OASES – Abstract: preview

Abstract # 13631

Effect of a source of sustained-release non-protein nitrogen on beef cattle

Rossi, C.[1], Compiani, R.[1], Baldi, G.[1], Vandoni, S.[2] and Agovino, M.[2], [1]Department of Science and Technology for Animal Nutritional Safety, University of Milan, Milan, Italy, [2]Alltech Italy, 40033, Casalecchio di Reno (BO), Italy; magovino@alltech.com

Improving nitrogen (N) use efficiency in beef cattle diets contributes to cost-effective production. This study investigated the effects a sustained-release (SR) ruminal non-protein N (NPN) source in the diet of young bulls as partial replacement of true protein on beef production parameters. Charolais bulls (n=56) were allocated to 1 of 2 diets: control (n=28; basal diets of corn silage, corn meal, concentrate, brewer's grains, straw and SBP) and treated (n=28; basal diets reformulated to include SR NPN (Optigen®, Alltech Inc.) decreasing CP from 147 to 135, 152 to 136 and 153 to 137 g·kg DM^{-1} for adaptation, fattening and finishing, respectively. Animals were on treatment for 140d (40d adaption, 30d fattening, 70d finishing). Dry matter intake (DMI), feed conversion rate (FCR) and daily gain (ADG) were measured at d0, d40 and d100. Chemical (DM, CP, EE, ash, starch and NDF) and visual evaluation (Hall, 2000) of faeces (d45, d75) and analyses of blood urea N (BUN; d40, d100) and rumen N (TVB N at slaughter) were carried out. Data were evaluated by ANOVA using the GLM procedure (SAS 8.02). The treated group had significantly ($p<0.05$) higher ADG (1.63 kg·d^{-1}) from d40 to d100 compared with control (1.46 kg·d^{-1}). DMI was lower ($p<0.05$) in treated animals indicating that increased ruminal N availability resulted in positive effects ($p<0.05$) on FCR (7.40 vs. 6.85 for control and treated, respectively). Ruminal [N] and faecal chemical composition were not affected. Visual evaluation showed greater but non-significant presence of mucin in faeces for control (1.54) compared to treated (0.62). BUN was similar indicating SR allowed for complete utilisation for microbial synthesis. Treated animals used less N to produce 1 kg ADG (138 g) vs. control animals (181 g). These data support the optimisation of soluble protein in beef cattle diets using SR NPN to improve ruminal synthesis whilst reducing dietary CP.