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Abstract

Mob grazing has emerged as an increasingly used management strategy on pasture-based farms throughout the country; however, the practice lacks clear definition among practitioners. We conducted a survey of livestock and dairy producers using some form of rotational grazing in the upper midwestern United States (*N* = 155) to gather producer-generated definitions, perceptions of benefits and disadvantages, and implementation strategies for mob grazing. The results describe a practice defined by variability and associated with compelling impacts. Implementation of mob grazing differed among producers, although most used it as a strategic tool and not a rigid management strategy.

Keywords: mob grazing, rotational grazing, pasture, stocking density, farmer survey

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Introduction

Mob grazing has become a popular grazing management strategy among many producers in the upper midwestern region of the United States. Although it is practiced in various forms by farmers, this method of grazing is poorly defined, and the source of the term *mob grazing* is unclear. Some believe the term originated when the forage researcher G. O. Mott returned from Australia, where herds are sometimes referred to as "mobs," and applied the expression to the new high-intensity defoliation technique he and his team were pioneering (Mislevy, Mott, & Martin, 1983). The researchers working with Mott described the practice as a "defoliation technique which simulates intensive rotational grazing" typified by "a high stocking density on a limited land area for a short period of time" (Gildersleeve, Ocumpaugh, Quesenberry, & Moore, 1987, "Introduction," para. 3).

Others believe the term and the practice arose organically and in tandem with farmers' adapting their herd management strategies to mimic natural herbivore behavior, including by implementing higher stocking densities, shorter grazing events, and longer rest periods (Savory, 1978). However the term and practice arose, both are widely and varyingly used, indicating the need to establish a more universal and comprehensive description of the practice and resulting definition of the term.

Only in the last decade has *mob grazing* become a widely used term among producers and in farmer-focused

industry publications (Hafla et al., 2014; Holin, 2013; Kidwell, 2010; Thomas, 2012). The increase in discussions of mob grazing in popular press articles and at pasture walks and conferences throughout the world appears to be producer-generated (Thomas, 2012). Although practices are similar to those described by Gildersleeve et al. (1987), the current form includes a broader management system extending beyond the use of increased stocking density as a defoliation technique. Although the International Forage and Grazing Terminology Committee does not include *mob grazing* as official terminology, they define *mob stocking* as "a method of stocking at a high grazing pressure for a short time to remove forage rapidly as a management strategy" (Allen et al., 2011). This definition is helpful but lacks details necessary for assisting producers with implementing the practice in a consistent manner.

The concept of mob grazing has gained its largest audience, adoption rate, and number of detractors to date, suggesting the need for the development of a detailed definition and accurate description of the practice as applied by producers. With farmers and Extension professionals from more varied backgrounds working in pasture production systems and needing to effectively communicate with one another, establishment of common terminology is increasingly important (Turner & Belesky, 2010). To better understand this still-emerging grazing practice, an attempt should be made to develop a clear description that allows for standardization across research endeavors to ensure that contributions are in line with what practitioners are doing on the landscape. To this end, we conducted a survey of livestock and dairy producers using various forms of rotational grazing in the upper midwestern United States. We sought to gather information about how producers define mob grazing; what they perceive the benefits and drawbacks to be; and if they do use mob grazing, what its application looks like at the farm scale.

Survey Methods and Analysis

We conducted a survey from March to October, 2013, targeting producers who used some form of rotational grazing on cool-season pastures and resided in Illinois, Iowa, Minnesota, or Wisconsin. We distributed a link to the survey instrument at three grazing conferences as well as through grazing networks in each state and at five pasture walks held in Wisconsin. The link contained directions and approvals as dictated by the Social and Behavioral Science Internal Review Board, and we collected results using the online survey tool Qualtrics (Version 56038, 2009, Qualtrics). We designed survey questions to address (a) respondents' definitions of mob grazing and perceptions of the benefits and drawbacks of mob grazing and (b) the management practices of respondents using mob grazing.

As mob grazing lacks a universal definition, we identified commonly used descriptions for mob grazing as well as accounts of benefits and disadvantages from available publications, personal correspondence, and conference presentations. We narrowed these descriptors to a list of less than 15 and asked producers to choose the five that most closely aligned with their own understanding of mob grazing. Additionally, we asked graziers to use a scale ranging from *extremely negative* to *extremely positive* to indicate their perceptions of how mob grazing is portrayed in the popular press. We then asked that they use the same scale to convey their personal opinions about mob grazing. We categorized respondents as livestock producers or dairy producers and as those using mob grazing or those rotationally grazing but not using mob grazing and then analyzed differences in their responses to select questions using the chi-square test. Differences were considered statistically significant at $p < .10$. We performed all data analysis using the statistical software R (Version 3.0.2, 2013, R Core Development Team).

Results and Discussion

Description of Respondents

Approximately 400 surveys were distributed to potential respondents, and 155 completed surveys were returned (we estimate a 39% return rate). Sixty-six percent of respondents were from Wisconsin, 14% were from Iowa, 14% were from Minnesota, and 6% were from Illinois. Most producers raised cattle (81%), but sheep (12%) and goats (3%) were also identified. Seventy-four percent of respondents described themselves as livestock producers, and 27% identified themselves as dairy producers. Respondents indicated that they rotationally grazed animals, with over 50% moving animals every day and 89% moving them at least every week.

