

Effect of a stair-stepped growth regimen during gestation on performance of beef heifers - Prepartum growth performance

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A stair-step nutrition and feeding regimen has been shown to produce compensatory responses in growth efficiency and increase subsequent lactation performance. Objectives of this study were to determine the effect on growth performance and lactation potential of beef heifers reared on a simplified stair-step growth regimen imposed during gestation. Lactation performance is reported in a companion abstract. Twenty pregnant beef heifers (463²⁹/₂₁ kg; 6.7²⁹/₂₁ body condition score [BCS]) were blocked by breeding sire and assigned to either a constant (C) or a stair-step (S) growth regimen for 18 wk immediately prepartum. Animals assigned to C were fed a diet designed to meet the nutrient requirements of heifers gaining .45 kg/d throughout the feeding period, while S heifers were fed an energy-restricted diet for 9 wk. Metabolizable energy concentration (ME) of the restricted diet was similar to C, however dry matter intake (DMI) was to be limited to 70% of C. Protein concentration (CP) was increased in the restricted diet to allow similar daily protein intakes between treatments. Following the restriction phase, S heifers were given ad libitum access to a high energy (130% ME and 100% CP of C) diet to allow compensatory growth for 9 wk. Subsequently, all heifers were managed similarly through weaning. Average daily gain (ADG; .51 vs .17 kg/d for C and S, respectively; $P < .10$), BCS (6.5 vs 6.0, $P < .15$) and dry matter intake (DMI; 10.8 vs 8.2 kg/d, $P < .01$), but not growth efficiency (GE, gain/feed; .047 vs .021, $P = .18$), were reduced in the restricted phase of S. Conversely, ADG (-.14 vs 1.36 kg/d, $P < .01$), DMI (8.0 vs 8.8 kg/d; $P < .05$), BCS (6.2 vs 7.0, $P < .06$) and GE (-.017 vs .153; $P < .01$) were increased in the compensating phase of S. Over the entire feeding period, ADG (.20 vs .73 kg/d; $P < .01$) and GE (.022 vs .086; $P < .01$) were increased, whereas DMI (9.3 vs 8.4 kg/d; $P < .05$) was reduced, by the experimental regimen. These results indicate that beef heifers reared on a stair-step growth regimen during gestation display compensatory responses in average daily gain and growth efficiency.

