

APPLYING EFFECTIVE ENERGY CONCEPT FOR INTAKE PREDICTION AND
BALANCING RUMINAL NITROGEN AND POST-RUMINAL AMINO ACID
REQUIREMENTS FOR BEEF CATTLE

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Abstract

Proper animal nutrition involves balancing nutrient supply to nutrient requirement. Accurate intake prediction is fundamental to diet formulation and appears simple but has historically been challenging to accomplish. Accuracy of effective energy equations (EE) was compared with three NRC equations and net energy equations (NE). The EE equations more accurately predicted intake, had less variation and the greatest coefficient of determination (r^2), and smaller line bias decomposition. These findings support the conclusion that EE models were the best for predicting intake by steers. Implementing EE intake prediction in a diet formulation model to formulate diets with adequate but not exceeding ruminal degradable nitrogen to allow maximal microbial protein yield was tested and demonstrated that diet could be formulated to meet ruminal nitrogen required for microbes and post-ruminal amino acid requirement. Balanced ruminal degradable nitrogen and post-ruminal amino acids requirements diet could improve steer feed efficiency.