herds within groups 30-50 and IRREG. In these groups, URNA analyses alone would lead to diagnoses of both sufficient or insufficient sodium supply in the herds.

The KNAQUOT showed more obvious differences among supply groups, with the same conclusion as URNA regarding NA supplementation in the well supplemented herds. Furthermore, the herds in groups 30-50 and IRREG were deficient according to this evaluation method, showing much less variability within groups.

In this study, urine sodium concentrations alone did not allow a clear diagnosis for all herds in marginally supplemented groups. The KNAQUOT takes into account both NA and K and can be interpreted as the momentary equilibrium between NA and K supply. Furthermore, the ratio between two concentrations has no dimension, and rules out the variability due to fluctuations of the urine-minute-volume. This method allows a better diagnosis of sodium supply than NA or K analyses alone, and does not require blood samples. Further studies under controlled conditions are needed to define the reference values of KNAQUOT.

Preliminary Results of an Observational Study describing the Relationship between Milk Urea Nitrogen and Pasture Management in Prince Edward Island Dairy Herds

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Introduction

The initial phase of a long term milk urea nitrogen (MUN) project consisted of a six month (May - Oct 99) observational study 75 dairy herds in Prince Edward Island, a temperate-climate, maritime province on the east coast of Canada.

Several studies have shown that MUN levels increase when cows are put on pasture (1, 2, 5). Ubertalle(4) found that MUN levels were related to grass quality and composition. Lean (5) reported that as pasture develops, the energy content and protein percentage of the dry matter(DM) decreases. Intensive pasture management reduces back grazing and promotes pasture regrowth (5), allowing the energy content and protein percentage of the dry matter (DM) to persist longerthan with low-intensity pasture management. This study describes the relationship between pasture management, precipitation, and observed MUN levels in dairy herds.

Material and Methods

From the 196 PEI dairy herds enrolled on a milk production recording program regional Seventy-six herds were selected.. An August 1999 feeding management survey allowed classification of herds into one of three categories: zero grazing (ZERO), low-intensity pasture management (LOW) and high intensity pasture management (HIGH). Total confinement herds were classified ZERO (n = 15). Herds practicing strip grazing, rotational grazing or utilizing a maximum 10 % of total available pasture at any point were classified HIGH (n = 30). From the remaining 150 herds, 30 herds were selected using a random numbers table and classified LOW (n=30).

MUN concentrations were measured from routine test day samples at the PEI Dairy Laboratory using an automated infrared test method (Fossomatic 4000). MUN patterns and precipitation were evaluated using a three week rolling MUN average and a three-week weighted rainfall average. Analysis of the data included descriptive statistics, graphical analysis and one-way ANOVAs using Stata release 6.0 (Stata Corp. College Stn, TX).

Results and Discussion

The overall average MUN levels were 11.6 for the ZERO group, 11.5 for LOW and 12.2 for HIGH. Graphical analysis showed MUN values increasing early in June, responding to lush pasture conditions in LOW and HIGH herds. LOW and HIGH herd MUN values decreased below the ZERO herd MUN values in late June in response to drought conditions in late May and June. In July, MUN values increased for the LOW and HIGH herds due to improved pasture conditions from increased precipita-

tion. LOW herds were more sensitive to rainfall and resulting pasture conditions, leading to larger MUN fluctuations than HIGH and ZERO herds. This may have been due to more successful pasture regrowth in the HIGH herds. In October, MUN levels stabilized for all groups.

Herd MUN variation was greater in LOW herds 11.5 ± 3.55 compared to the ZERO herds 11.62 ± 2.09. One way ANOVA showed that average weekly MUN values significantly differed among the three groups during certain periods of the summer.

Conclusion

The data from this preliminary study showed that pasture management practices and precipitation have an effect on MUN values in pastured dairy herds.

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