APPENDIX II

MULTPILE REGRESSION MODEL - ANALYSIS

PROJECTED DAYS OPEN ANALYSIS - RESULTS : Dependent Variable: ADO

R-Square	F Value	Pr>F
0.778174	27.11	0.0001

Source	DF	F Value	Pr > F
PDO	1	217.68	0.0001
FARM	10	8.05	0.0001

MICHIGAN DHIA AVERAGE DAYS OPEN ANALYSIS - Dependent variable: ADO

R-Square	F Value	Pr>F
0.723318	20.20	0.0001

Source	DF	F Value	Pr > F
MIDHIA	1	160.73	0.0001
FARM	10	6.15	0.0001

PROJECTED AVERAGE MINIMUM DAYS OPEN ANALYSIS - Dependent variable: ADO

R-Square	F value	Pr>F
0.753066	23.57	0.0001

Source	DF	F Value	Pr > F
PAMDO	1	196.20	0.0001
FARM	10	6.30	0.0001

HEAT DETECTION/CONCEPTION RATE AVERAGE DAYS OPEN ANALYSIS - RESULT

R-Square	F Value	Pr>F
0.752329	24.00	0.0001

Source	DF	F Value	Pr > F
HDCRPDO	1	118.48	0.0001
FARM	9	13.50	0.0001

Dry Cow Therapy and Mastitis Control, An Observational Study

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A cross-sectional study involving 1032 dairy farms in Ohio was conducted with the objective to evaluate the effectiveness of mastitis control measures in a contemporary dairy environment. Recently published observational studies have found varying effectiveness of common mastitis control practices, particularly nonlactating cow therapy (dry cow therapy, DCT). Miller and Bartlett reported that DCT was not an economically advantageous practice. Howard *et al.* reported a negative marginal value product for DCT. Dargent-Molina *et al.* reported that not using DCT increased the risk for herds having mastitis associated with *Streptococcus agalactiae* (Strep ag) but did not increase the risk for a herd having mastitis caused by *Staphylococcus aureus* (Staph aureus). These findings seem to contradict the experimental results reported by Kingwill *et al.* and Smith *et al.* that support the use of DCT. The design and conduct of our study was aimed at explaining the apparent discrepancy between the findings of the observational studies and those of the experimental studies. To this end we designed the study to minimize information, confounding and response bias and to develop a parsimonious statistical model that would accurately describe the biologic implications of mastitis control.

Many of the routine practices used to control mastitis were developed when the major contagious pathogens (Strep ag and Staph aureus) were prevalent. We felt that this situation may have changed, especially for Strep ag, and that these pathogens currently were less prevalent. It was hypothesized that the effectiveness of certain mastitis control practices would be conditional on the presence of the major contagious pathogens. A primary focus of our study design was to classify study herds on the basis of the presence or absence of contagious pathogens and on herd somatic cell count (SCC). This constraint required that our sampling frame include only herds enrolled in the SCC option of Dairy Herd Improvement Association (DHIA) and also belonging to Milk Marketing Inc. (MMI), an Ohio-based milk cooperative.

The detection of contagious pathogens in a herd was based on culturing these pathogens from the herd's bulk tank milk which was provided to us by MMI. Complete microbiological information was obtained from 802 herds. To complement the microbiological data, SCC data were obtained from DHIA on 741 of the study herds. As a result of these data, four mutually exclusive outcome categories were created: 1) herds with low SCC (geometric mean SCC <150,000 cells/ml) without contagious pathogens, 2) herds with mid-level SCC (150,000-300,000 cells/ml) without contagious pathogens, 3) herds with coagulase-positive staphylococci in their bulk tank milk (CPS), and 4) herds with esculin-negative, CAMP-positive streptococci (ENCPS) in their bulk tank milk.

Herd owners were surveyed by mail concerning their use of mastitis control measures. The survey focused on the use of DCT, post-milking teat dipping (PTD), culling practices, milking machine maintenance, treatment for clinical mastitis, and pre-milking hygiene. Nearly ninety percent of questionnaires were returned.

Complete data (SCC, questionnaire and microbiological) were obtained for approximately 65% of the eligible herds.

The majority of farms were negative for the contagious pathogens, although there was a large percentage of farms (45.4 percent) with CPS present in the bulk tank milk. The results of the mail survey clearly showed that this group of producers had not uniformly adopted the surveyed practices. However, greater than 90 percent of these farmers used PTD and greater than 85 percent used DCT on every cow. The geometric mean SCC for all microbiology groups was below 300,000 cells/ml which was the bulk tank SCC threshold for payment of a premium bonus by the milk cooperative (although the geometric mean SCC used in our study may not be the same as the bulk tank SCC). The lowest geometric mean SCC was seen in the group negative for contagious pathogens in the bulk tank milk. The highest averge SCC was found for farms with Strep ag in their bulk tank milk.

Farms classified as negative for the contagious pathogens had the highest proportion of farms adopting all of the surveyed practices, particularly of teat dipping and dry treating. Farms classified as positive for CPS were similar in the proportion of farms adopting the program to farms negative for the contagious pathogens. Farms classified positive for ENCPS in their bulk tank were less likely to use DCT, PTD, treat lactating cows for mastitis, and report observing clinical mastitis in the previous 30 days than farms negative for the contagious pathogens. The one management variable that distinguished farms with CPS from farms without contagious pathogens was using a teat dip on all cows prior to milking or predipping.

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