In a previous survey, Paine and Gildersleeve (2011a, 2011b) found that 25% of beef producers and 29% of dairy producers used mob grazing. We found a similar pattern, with 37% of livestock producers and 40% of dairy producers using mob grazing. Overall, 56 of our survey's respondents (37%) used mob grazing, with 71% of producers from livestock operations and 29% from dairy operations doing so.

Producer Definitions and Perceptions of Benefits and Drawbacks of Mob Grazing

Increased stocking density, increased rest period, more trampled forage, and shortened grazing periods were the top four descriptors selected for mob grazing (each > 50%) (Table 1). Surprisingly, the only difference between mob and non-mob rotational graziers' opinions was with respect to an increase in rest period length ($X^2 = 7.05$, $df = 1$, $p < .01$). Other research has shown that rest periods are often emphasized by practitioners as an overlooked element of mob-grazed systems (Thomas, 2012).

Table 1.
Partial Definitions of Mob Grazing as Identified by Mob and Non-Mob Rotational Graziers

Partial definition	Mob graziers (*n* = 58)	Non-mob rotational graziers (*n* = 97)	*p* value
Increased stocking density	79%	88%	*ns*
Increased rest period[a]	76%	55%	.008
Trampled forage	62%	60%	*ns*
Shortened grazing period	60%	59%	*ns*
Grazing mature forage	36%	34%	*ns*
Leaving forage uneaten	31%	24%	*ns*
"Herd" effect	31%	28%	*ns*
Increased stocking rate	26%	33%	*ns*
Constant moves	16%	28%	*ns*

Increased residual	5%	14%	*ns*
Other	0%	3%	*ns*

[a]X^2 = 7.05, df = 1, p = .008.

Even distribution of nutrients and decreased selectivity were the top two benefits reported for mob grazing (each > 50%) (Table 2). More mob graziers identified increased profitability (p < .01), increased forage amount (p = .07), and animal health (p < .01) as benefits than producers not using mob grazing (Table 2). These differences highlight often-held reservations about the practice, namely that profitability may be reduced by animals' trampling forage and that animal health can be negatively affected by increasing stocking density. That mob graziers label these as benefits indicates that reservations among those not using mob grazing may be unfounded or informed primarily by specific operation type or location.

Table 2.

Perceived Benefits of Mob Grazing as Identified by Mob and Non-Mob Rotational Graziers

Potential benefit	**Mob graziers (*n* = 58)**	**Non-mob rotational graziers (*n* = 97)**	***p* value**
Even distribution of nutrients	67%	60%	*ns*
Decreased selectivity	60%	56%	*ns*
Increased organic matter	45%	46%	*ns*
Weed control	36%	38%	*ns*
Resilience	36%	30%	*ns*
Increased soil moisture	28%	27%	*ns*
Increased profitability[a]	26%	9%	.01
Ability to increase number of animals	22%	27%	*ns*
Increased production (meat and/or milk)	22%	15%	*ns*
Increased forage amount[b]	22%	11%	.07
Animal health[c]	22%	3%	.001
Increased forage diversity	21%	24%	*ns*
Season extension	19%	11%	*ns*
Other	12%	3%	*ns*
No benefits	0%	1%	*ns*

[a]X^2 = 6.2399, df = 1, p = .012. [b]X^2 = 3.1815, df = 1, p = .074. [c]X^2 =

10.7347, *df* = 1, *p* = .001.

Just as unsubstantiated claims about mob grazing's benefits abound, so too do equally untested disadvantages. Increased labor was the only disadvantage of mob grazing that was agreed on by more than 50% of respondents (Table 3). Decreased forage quality was reported as a disadvantage by 27% of respondents overall; however, the proportion of mob graziers who reported this disadvantage was 16 percentage points lower than the proportion of non-mob practitioners who did so (Table 3). This finding highlights a common hesitation pertaining to reduced forage quality. The limited applicability of mob grazing in many environments was also cited as a disadvantage by rotational graziers, though fewer mob graziers (14%) held this opinion (X^2 = 4.02, *df* = 1, *p* = .04) (Table 3). Finally, 13% more mob graziers than non-mob graziers thought that none of the potential disadvantages applied, indicating satisfaction among many practitioners of mob grazing (X^2 = 5.95, *df* = 1, *p* = .01) (Table 3).

Table 3.

