Relationship between Drinking Frequency and Carcass Traits in Yearling Feedlot Cattle

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Summary and Implications
Normal variation in cattle drinking behavior regarding drinking frequency cannot be used to estimate finished carcass characteristics, however there is some relationship between frequency early in the feeding period and overall average daily gain.

Introduction
The capability to monitor individual animals in group housing without excessive effort on the part of the herdsman is possible with electronic identification. Production information and simply knowing which animal is eating, drinking, or is in estrus has been the primary thrust thus far in these management systems. In a previous Animal Industry Report, "Determination of Carcass and Live Body Weight Finishing Cattle from Front Body Weights Taken at a Scale – Electronic Identification Equipped Water Fountain" the use of a scale coupled with the E-ID reader and the water fountain was described. This setup provided a means to collect live cattle weights and estimate current carcass weight while cattle were on feed on a daily basis. This paper looks at whether monitoring drinking behavior has any other implications of future carcass merit of finishing cattle with the purpose of possibly using this information to further refine sorting cattle into marketing groups.

Material and Methods
Four groups of yearling steers of British and Continental influence were tagged with a half duplex, electronic identification (E-Id) tag, weighed and put on a finishing ration of corn, dry ground hay, distillers grain and supplement. Two of these groups were fed during winter and two groups were fed during summer over a two year period. Cattle drinking frequency was monitored by an electronic animal E-Id tag reader located by the water fountain within the pen. This reader was coupled to a computer which then recorded drinking events. A drinking event was considered to occur at an interval which was at least 20 minutes after a previous visit to the fountain. Data from the reader-computer system was downloaded remotely to the farm office. At the end of the time on feed, cattle were processed at Tyson Fresh Meats (Denison IA) where carcass weight, ribeye area, back fat, KPH fat, quality grade and yield grade measures were collected. The carcass measures of the individual animals were matched with the number of drinking events each animal logged in the first days on feed, the average per day while on feed and the number of drinking events at the end of their time on feed. PC SAS version 9.1 was utilized to analyze the data using Proc GLM.

Results
Table 1 provides a summary of the results. In general the number of drinking events an animal logs initially, on average over the entire time on feed or in the days just prior to harvest do not have any relationship with the outcome of the animal's carcass measures in the case where healthy animals are fed as was the case in these trials. If there were health issues, the results may be quite different. One relationship that was noticed is that between the number of drinking events and overall average daily gain. This relationship seems particularly significant when looking at the initial and final counts but not with the average number of drinking events. This may imply a number of things: one - that cattle that start well on feed and subsequently drink well tend to gain better in the long run, two - that cattle which gain well do so throughout the feeding period even when physiological signals brought on by higher body fat deposition generally tend to promote a reduction in appetite and subsequent weight gain.

Table 1. Correlation between drinking frequency and carcass measures.

Drinking Frequency	ADG	REA	Fat	YG	QG	% Dress
Initial	0.02	0.41	0.82	0.56	0.75	0.76
Avg. on Feed	0.26	0.18	0.43	0.65	0.62	0.58
Final	0.003	0.80	0.52	0.82	0.83	0.84

*Values given on table of 0.05 or less (P > F 0.05) would be consider significant