

age pregnancy rate for an even number of cycles. Pregnancy rate is defined as the average proportion of cows open and eligible for insemination that become pregnant per 21-day estrus cycle. Covariates include week of enrollment, retained placenta (RP), metritis, milk fever, displaced abomasum, foot disease and parity. In addition, projected ME305 and peak milk were compared between groups. A calculated sample size of 400 cows per treatment group allows for detection of a meaning-

ful difference in the proportion of cows pregnant between the two treatment groups.

Results and Conclusions

Results of this study will help organize labor on dairies and should be generally applicable to similar dairies. The final results will be presented at the September 2003 conference.

Milking Procedures and Udder Health Management on US Dairy Operations: Results from NAHMS Dairy 2002 Study

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Introduction

Many recommendations relating to proper milking procedures and udder health management have been published, but adoption of these recommended practices on US dairy farms has not been determined. The National Animal Health Monitoring System's (NAHMS) Dairy 2002 Study included survey questions regarding these practices on dairy farms. The objective of this report is to describe current milking procedures and other management practices associated with udder health on U.S. dairy operations.

Materials and Methods

The NAHMS Dairy 2002 study surveyed operations in 21 states representing 82.8% of US dairy operations and 85.5% of US dairy cows. Data was collected during the first six months of 2002. A stratified random sample of 1104 farms was included in this report on milking procedures and udder health management. Data was weighted so that inferences could be generalized to the population. Survey questions included milking personnel's use of gloves, pre-milking teat preparation, automation used in milking, post-milking teat protocol, milking frequency, use of vaccines related to udder health and the use of dry cow therapy.

Results and Conclusions

Only 32.9% of operations represented by the Dairy 2002 study reported that workers wore gloves to milk

all cows. Forestripping was practiced on all or some cows on 86.9% of operations. Overall, 59.1% of operations used a predrip teat preparation in both summer and winter. The two most commonly used disinfectants in predrips were iodophore and chlorhexadine (70.3% and 10.4% of operations using a predrip, respectively). Teat wash preparation methods were used on 35.6% of operations. Teat wash preparation was most frequently done using a single use cloth/paper towel on 53.4% of operations using teat wash preparation methods. Neither a predrip nor a teat wash method was used on 5.3% of operations. Drying of teats following wet prep method was most frequently accomplished using a single-use cloth/paper towel. Removal of milking machines by mechanical methods was reported on 36% of all operations, with increasing use as herd size increased. More than 94% of operations used a post-milking teat disinfectant, with iodophores and chlorhexadine being the most common. Most operations reported milking cows twice daily (93.6% of operations representing 78.6% of cows). Coliform mastitis vaccines were administered to the majority of cows on 35.8% of operations representing 57.1% of all cows. Intramammary dry cow therapy was administered to all cows at dry off on 75.2% of operations. The majority of cows was treated with a dry cow product containing cephalosporin, followed by the combination of penicillin G/dihydrostreptomycin. Although results suggest that many recommended procedures are used frequently on a majority of US dairy operations, continued education regarding how to improve milking procedures could help reduce the incidence of mastitis.

The Relationship between Milk Urea Nitrogen and Reproductive Performance in Dairy Cattle

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Introduction

The objective of this study was to investigate the relationship between milk urea nitrogen (MUN) and first service breeding success on dairy farms.

Materials and Methods

The study population included all cows with a first service from 191 Prince Edward Island (PEI) dairy herds on monthly milk recording. Breeding data for these cows were obtained from the Atlantic Dairy Livestock Improvement Corporation (ADLIC) for June 1, 1999 to May 31, 2001. First-service breeding success (FSBS) was determined for breedings between June 1, 1999 to May 31, 2000. In order to minimize misclassification errors for FSBS, the remaining period was utilized to categorize the first services as successful or not, according to strict definitions (eg. successful = first breeding was last breeding, producing a subsequent calving 270-290 days later). MUN and milk production data for these cows were obtained from ADLIC for April 1, 1999 to August 31, 2000 in order to obtain possible covariate data for the milk production test date closest to the breeding date, and to calculate the following MUN values relative to each breeding: 1) average MUN value during the 60 days before breeding, 2) most recent MUN value before breeding, 3) MUN value that was closest to the breeding date (before or after), 4) the next MUN value after breeding, and 5) average MUN value during the 60 days after breeding. After investigation of simple associations between MUN categories and FSBS, multiple variable logistic regression was used to determine if the five categories of MUN values were related to FSBS, while controlling for possible confounders such as milk pro-

duction, parity, milk protein, linear score somatic cell count (LSSCC), number of days of dry period of previous parity, days in milk on service date, and month of the year. A random variable for herd and for cow were included in the model to control for clustering of management and reproductive success of cows within herds and lactations within cows.

Results and Conclusions

In total, 6,081 first services with a determination of the pregnancy success were used in the analysis, 2,716 successful services and 3,165 unsuccessful services. There were 1180 first services that did not meet the criteria for successful or unsuccessful breeding, and therefore were excluded from the analyses. The MUN value on the test date closest to the breeding date ("MUN closest") produced the strongest statistical (and biological) relationship with pregnancy and therefore was used in the multiple variable modelling process. Simple associations showed MUN closest was significantly ($p < 0.05$) related to FSBS. Without controlling for 24 hour test day milk production on the date closest to the breeding date, the final model of significant ($p < 0.05$) variables included MUN closest, LSSCC for the closest test date to the breeding date, parity, and previous dry period length, with each having an inverse relationship with FSBS. When controlling for milk production, the results showed that MUN closest was still significant ($P = 0.05$). A change in MUN from 10 to 20 mg/dl was associated with a 14% reduction in the odds of conception. This relationship between MUN and FSBS will be further examined using nutritional data recorded for 83 of the 191 herds.