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Importance of Acclimation to Grazing

U.S. Dairy Forage Research Center

Introduction

Graziers frequently question the credibility of research results for a variety of reasons. Some of these concerns involve the selection of research animals for grazing trials, and especially their grazing experience prior to starting any research trial. Because of the land-area requirements and overall expense involved, most research facilities cannot maintain both confinement-based and dedicated grazing-based dairy herds, the latter of which may require a considerably different genetic background. As a result, research efforts are often criticized by graziers whenever confinement-based cows or heifers are used in grazing trials.

Addressing Adaptation Requirements

A 3-year trial was conducted in Marshfield and Arlington, Wisconsin (Lopes et al., 2013) to address this general issue, and to specifically assess adaptation requirements for confinement-based animals selected for grazing experiments. During a 2-year developmental period at Marshfield, 64 Holstein or Holstein × Jersey crossed heifers were randomly assigned to four treatment combinations based on grazing (**PAS**) or confinement (**CON**) rearing regimes during Years 1 and 2. These included:

- PAS-PAS
- PAS-CON
- CON-PAS
- CON-CON

Heifers grazed Italian ryegrass pastures from 9 September to 14 October (41 days) in Year 1 and from 22 June to 17 September (65 days) in Year 2. Confinement groups were maintained in a freestall barn and offered a total mixed ration daily. All heifers were then transported to Arlington, where they calved and grazed mixed species pastures (41.5% tall fescue, 41.5% meadow fescue, and 17.0% white clover) during May and June (61 days) of Year 3.

Dairy heifers grazing a paddock with experimental cool season grass pastures near Marshfield, Wisconsin.

Response as Heifers

At the conclusion of Year 1, PAS and CON heifers had almost identical bodyweights (mean = 467 lbs). Because heifer groups assigned to pasture during Year 2 (PAS-PAS or CON-PAS) differed based on previous grazing experience, it was possible to make some preliminary observations about the effect of grazing experience on heifer adaptation to pasture (Table 1). While previous grazing experience clearly affected heifer behaviors on Days 1 and 3, these data suggested heifers approached common or similar behaviors in response to pasture within about a week.

Response as First Lactation Cows

As lactating cows, behaviors for each treatment group were assessed between 7 a.m. and 3 p.m. on selected days after introduction to pasture. All cows received 8.8 lbs concentrate after each of the

Table 1. Percentage of time (9-hour observation daily) dairy heifers spend on various activities at the beginning of Year 2. Treatment designations: i) PAS-PAS indicates access to pasture during Years 1 and 2; ii) CON-PAS indicates no pasture experience during Year 1 [adapted from Lopes et al. (2013)].

	Grazing, %		Lying, %		Other, %[1]		Distance Walked, miles	
Day	**PAS-PAS**	**CON-PAS**	**PAS-PAS**	**CON-PAS**	**PAS-PAS**	**CON-PAS**	**PAS-PAS**	**CON-PAS**
	---------- % ----------						----- *miles* -----	
1	78.1	35.4	0.0	0.0	21.9	64.4	3.4	2.2
3	66.0	53.0	4.5	0.0	30.0	47.0	1.8	1.7
5	61.6	71.3	14.1	7.2	24.4	21.5	1.9	1.6
15	46.1	55.9	46.0	33.4	7.9	10.7	1.6	1.4
32	57.6	57.9	35.4	31.3	7.0	10.8	1.2	1.7
65	59.8	68.3	36.3	27.4	3.9	4.3	0.8	1.0

[1] *Other activities included standing, drinking, and walking.*

milkings daily. There were especially strong differences in time spent grazing on Days 1 and 3, where cows with previous grazing experience spent respective overall averages of 66% and 49% of their time grazing compared to only 13 and 24% for cows with no previous experience (Figure 1). Similarly, there were clear differences in milk production on the same evaluation days (Figure 2). However, over the entire 61-day evaluation period, there were no statistical differences in daily milk production (mean = 67.1 lbs/day) or in 4% fat corrected milk (mean = 61.6 lbs/day) across treatment groups.

Conclusions

Generally, these results suggest a relatively short (10 to 14-day) adaptation period is sufficient to acclimate confinement-based cows to grazing, and for them to recover any depressions in milk production while adjusting to the change from a confinement system. While this research effort may not totally satisfy all concerns expressed by grazing advocates, it does demonstrate a detailed and extensive effort to address this key concern. Furthermore, while this research did not include animals that were bred specifically for use in grass-

