on milk protein %, ketosis incidence or displaced abomasum incidence. However, particle size was associated with herd lameness incidence and mean herd milk fat percentage. When mean herd milk fat percent was assessed using a generalized linear model, herds feeding a TMR diet had significantly lower milk fat percentage than herds feeding a component diet (-0.11%, p=0.02). In addition, herds that had low fiber based on any screen for either haylage or TMR tended to have lower milk fat % (-0.09%, p=0.06). When herds were classified into low (<12%) and high (≥ 12%) lameness incidence categories, herds fed diets with low fiber on both of the top 2 screens, for either haylage or TMR, were at 3 times greater risk for high lameness incidence (p<0.05). These herds also were twice as likely to have a high incidence (>5 %) of abomasal displacement.

This data demonstrates that low effective fiber is common in Ontario dairy herds and is associated with depressed milk fat percentage and increased incidence of lameness.

Evaluation of the Sodium Supply with Biochemical Analysis: Influence of the Amount of Sodium Chloride Fed on Sodium Excretion

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Introduction

Sodium deficiency has been associated with such reproduction disorders as poor conception, irregular oestrus cycle, genital catarrh, loss of appetite, decreased milk yield and licking. Forages are generally poor in sodium, and supplementation with sodium chloride (stock salt) is necessary. Although requirements are well defined, situations with sub-optimal or insufficient sodium supply are not rare in practice. Furthermore, as sodium and potassium are antagonistically regulated, high dietary potassium can aggravate a situation with sub-optimal sodium supply.The purpose of this study as to evaluate the sodium supply in dairy herds with serum and urine analyses and compare different methods of evaluation. These biochemical findings were compared to the anamnestic declared amount of sodium chloride offered to the cows.

Materials and Methods

Blood and urine samples were taken in dairy cows from 29 herds. A total 334 blood and urine samples were taken, with mean sample size n=11 (s=4). According to the system of salt distribution and the daily amount of stock salt given, herds were split into 5 groups of supplementation: PORTION had three levels (10-20, 30-50, 70-100 gm salt/d) and ADLIBITUM had two levels (REG = regular, IRREG = irregular filling of the bowls or replacement of salt blocks). Serum and urine sodium (SENA, URNA) and potassium (SEK, URK) concentrations were analyzed. Furthermore, the urinary potassium / sodium ratio (KNAQUOT) was calculated. Differences among groups were tested with non-parametric tests (Kruskal-Wallis analysis of variance). Post-hoc test of pairwise differences was performed with the Mann-Whitney U-test, using Bonferroni correction for multiple testing.

Results and Conclusions

Groups 70-100 and REG had significantly higher URNA concentrations than the other groups ($p < 0.001$). Group 10-20 had significantly higher KNAQUOT values than all other groups, groups 30-50 and IRREG were intermediate, and groups 70-100 and REG had the lowest values. At the herd level, the 3 herds in group 10-20 were classified as deficient, and all herds in groups 70-100 and REG were considered sufficiently supplemented. In contrast, there was a large variability among

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-