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The measurement of residual feed intake to determine feed efficiency of pregnant Hereford heifers

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The large potential improvement in profitability is what makes feed efficiency such a studied and concerned topic in the beef industry today. Currently, no herd exists in the United States that has been selected solely for the purpose of measuring and improving feed efficiency. The objective of this study was to rank forty-two pregnant Hereford heifers based on their feed efficiencies, so that they may be mated to bulls of known efficiency. The long term goal of this project is to create both efficient and inefficient herds for future feed efficiency research. These heifers were acquired from various beef producers across the state to ensure genetic variation within the herd. The heifers were fed an alfalfa/grass hay to which they had ad libitum access. Their diet was 86% dry matter and contained 58% neutral detergent fiber, 38% acid detergent fiber, and 14% crude protein on a dry matter basis. The individual intake of each heifer was recorded by the GrowSafe® feed intake system. Expected feed intake was calculated as a regression of actual intake on average daily gain and metabolic mid-weight. Expected feed intake was subtracted from actual feed intake to calculate the residual feed intake value of each individual heifer. Residual feed intake was then used as a measure of feed efficiency. The average body weight at the start of the study was 488 kg. Heifers consumed on average 17.77 ± 5.24 kg/d, and the herd gained at a rate of 0.77 ± 0.32 kg/d. The most efficient heifer consumed 9.78 kg/d less than was expected, while the most inefficient heifer consumed 11.54 kg/d more than was expected. Calculating residual feed intake as a means of determining feed efficiency will enable us to establish both efficient and inefficient herds for further research.