An Evaluation of Retinal Imaging Technology for 4-H Beef and Sheep Identification

ABSTRACT

Blomeke, C.R., Rusk, C.P., Balschweid, M.A., & Elliott, S.J.

The purpose of this study was to evaluate retinal imaging technology as a means of permanent identification of 4-H beef and sheep projects. The specific objectives of this study were to compare the time required to collect a retinal image versus a nose print, and to determine the false match and false non-match rate of visual verification for each identification method in beef and sheep. The OptiReader™ Device, designed by Optibrand Ltd., LLC, was used to capture digital images of the retinal vascular pattern of beef and sheep projects being enrolled in the Indiana 4-H program. Nose prints were also collected by county committee members. A total of 317 beef and 159 sheep were re-imaged at county fairs in order to collect retinal images to compare with the images collected during 4-H enrollment. The on-site visual verification rate was 96.2 percent for beef, and 100 percent for sheep. Retinal images from nine additional beef cattle were verified by Optibrand technicians using visual and electronic verification methods. A subset of the re-imaged animals was nose printed again for comparison by a fingerprint examiner who determined that, two pairs of prints did not match. A recording error was discovered to be the cause of the incorrectly paired nose prints.

The second objective was investigated by providing adult volunteers with a visual verification exercise. The exercise consisted of 20 pairs of retinal images and 20 pairs of nose prints, ten pairs each from both beef and sheep. Individuals correctly identified a pair of retinal images as a match 98.6 % of the time for beef and 84.9 % of the time for sheep. Nose prints were correctly identified as a match 68.9% of the time for beef, and 79.5% of the time for sheep. The researcher concluded that the retinal imaging system is a viable method for enrolling Indiana 4-H beef and sheep projects.