

OASES – Abstract: preview

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Effect of total replacement of soybean meal with a sustained-release non-protein nitrogen source

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Protein use efficiency in ruminants is increasingly important as feed costs rise. This, and the increased awareness of raw material availability, has fuelled interest in enhancing microbial protein supply. Hence, this study investigated the complete replacement of soybean meal (SBM) with a sustained-release non-protein nitrogen (NPN) source. Seventy Holstein dairy cows (average 10,300 kg, 4.08% fat, 3.61% protein) were allocated to one of two groups based on DIM, parity and milk production. Two treatments were tested in a cross-over design: Control (grass and maize silage-based, beet pulp, wheat, distillers grains and SBM; CP 167g·kg DM⁻¹, 6.95 MJ kg DM⁻¹, € 2.20 h⁻¹ d⁻¹); Treatment (Control where 2.5 kg rapeseed meal and 0.13 kg sustained-release NPN replaced 2.5 kg of SBM; CP 167g kg DM⁻¹, 6.98 MJ kg DM⁻¹; € 2.11 h⁻¹ d⁻¹). The trial consisted of two, 21d experimental periods each preceded by one, 7d adaptation period. Standard commercial individual milk recordings were taken at the end of each experimental period. Group intakes, milk yield, fat and protein levels, milk urea and SCC were measured during the trial. Data were tested for normality and analysed using the Two-sample T Test (Statistix 9.0). Overall milk yields were similar for Treatment animals (30.0) and Control animals (29.4 kg d⁻¹). There was no effect on concentrations of milk fat, protein, lactose, urea or SCC. The Treatment group tended to have higher daily intakes (estimated from group intake data) at 24.4 compared with 23.9 kg DM for the Control group. Despite higher daily intakes, the reduced cost of the Treatment ration resulted in additional income of € 0.29 h⁻¹ d⁻¹. N use efficiency was similar for both diets at 0.25. These data support the hypothesis that SBM can be completely replaced in dairy cow rations with a sustained-release NPN source without negatively affecting performance.