

MANURE NUTRIENT RESPONSE TO LIMIT FEEDING IN DAIRY REPLACEMENT RATIIONS

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A study was conducted to evaluate the effect of limit-feeding on growth, feed efficiency and fecal excretion in gravid Holstein heifers. Gravid Holstein heifers (n=54) were randomly assigned to one of nine pens containing six heifers/pen. Heifers were fed one of three experimental diets for 111 d. Control heifers were ad libitum fed a diet containing 11.3% CP and 2.46 Mcals/kg of metabolizable energy (ME). Two experimental diets of increased nutrient density were formulated to contain 12.7 and 14.2% CP and 2.55 and 2.68 Mcals/kg of ME respectively. Feed intake of these diets was limited to 90 and 80% of control heifer feed intake. Nutrient intake, growth, fecal excretion, blood profiles, behavior and 90 d lactation performance of heifers were examined. Limit-fed heifers consumed less ($P<0.01$) DM (9.02, 8.30 vs 9.66 kg/d), similar amounts of net energy for gain (9.4, 9.5 vs. 9.4 Mcals/d) but slightly higher ($P<0.07$) amounts of CP (1.15, 1.17 vs. 1.10 kg/d) as compared to heifers fed ad libitum. Average daily gain or gain of body frame (height, hearth girth) was not different ($P>0.10$) between limit-fed and ad libitum fed heifers but feed efficiency was improved ($P<0.09$) by 1.04 kg DM intake/kg gain by limit-feeding. Limit-fed heifers excreted 0.36 and 0.86 kg less ($P<0.10$) DM but excreted similar amounts of N and P as compared to heifers fed ad libitum. Limit-fed heifers spent less ($P<0.05$) time eating, more ($P<0.01$) time standing without eating and vocalized more ($P<0.03$) than ad libitum fed heifers. Incidence of increased vocalization was minor and was negligible after 30 d. Limit-feeding did not influence blood glucose, total protein, albumin, P or Ca as compared to ad libitum fed heifers but linear increases ($P<0.07$) in blood urea nitrogen were observed in limit-fed heifers due to higher N intakes. Limit-feeding of gravid heifers may offer opportunity to reduce feed cost, control body condition and reduce fecal excretion without negative effects.

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