

**12 Predicting cattle age using the eye lens.** C. R. Raines, M. E. Dikeman\*, J. A. Unruh, M. C. Hunt, and J. L. Marsden, *Kansas State University, Manhattan.*

The eye lens grows continuously throughout life and has been shown to have a very strong relationship with chronological age for many species, and has been shown to be largely unaffected by environment, diet, parity or gender. Of particular interest, a 20-month maximum limit for cattle age has been set as a requirement for the re-establishment of overseas beef trade. Our objective was to evaluate and compare eye lens weight and nitrogen content, dentition, and USDA maturity score as predictors of beef animal age. Cattle (n = 386) of documented ages ranging from 370 to 1,115 d of age were used. Dentition was evaluated immediately after slaughter and eyes were removed within 15 min of slaughter. Eyes were dissected within 20 h of collection, or frozen at -80°C until dissection could occur. Lenses were recovered, weighed, and analyzed for total N content. Correlations with chronological age were determined: lens weight (r = 0.77); dentition (r = 0.74); lens N (r = 0.71); and USDA maturity (r = 0.64). Stepwise backward regression resulted in lens weight and dentition as the remaining significant predictors (P < 0.1). The following equation (R<sup>2</sup> = 0.67) was developed: Age (months) = -21.79 + 17.23(lens weight) + 0.038(dentition score). Using this equation, 38% of cattle ≤ 20 months of age in this study were verified as ≤ 20 months of age. Independent measures verified the following percentages of cattle as ≤ 20 months of age: lens weight (20.18%); USDA maturity (11.01%), dentition (9.63%), and lens N (8.72%). An additional, separate group 20 cattle ranging in age from 1 to 12 yrs of age was evaluated for lens properties. Lens weight (R<sup>2</sup> = 0.91) and lens N (R<sup>2</sup> = 0.92) were both highly correlated with age. Higher correlations for lens weight and N content were observed in the group of 20 cattle ranging in age from 1 to 12 years because a greater range of age was used. Lens weight and dentition were the best predictors of age for cattle 13 to 37 months of age and, when used together, are more accurate for predicting age than USDA maturity.