ABSTRACT

A comparative study of the CowManager tag versus visual observations was conducted to measure the efficacy of cow behavior measuring technologies. The study used 30 Angus cross beef steers grouped into pens of 6. The steers were monitored once a week every other week for a total of 6 days. Each observation period was within 4 hours from the hours of 7am to 11am using the scanning method at an interval of 5 minutes. The behaviors that were monitored by the observer and CowManager technology included time spent ruminating, eating, and being active. Each behavior time was put on an hour time scale and compared. After SAS analysis there was no statistical difference in the time spent ruminating when using observational methods versus those that the CowManager reported. However, there was a statistical difference in time spent eating when comparing observational and CowManager data. The CowManager data appeared to underreport the amount of time spent eating. These results indicate that CowManager tags can accurately measure rumination time but are unable to accurately measure feeding time when used in beef cattle production systems. This is significant for beef cattle research and feedlot industries looking to use this technology.

BACKGROUND

• Rumination is a behavior of all ruminant species of regurgitating and rechewing feed for further digestion. Rumination has a direct correlation with the health of a ruminant animal.
• The CowManager tag, placed in the ear, is a behavior monitoring device developed by Agis Automatisering. It monitors temperature and activity, as well as time spent eating and ruminating, on a minute per hour basis.
• The CowManager tag is a widely used technology in the dairy industry but has limited use in beef production.
• Research done by Schirmann et. al shows that CowManager tags monitored eating behavior mainly through detection of head movements.
• Two separate studies by Borchers et. al, and Bikker and associates found that CowManager technology correlated with observational measurements.

OBJECTIVES

• To test the effectiveness of the CowManager technology in an untraditional (non-dairy) production setting
• To test the viability of using CowManager technology as a means to collect data for use in Ruminant Nutrition research
• To test the accuracy of the CowManager technology to measure time spent ruminating and eating

METHODS

• 30 Angus cross beef steers grouped into 5 pens of 6, each were identified by ear tag number and paint markings applied by observer.
• The Scanning Observational method was used. Each steer was observed at five minute intervals and marked for either standing, walking, eating, ruminating, or lying down.
• Steers were monitored for four hours from 7am – 11am every other week. Observational data times were compared at same time intervals collected from CowManager tags.
• All data was run through SAS for analysis.

RESULTS

• CowManager data and observational data for rumination were statistically similar with a p value of 0.416 (p value > 0.05)
• CowManager data and observational data for eating were not statistically similar with a p value < 0.0001. CowManager tag grossly underestimates time spent eating.
• Non-Active and Active observations were not statistically similar but did follow a similar trend. Differences in data collected may be due to observational technique used.

CONCLUSIONS

• CowManager tags can effectively monitor rumination time in cattle.
• CowManager tags can effectively monitor eating when in a setting (such as for dairy) where feed is placed close to the ground. However, when used with bunks like in the beef industry, the CowManager tags underestimate the amount of time spent eating.
• CowManager tags will need to further enhance the CowManager algorithm needed to accurately measure eating if this device is to be used in any aspect of the beef feedlot industry.