



Grower Research Roughage Level and Type

Summary

Textured growers based on 62% grain (corn and oats) should be fed with approximately 1% ADF or approximately 1.5% NDF from roughage to calves between 8 and 16 weeks age. This added amount of roughage corresponds to from approximately 1.5% straw to 5% alfalfa hay.

Previous Research on Grower Diets for Calves under 5 Months of Age

Weaned calves under 4.5 months of age do not gain excessive body condition score (BCS) when fed high grain diets. Published research has shown that as little as 15% grass hay is excessive and slows ADG because of reductions in intake. Recommendations have been to use approximately 5% hay in diets however; roughage type and level have not been thoroughly researched.

Three Trials at Akey

Calves (8 to 16 weeks of age initially) were fed textured grower feeds based on 62% grain (corn and oats). In Trial 1, test diets contained 0, 3, 6, and 9% chopped wheat straw (2% CP, 54% ADF, 81% NDF on DM basis). Calf ADG and intake declined linearly ($P < 0.05$) as straw increased. Intake appeared to respond more quadratically than linearly, but only the linear function was significant. In Trial 2, test diets contained 0, 5, 10, and 15% chopped alfalfa hay (23% CP, 23% ADF, 33% NDF on DM basis). Calf ADG declined linearly ($P < 0.05$) as alfalfa increased. Intake was not significantly changed with level of alfalfa. In Trial 3, test diets contained 0, 3, 6, and 9% chopped grass hay (12% CP, 36% ADF, 55% NDF on DM basis). Calf ADG and intake changed quadratically ($P < 0.05$) as grass hay increased. The maximum ADG and intake was with 3% grass hay. See Figures 1 and 2 on the next page for details on ADG and intake relative to level of roughage (% of as-fed diet) in each trial.

When ADG was plotted against % ADF from roughage in the diet (as-fed basis), the response was curvilinear, with little to no change with the first increments of ADF added from the roughage and a near linear decline through the next level of ADF added from the roughage (Figure 3). This is likely a result of some marginal acidosis issues in calves fed no roughage. Calves fed no roughage had some incidence of minor bloating (high left sides from gas in the rumen, but never severe enough to warrant release with an esophageal tube) but no bloating was noted for calves fed roughage. Also, in retrospect, less straw should have been added to diets in Trial 1. Note the first level of straw added (3%) was as much ADF as the second levels of alfalfa and grass hay.

In these 3 trials, and in previous trials at Akey, calves under 4.5 months of age fed these high concentrate diets have not gained excessive BCS. The average gain in BCS over these 56-day grower trials have been less than 0.5 BCS units starting with an average initial BCS of approximately 2.5 to 2.75 in the 8 week old calves. No individual calf in these trials have had an ending BCS of exceeding 3.5. Additionally, hip width change has paralleled ADG. So calves gaining more body weight are also growing frame.

Figure 1. Roughage level and type on intake

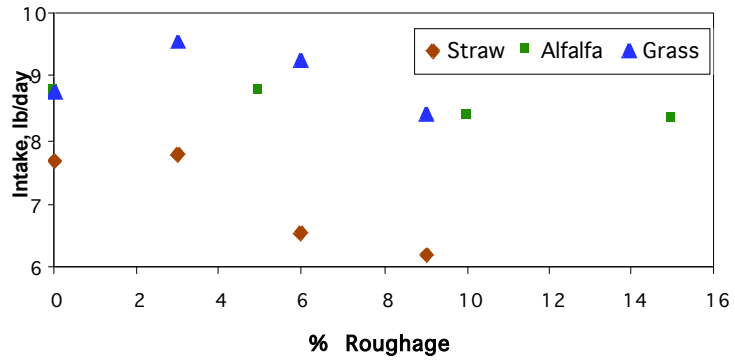


Figure 2. Roughage level and type on ADG

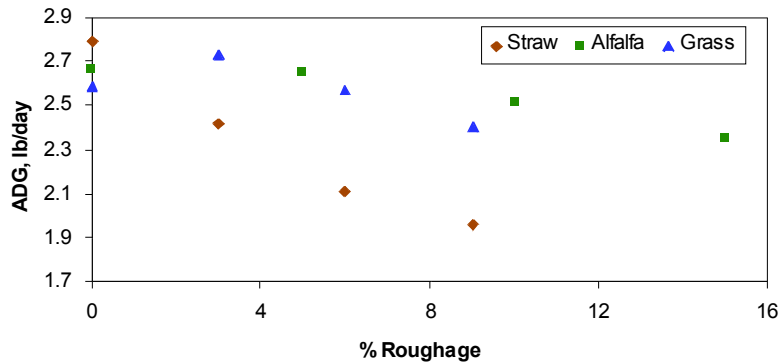


Figure 3. Roughage ADF and type on ADG

