

## EPIDEMIOLOGIC AND FINANCIAL ANALYSIS OF RESPIRATORY DISEASE IN LAMBS

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Data on all lambs born from 1986 through 1990 (n=6320) in a large midwestern flock were used to assess risk factors and financial costs associated with respiratory disease (RD) and respiratory mortality (RM). Clinical RD represented 75.9% of all disease and was found in 7.9% of lambs. RM accounted for 15.9% of all lamb deaths. Demographic, management and environmental factors which led to variations in likelihood of disease or death were identified using relative risk (RR) and the chi square statistic. Males had a higher incidence of RD (RR=1.4, p<.001) and RM (RR=1.82, p<.001). Lambs with Suffolk dams or Suffolk sires were at increased risk of RD (RR=1.59, p<.001 and RR=1.94, p<10<sup>-6</sup>, respectively) while RD was lowest in lambs with crossbred dams (RR=.66, p<.01). Lambs from Combo-6 dams had the lowest RM (RR=.57, p=.05) and St. Croix sired lambs were at decreased risk of RD (RR=.27, p<.01). Other dam and sire breeds (Booroola Merino, Dorset, Rambouillet, and Targhee) had no significant effect on RD or RM. There was a significant trend for reduced RD in lambs stronger at birth (p<.01) but a trend for reduced RD in lambs from ewes with better milk production was not significant (p>.05). Number of siblings at birth or during rearing was not associated with RD or RM. RD and RM incidence was not significantly different for lambs born in barns other than the primary lambing barn, but lambs born in the more heavily used south end of the lambing barn versus those born in the north end were at increased risk of RM (RR=1.45, p<.01). RD was associated with decreased gains before 30 days (p<10<sup>-6</sup>) but not from 30 to 56 days (weaning).

A partial budget was constructed to evaluate annual costs due to RD and RM, during 1989, for which costs associated with morbidity were available. Factors included in RM costs were lost market returns for dead lambs, RD treatment costs, and reduced feed costs from ewes which lost lambs. For 1989 the total cost of RM was \$2,933.61. Factors included in RD costs were lower market weights for RD lambs, extra feed costs for longer finishing time, and RD treatment costs. Total cost of RD in surviving lambs was \$683.96. Total cost of RD and RM was \$3,617.57. Costs averaged \$71.55 for each lamb which died from pneumonia and \$17.10 for lambs which survived RD. The overall cost of RM and RD added \$2.80 per lamb to production costs. Using this basic partial budget model, the relative financial importance and cost-effectiveness of modifying each significant risk factor can be determined. This combination of epidemiologic and economic techniques provides a method for identifying and comparing potential interventions.

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