

# Changes in feeding and social behavior when dietary experience does not match expectation: Effects of spatial and temporal variation in feed quality

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## Introduction



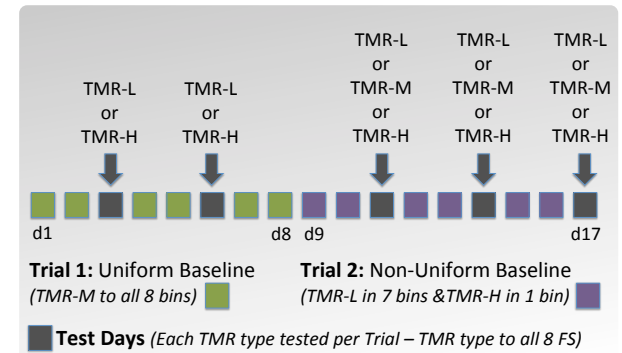
The factors influencing *where* cattle choose to eat at a feed bunk are poorly understood. Changes in the quality of a total mixed ration (TMR) may alter the extent to which dairy cattle “graze” the feed bunk.

**Objective:** Measure the effects of spatial and temporal variation in feed quality on the feeding and social behaviour of dairy heifers.

## Methods

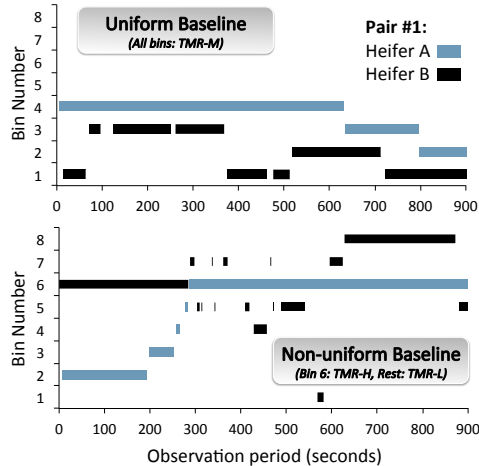
- Four groups of 8 Holstein heifers. Each pen had 8 distinct feeding stations (FS).
- Three TMR qualities were offered:
  - Low energy density = TMR-L
  - Moderate energy density = TMR-M
  - High energy density = TMR-H
- Heifers observed in pairs (n = 16) continuously for 15 min following morning fresh feed delivery
- Switches between FS, time spent at each FS and competitive interactions at FS recorded from video.

## Study Design



## Qualitative Results

Typical movement patterns of dairy heifers between FS during the Uniform Baseline and Non-uniform Baseline days.



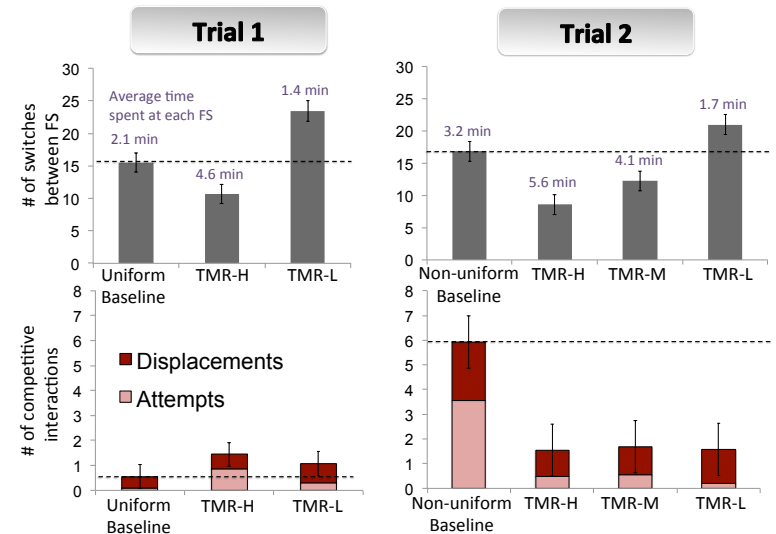
## Quantitative Results

### Exploratory Sampling (FS Switches)

- Heifers sample more and spend less time at each FS when shifted to a less energy dense TMR but sample less and spend more time at each FS when shifted to a higher energy density diet (e.g. Trial 1 & 2)
- Magnitude of this response depends on the degree of contrast (energy density) of the baseline and test diets (e.g. Trial 2)

### Competitive Interactions

- Competitive interactions do not change in response to uniform shifts in feed quality between days (e.g. Trial 1 & 2)
- Heifers are most competitive when TMR quality is non-uniformly distributed along the feed bunk (e.g. Trial 2)



## Conclusion:

Consistency in feed bunk management can reduce competitive interactions, minimize time cattle spend “grazing” the feed bunk, helping to ensure that animals within a group have similar opportunity to access the intended diet.