

Public Abstract

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Title:EFFECTS OF MATURITY AND PRODUCTION STAGE ON RESIDUAL FEED INTAKE
CLASSIFICATION OF BEEF COWS

In spite of its recent popularity, there has been limited research on the stability of RFI classification as influenced by animal age and production stage. The objective of this research was to determine if the postweaning RFI classification of beef heifers remain consistent as the animals matured (postweaning vs. mature), went through different stages of production (dry vs. lactating) and were placed in different feeding systems (confined feeding vs. pasture). Three feed intake trials, using the GrowSafe feed intake system, (postweaning, dry and lactating) and a two-year pasture trial were conducted on the same 33 Simmental X Angus females from a single herd. Data from all three GrowSafe trials were pooled and stepwise regression (SAS PROC REG) was used to calculate expected feed intake (EFI) across all trials. Individual RFIs were calculated as the difference between actual dry matter intake (ADMI) and EFI. Cows were then categorically grouped as Low (RFI < 0.5 SD below the mean), Average (RFI \pm 0.5 SD above and below the mean) and High (RFI > 0.5 SD above the mean) based upon individual RFI classifications for each trial. No correlations ($P > 0.1$) were found between postweaning RFI classifications and either trial as mature animals (dry or lactating). Moderate correlations ($r = 0.53$; $P < 0.001$) were found between RFI classifications during the dry (RFIdry) and lactating (RFIlac) trials. The overall average daily intakes in the pasture study were lower ($P < 0.05$) than in the GrowSafe trials (15.0 kg and 18.4 kg, respectively). No relationship was found between individual animal intakes from pasture and the GrowSafe trials for either dry or lactating cows ($R^2 = 0.02$ and 0.002 , respectively). When compared to the high category cows, the low category cows had reduced metabolizable energy intake (MEI) [Mcal/hd/d], and recovered less energy (RE), ($P < 0.01$) across all trials; they also produced less heat energy (HE) ($P = 0.05$) during the dry cow trial. It was also found, for all trials, that while cows in the low category produced less heat they partitioned a greater percentage of their MEI as HE ($P < 0.01$). Noticeable movement in regards to RFI ranking occurred between trials; 61%, 52% and 82% shifted categories among low, average or high rankings between heifer vs. dry; dry vs. lactating and heifer vs. lactating comparisons, respectively. Of the 33 animals tested only three remained in the same category across all three trials.