Perceived Disadvantages of Mob Grazing as Identified by Mob and Non-Mob Rotational Graziers

Potential disadvantage	Mob graziers (*n* = 58)	Non-mob rotational graziers (*n* = 97)	*p* value
Increased labor	52%	59%	*ns*
Increased time	28%	41%	*ns*
Increased soil compaction	19%	25%	*ns*
Only works with some animals	19%	24%	*ns*
Decreased forage quality[a]	17%	33%	.08
Decreased animal health	17%	8%	*ns*
Only applicable in some environments[b]	14%	30%	.04
Decreased production	9%	20%	*ns*
Decreased profit	3%	7%	*ns*
Decreased soil quality	2%	7%	*ns*
Increased soil erosion[c]	2%	10%	.09
Other	10%	8%	*ns*
No disadvantages[d]	17%	4%	.01

[a]X^2 = 3.0615, *df* = 1, *p* = .08017. [b]X^2 = 5.9528, *df* = 1, *p* = .01469.
[c]X^2 = 4.0203, *df* = 1, *p* = .04495. [d]X^2 = 2.9353, *df* = 1, *p* = .08666.

Perceptions of Mob Grazing

The majority of respondents (93%) indicated that the practice was portrayed as somewhat to extremely positive in the information sources they accessed, whereas only 4% indicated having seen a somewhat to extremely negative portrayal (Table 4). However, the producers' personal opinions differed from those represented by authors and speakers providing information about mob grazing. Perhaps the most notable departure was that only 3% of respondents indicated *having seen* a neutral portrayal and 19% indicated *having* a neutral opinion (Table 4). Personal opinion also differed between graziers using mob grazing and those not using it. Not surprisingly, more producers using mob grazing had a positive opinion of the practice (91%) than rotational graziers not using it (58%) ($X^2 = 40.9$, $df = 7$, $p < .01$) (Table 4). Of the respondents with neutral opinions, most were non-mob graziers, indicating that many rotational graziers had not yet formed an opinion about the practice. Results suggest a clear disconnect between how advocates are portraying mob grazing and what producers' opinions are. Further, those who have used mob grazing hold overwhelmingly positive opinions about the management strategy, whereas other rotational graziers appear more hesitant to embrace it.

Table 4.

Portrayal of Mob Grazing in Literature and Personal Opinion of Mob Grazing

Portrayal and/or opinion	Information sources	Personal opinion
Extremely positive	18%	16%
Very positive	44%	23%
Somewhat positive	31%	32%
Neutral	3%	19%
Somewhat negative	3%	7%
Very negative	1%	2%
Extremely negative	0%	1%

Implementation of Mob Grazing

Our audit of 58 Midwestern producers who use mob grazing showed pronounced variability in their practices. We found that 51% of the respondents were using the practice for the majority of the growing season (Table 5). In contrast, many were using it much less frequently, with 30% mob grazing for less than half of the year (Table 5). This finding suggests that several producers are using the practice strategically. A deliberate deployment of mob grazing may be used for any number of reasons, including for achieving rapid defoliation during the spring flush, giving an overgrazed pasture a longer rest period, improving manure distribution, or increasing use of an otherwise refused forage.

Table 5.

Duration of Mob Grazing Application

Percentage	Percentage of respondents who

of growing season	used mob grazing for specified duration
0%–25%	25%
26%–50%	5%
51%–75%	19%
76%–100%	51%

Average stocking densities also ranged widely, varying from less than 56,000 kg ha^{-1} to nearly 1,120,000 kg ha^{-1}, with more than half (60%) of the mob graziers surveyed stocking between 56,000 and 280,210 kg live weight ha^{-1}. Although we documented some producers stocking over 560,425 kg ha^{-1}, the percentage of those doing so was much lower than expected (Hafla et al., 2014).

When using mob grazing, both dairy and livestock producers rotated pastures grazed by their herds with the same regularity. The majority of respondents (84%) reported that herds were moved one to three times a day, and none indicated that herds were moved more than five times per day. Respondents indicated that after a grazing event, less than 4 to more than 25 cm of residue was left, though residuals reported most commonly were between 10 and 18 cm (76%). Dairy producers reported grazed pastures that were lower than those of livestock producers, with 88% of dairy producers reporting less than 13 cm left and 44% of livestock graziers reporting 15 cm left ($X^2 = 19.44$, $df = 6$, $p < .01$). Paddocks were rested from 20 to 80-plus days, with 71% of respondents indicating that paddocks were rested between 31 and 60 days.

Conclusion

Although a goal of our survey was to develop a user-generated definition of mob grazing practices in the upper Midwest, the results suggest that this practice is necessarily variable and may elude easy definition. Typical suggested descriptors include high stocking density, short grazing intervals, and long rest periods. We found that although respondents agreed that these were important in defining mob grazing, implementation of these practices by respondents varied widely, making it difficult to describe the practice in definitive terms. Given the many variations of mob grazing on the landscape, we recommend that researchers and Extension professionals carefully describe all elements of any grazing system being studied or implemented, including stocking density, lengths of rest and grazing periods, and degree of forage trample to increase the relevance to producers. Unpredictable weather, markets, and animals dictate that flexibility is built into any pasture-based, management-intensive farming system, though it is likely that mob grazing demands a more elastic management strategy than typical rotational grazing. Further, the differences between typical rotational grazing and mob grazing management will surely influence the potential agronomic and environmental impacts. Although the advantages and disadvantages of mob grazing have not been researched or universally experienced by producers, our findings indicate that the majority of graziers we surveyed in the midwestern United States are strategically and adaptively applying this emerging management tool, and with time, a more useful definition may emerge.

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