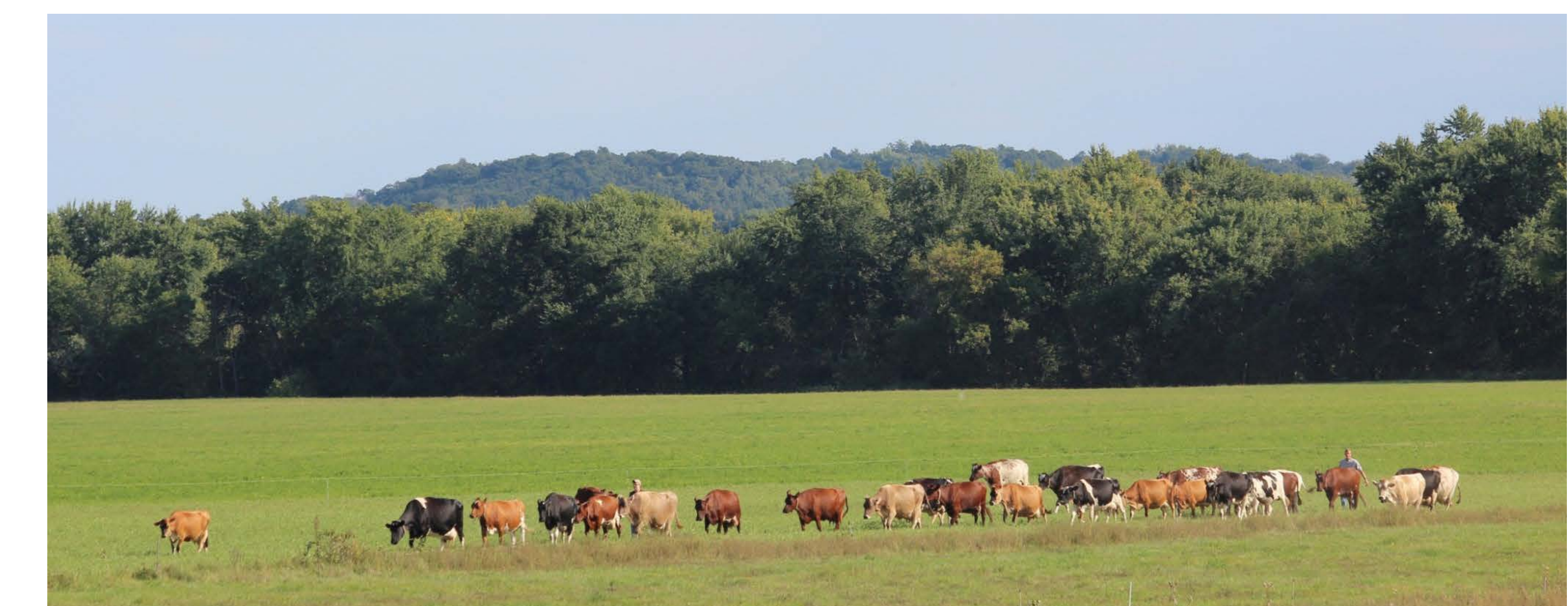


Figure 2: (Left) Proportion of each ingredient type in the surveyed farms lactating cows' diets by cluster. Proportion pasture was estimated using the subtraction method. The white space for February in cluster 2 signifies that there were no lactating cows on its farms during that month.

Support

This project is supported by Agriculture and Food Research Initiative Competitive Grant no. 2010-51300-20534 from USDA National Institute of Food and Agriculture.