

Objectively Defining Meals of Lactating Dairy Cows

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When monitoring feeding behaviour we see periods of time feeding and intervals between feeding. Some of these intervals are very short, typical of breaks within a meal, and others are much longer, characteristic of separate meals. The objectives of this research were to: 1) define the interval time which signifies a new meal (meal bout criterion), and 2) to test whether this meal bout criterion changes at different stages of lactation. Twenty-one cows housed under normal free stall conditions, with unrestricted access to the feed bunk were monitored continuously for 10 d at early lactation (DIM=35±16; mean±SD) and for 16 d at peak lactation (DIM=94±16). Cows wore transponders that allowed for automatic monitoring of bunk attendance at 6 s intervals (Growsafe™ Systems Ltd.). The intervals between records were log-transformed and the resulting frequencies of each interval length were plotted. These frequency distributions were bi-modal, with the first peak showing intervals within meals and the second showing intervals between meals. The meal bout criterion was defined as the low point in the trough separating these distributions. Based on this definition, time intervals away from the feed bunk longer than the meal criterion characterized the beginning of a new meal. The average meal bout criterion was less for the animals at peak lactation compared to early lactation (Table 1), signifying a quicker return to the feed bunk. Correspondingly, animals increased their total time spent at the feed bunk d⁻¹ (duration) during peak lactation. The ranges in meal criterion at early (21.0 – 41.9 min) and peak (13.2 – 33.3 min) lactation were less than that previously reported (26.4-63.7 min) for cows ranging from 30-150 DIM. These results indicate that stage of lactation must be considered when using meal bout criterion to determine meal number and duration. Therefore, this research demonstrated that meal bout criterion can be defined objectively and that meal bout criterion changes over the course of lactation.

Table 1. Meal criterion, number of meals, and feed bunk attendance at different stages of lactation.

Parameter	Early lactation	Peak lactation	SE	P
Meal criterion (min)	27.90	22.59	1.32	0.01
No. of meals d ⁻¹	7.32	7.02	0.15	0.17
Duration (min d ⁻¹)	302.00	351.43	6.01	0.001