

of the previous economic evaluations, increase the cost of lameness substantially.<sup>3-5</sup> An increase of 14 to 30 days in the interval from calving to conception has been shown in lame cows when compared to nonlame cows. These economic factors make bovine lameness a very important disease syndrome in the dairy industry.

Goals of this study were to determine the prevalence of clinical lameness in dairy cows in the midwestern United States and to determine cow level risk factors for clinical lameness.

### Materials and Methods

The seventeen Minnesota and Wisconsin dairy herds selected into this study were visited twice, in the summer of 1989 and in the late winter of 1990. The mean number of milking cows at each visit was about 50.

The clinical lameness scoring system utilized for identification of clinical lameness consisted of individual observations of each milking cow at a walk by two observers at each farm. A lame cow was defined as one classified lame by at least one observer. The prevalence of clinical lameness was defined to be the number of lame cows divided by the total number of milking cows on these farms.

To determine cow level risk factors for clinical lameness, a case-control study design was used. Cases (cows with clinical lameness) were previously identified from the prevalence study. A control nonlame cow was selected from the same herd as each case matching on parity and stage of lactation.

Factors evaluated in each case and control animal for their association with clinical lameness included the following: bodyweight, body condition score, dorsal claw an-

gles, and presence and character of limb lesions. Sole lesions were not evaluated.

### Results

Using our scoring system, the prevalence of clinical lameness in these herds was 13.6% of milking cows in summer and 16.7% in late winter.

From univariate analysis of late winter data, higher bodyweight was positively associated with clinical lameness, while higher body condition score appeared to have a strong negative association with lameness. Lesions positively associated with clinical lameness included abnormal hoof overgrowth and rear limb superficial swelling in locations other than the tarsus.

The multivariate statistical technique of conditional logistic regression will be utilized to yield a model from which estimates of relative risk can be determined, after controlling for confounding and evaluating interactions among these variables.

### References

1. Weigler, B.J., Hird, D.W., Sischo, W.M., et al. *Veterinary and nonveterinary costs of disease in 29 California dairies participating in the National Animal Health Monitoring System from 1988 to 1989*. JAVMA 1990; 26 (12):1945-1949.
2. Whitaker, D.A., Kelly, J.M., Smith, E.J. *Incidence of lameness in dairy cows*. Vet Record 1983; 113:60-62.
3. Lee, L.A., Ferguson, J.D., Galligan, D.T. *Effect of disease on days open assessed by survival analysis*. J Dairy Sci 1989; 72:1020-1026.
4. Lucey, S., Rowlands, G.J., Russell, A.M. *The association between lameness and fertility in dairy cows*. Vet Record 1986; 118:628-631.
5. Collick, D.W., Ward, W.R., Dobson, H. *Association between types of lameness and fertility*. Vet Record 1989; 125:103-106.

## Mastitis in the Beef Cow and Its Effects on Calf Weight Gain

M.A. Newman, R.J. Eberhart, E.H. Cash, T.R. Drake  
Penn State University, University Park

Quarter samples for culture were collected from 120 beef cows in early, mid, and late lactation to assess prevalence of mastitis pathogens and effects of mastitis on calf weight gain. In early, mid and late lactation respectively, 25.8, 29.2, and 54.4% of cows and 13.1, 14.9, and 27.5% of quarters were infected.

*Staphylococcus aureus* was found in 2.9, 2.7, and 3.2% of quarters in early, mid and late lactation respectively. *Staphylococcus hyicus* was found in 2.5, 1.7, and 2.5%, and *Corynebacterium bovis* the most prevalent organism, in 4.0, 7.6, and 18.2% of quarters at the respective sampling times. Geometric mean somatic cell counts (cells/ml X 10<sup>3</sup>) by quarter infection status were: *S. aureus*, 792; *S. hyicus*, 477; *C. bovis*, 102; and uninfected, 18. Adjusting 205 day weight gain of 224.1 kg for calves with *S. aureus*-infected dams was lower ( $p < 0.5$ ) than the 233.7 kg for calves with

uninfected dams. Effects of other infections on calf weight gain were not significant. California Mastitis Test did not effectively select infected quarters for dry cow therapy.

In order to evaluate the effect of treatment at fall weaning, cows were randomly divided between control and dry treatment, and final milk cultures collected at 2 to 4 weeks post calving the following spring. Prevalence of infection with any organism was reduced primarily due to elimination of infections present at weaning.

Currently a study is in progress to determine economic advisability of dry treating all cows at weaning on the basis of improved calf growth during the subsequent lactation. Concerns which remain to be addressed include; injectable products available for dry treatment, age groups requiring preferential treatment, frequency of treatment, and effect of treatment on cow longevity.