

Relationships among residual feed intake, plasma urea nitrogen concentration and infrared images in beef cows

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Feed expenses represent around 60% of the costs in cow-calf production. Therefore, measures related to feed efficiency, such as residual feed intake (RFI), are desirable. One-hundred-fourteen pregnant crossbred beef cows were randomly assigned to dietary treatments consisting of mainly haylage with four levels of wheat straw (0%, 20%, 40%, and 60%, DM basis). Diets were formulated to exceed requirements for energy and protein. Blood samples and infrared images were taken in the first and last week (nine-week experiment) with feed intake recorded daily for individual cows. Plasma urea nitrogen concentration (mg/dl;PUN) was greatest ($P<0.05$) for the 60%-straw (12.25) and lowest for the 40%-straw (5.78), with the 0%-straw and 20% straw diets intermediate. Cows fed 0%-straw diet had the greatest ($P<0.10$) hind temperature (HT). Both within and across diets, HT was numerically ($P>0.10$) greater for cows with high RFI ($\text{RFI}>1.0\text{kg DMI/d}$, less efficient) than for cows with low RFI ($\text{RFI}<1.0\text{ kg, DMI/d}$). High and low RFI cows showed a negative correlation ($P<0.10$) between HT and PUN (-0.21 and -0.19). As the use of the technology progresses, infrared images may be useful in the assessment of dietary treatment effects and also infrared images may have some predictive abilities for feed efficiency.