the majority of herds from being classified correctly. By culturing feces or serial testing >95% of herds could be correctly classified (with sufficient sample size). Incorrect classification using those strategies is more likely, due to false-negative classifications in populations where the prevalence of infected herds is high and within-herd prevalence is low. Low within-herd prevalence cannot be detected as well in smaller herds. For the same accuracy, the proportion of the herd to sample decreases as herd size increases.

Milk Quality Premiums Received by Wisconsin Dairy Farms Participating in Veterinary-directed Milk Quality Programs

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Introduction

High quality milk is generally defined as adulterant free milk that meets specific quality criteria relating to the level of somatic cells (SCC) and bacteria. In the U.S., production of high quality milk is encouraged by legislating maximum limits of SCC and bacteria, and by financial rewards offered by processors (premiums). This study describes the relationship between measures of milk quality, dairy management practices and financial incentives offered by milk processors on selected Wisconsin dairy farms.

Materials and Methods

Data was obtained from a subset of dairy herds (n=54) that were participating in a milk quality pilot program. Data collected included financial information, health information and herd management practices. Herds were classified based on milk quality adjustment made to their base milk price in the month prior to beginning the milk quality program. Premium categories were defined as: Deduct (D) (-$0.30 to $0.00 per 45 kg milk; n=12); Small Premium (SP) ($0.06 to $0.30 per 45 kg milk; n=22), or Large Premium (LP) ($0.32 to $0.93 per 45 kg milk; n=20). Data was analyzed using Statistix.

Results and Conclusions

Among premium categories there was no significant difference in number of cows per herd (141 cows in D, 155 cows in SP and 178 cows in LP) or rolling herd average: 9,692 kg (21,322 lb) in D, 10,036 kg (22,079 lb) in SP and 10,441 kg (22,970 lb) in LP. However, herds participating in this study were larger and more productive than typical Wisconsin dairy farms.

SCC values are used to define premium levels and as expected, bulk tank SCC was higher for D (452,667 cells/ml) as compared to SP (285,667 cells/ml) or LP (220,125 cells/ml). Premiums received (RecPrem) approximated a normal distribution, with a mean of 23 cents per 45 kg (99 lb).[a]

Average RecPrem per 45 kg were 11 cents for D, 17 cents for SP and 50 cents for LP. Maximum premium offered by the processor was lower for SP at 66 cents, compared to D at 69 cents and LP at 85 cents.

The following equation accounted for 77 percent of the variation in received premium:

$$RecPrem=0.24-.0000018(BTSCC)+0.41(MaxPrem)+.001(DIM)$$

Prevalence of subclinical mastitis was lower for LP and SP herds, with 24% of the LP herd showing linear somatic cell scores >4, and 28% of the SP herd. This compared to 36% of scores in the D herd. Incidence of subclinical mastitis, defined as cows with new linear somatic

cell scores >4 was not significantly different between premium categories (9.4% for D, 7.2% for SP and 7.4% for LP. Overall rate of clinical mastitis (no. cases per month divided by the number of lactating cows) was 6.75% and did not vary among premium categories.

Action to lower SCC to 150,000 would result in considerable additional monthly income for herds in all premium categories. In this example, income from herd D would be up $2,234, herd SP would have generated an additional $1,452 and herd LP would be up $1,139. The majority of herds (58%) did not routinely record clinical mastitis and 15% of the herd managers had never performed a bulk-tank culture. Some 33% of the herds had never had a milking system analysis performed during milking. In this survey of herds recruited by consultants and veterinarians only 40% reported that they routinely consulted veterinarians regarding milk quality.

[a] 95% confidence interval: 16 cents – 30 cents

Comparison of an Experimental Pulsation System with Conventional Pulsation

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Introduction

This study examined whether cows milked with a "copulsation" milking machine differed from cows milked with a standard pulsation milking unit in measures of udder health, teat end condition, and milk flow rate. Study design was a one-year trial with a completely randomized block crossover. Background on the "copulsation" method will be provided.

Materials and Methods

Holstein cattle housed in a tie-stall barn and milked with an around-the-barn high-line milking system are maintained for teaching and research purposes at the Cornell University College of Veterinary Medicine. From the herd, 30 cows were selected that were considered most likely to remain in the herd for the next year, and that were suitable for pair blocking. They were blocked into 15 pairs of contemporaries based on lactation and production information. Each pair was randomly divided, with one cow assigned to a conventional pulsation group and the other cow assigned to the experimental pulsation group. After 6 months, all cows were reversed between milking groups.

Once each month for one year, quarter milk samples were collected from all cows enrolled in the study. Culture and Somatic cell count (SCC) tests were performed. IMI were defined as new or chronic (case definitions will be provided). Teat ends were scored as good, intermediate, or poor using objective criteria (details will be provided). Using milk meters, mean milk flow rate per minute was calculated. Clinical mastitis cases were recorded, cultured and had SCC tested. Milking system performance measurements were made monthly (details of testing will be provided).

Depending on whether continuous or categorical variables, ANOVA or Chi-square testing of significant differences was used.

Results and Conclusions

"Copulsation" milked cows did not differ from conventionally milked cows in SCC, milk flow rate, proportion of quarters with new IMI, chronic IMI and negative culture results, or proportion of teat ends scored as good, intermediate or poor. There was no evidence of difference in performance between "copulsation" and conventional pulsation milking.