



Deutscher Tropentag, October 8-10, 2003, Göttingen

“Technological and Institutional Innovations
for Sustainable Rural Development”

Utilisation of Soybean Hulls as Dairy Cattle Feed

SUKUNYA KERNKLANG¹, CHOKE MIKLED¹, THERDCHAI VEARASILP¹, UDO TER MEULEN²

¹*Chiang Mai University, Department of Animal Science, Thailand*

²*Georg-August-Universität Göttingen, Institute of Animal Physiology and Nutrition, Germany*

Abstract

The study was conducted to determine the chemical composition, rumen degradability and in vitro digestibility of soybean hulls. Soybean hulls were incorporated at 0, 20, 40 and 60 % of the total rations and offered to four rumen fistulated crossbred Thai Indigenous x Holstein Friesian dairy cows of average 416 ± 54 kg in a Latin Square Design study. Rumen degradation of soybean hulls was determined using the nylon bag technique and the digestibility using Menke in vitro gas technique. The soybean hulls contained 88.71 % DM. The composition of the soybean hulls as percentage of DM was 95.42 % OM, 11.42 % CP, 3.57 % EE, 24.75 % CF, 39.03 % NDF and 27.78 % ADF. The results from nylon bag technique showed that the potential DM degradability of soybean hulls was very high (99.35 %) and the effective degradation at 0.05 hr^{-1} was 56.25 %. When supplemented at 60 % in the diet, the effective degradation of DM, OM and CP were relative higher than at 0, 20 and 40 %. The estimated DMI, DDMI, growth rate and index value also followed the same trend. The prediction values of OMD were 73.27, 73.04, 70.80 and 69.13 %, respectively, ME values were 11.98, 12.20, 12.00 and 11.59 MJ/kg DM , respectively and NEL values were 7.45, 7.64, 7.49 and 7.20 MJ/kg DM , respectively at 0, 20, 40 and 60 % inclusion. The values tended to decrease at higher levels of soybean hulls supplementation. Ammonia nitrogen level in the rumen at 1h after feeding was significantly higher ($p < 0.05$) at 0 % soybean hulls diets than at 30 %. However, at 3h after feeding the ammonia nitrogen level in the rumen at 30 % soybean hulls was significantly higher ($p < 0.05$) than at 20 % soybean hulls diet. Total volatile fatty acid tended to decrease at the higher levels of soybean hulls in the diets. It is concluded that soybean hulls can be supplemented at 3 % of the ration of dairy cattle.

Keywords: Dairy performance, nutrient digestibility, rumen degradability, soybean hulls