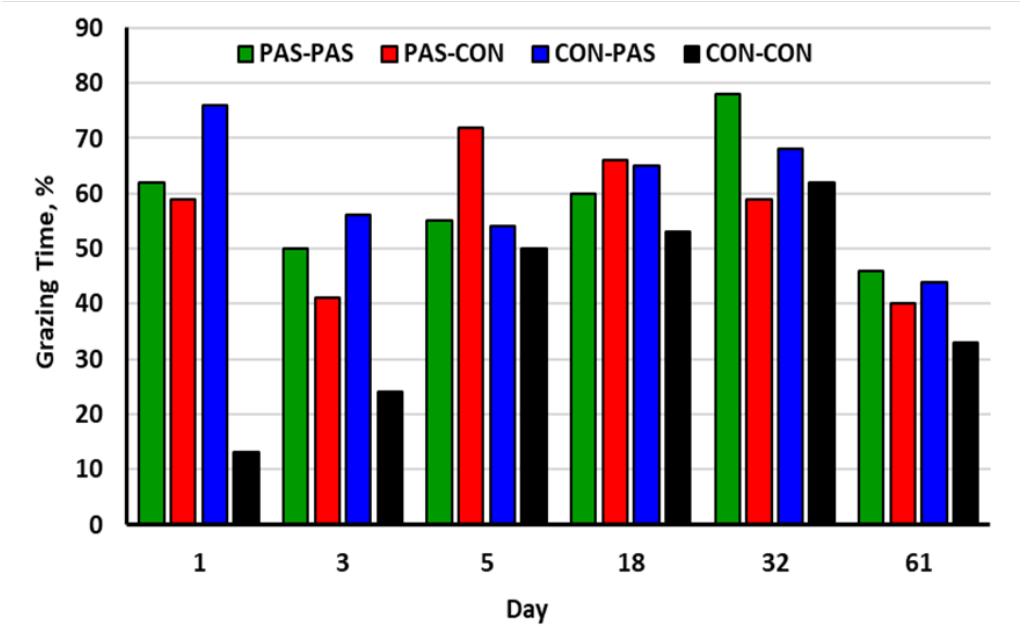

Figure 1. Percentage of time spent grazing on specific evaluation days after introduction to pasture as lactating cows. Cows were evaluated between 7:00 am and 3:00 pm on each evaluation day. Treatment designations are based on rearing systems during Years 1 and 2 as heifers, where PAS = pasture-based and CON = confinement-based systems [adapted from Lopes et al. (2013)].

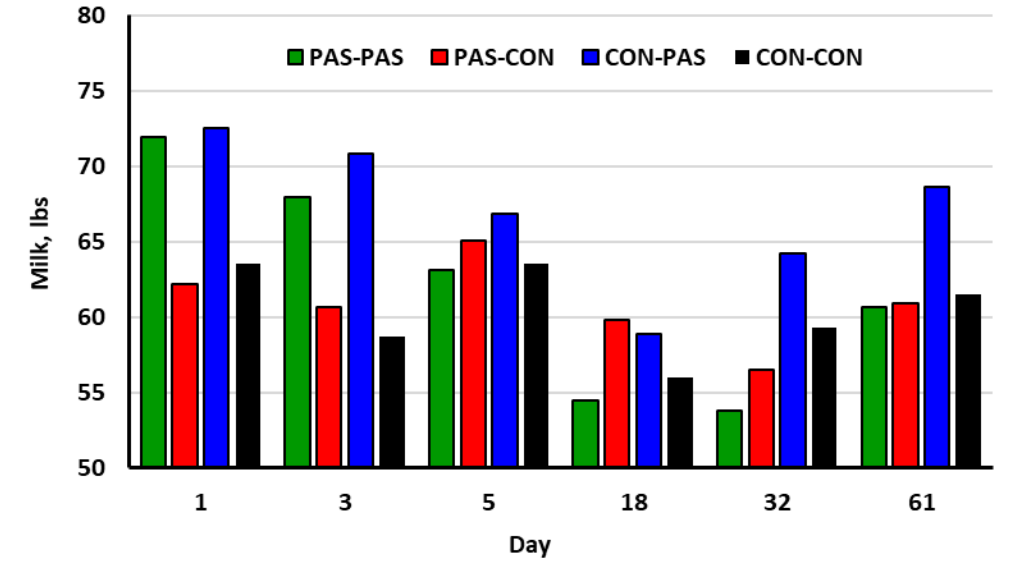

Figure 2. Daily milk production on specific evaluation days after introduction to pasture as lactating cows. Treatment designations are based on rearing systems during Years 1 and 2 as heifers, where PAS = pasture-based and CON = confinement-based systems [adapted from Lopes et al. (2013)].

based grazing systems, it does indicate that animals have considerable ability to adjust to grazing-based production systems, regardless of their genetic background.

References

Lopes, F., W.K. Coblentz, P.C. Hoffman, and D.K. Combs. 2013. Assessment of heifer grazing experience on short-term adaptation to pasture and performance as lactating cows. J. Dairy Sci. 96:3138-3152.