

Pichitpol Angteeranuwong 2009: Utilization of Cassava Leaf as a Replacement for Soybean Meal in Diets of Fattening Beef. Master of Science (Animal Nutrition and Feed Technology), Major Field: Animal Nutrition and Feed Technology, Department of Animal Science. Thesis Advisor: Assistant Professor Lerchat Boonek, Ph.D. 96 pages.

Experiment 1: To evaluate quality of ensiled cassava leaf from various methods. Treatments were ensiled by spontaneous fermentation without additive and with cassava pulp as additive for 0, 7, 14, 21, 28 and 60 days. The result showed that silage on day 60 had the significant ($p < 0.01$) lowest dry matter (DM), ammonia-N ($\text{NH}_3\text{-N}$), pH and hydrogen cyanide (HCN) and highest volatile fatty acid (VFA) while silage with cassava pulp added had a significant ($p < 0.01$) lower $\text{NH}_3\text{-N}$, pH and HCN and higher lactic acid bacteria, lactic acid, VFA, water soluble carbohydrate and DM than without additives. It is concluded that cassava leaves ensiled with cassava pulp on day 60 had a greatest silage quality for utilization as ruminant feed.

Experiment 2: To compare quality of dry cassava leaf with different times of storage. The result showed that HCN levels of fresh cassava leaves (863.58 mg./kg. DM) were reduced after sun-drying and stored at room temperature for 0, 1, 3, 5, 7 and 11 days by 204.47, 167.57, 112.58, 90.47, 63.13 and 61.25 mg./kg. DM, respectively. The results indicated that sun-drying for 7 and 11 days had the lowest HCN concentration and more effective method than ensiling for reducing HCN in cassava leaves (61.25 vs. 229.78 mg./kg. DM).

Experiment 3: To investigate the effect of feeding crossbred bulls (Thai native x Brahman) with Panicum grass as basal roughage supplemented with concentrates contained different supplemental protein sources as followings: soybean meal (Diet1); dried cassava leaves (Diet2) or ensiled cassava leaves (Diet3). The results showed that the rumen pH and blood glucose (BG) were similar in all experimental groups ($p > 0.05$). Ruminal $\text{NH}_3\text{-N}$ concentration and blood urea nitrogen (BUN) were highest in diet1 ($p < 0.01$) with mean values of 99.74 mg./l. and 14.63 mg.%, respectively. Total dry matter intake ($p < 0.05$), acetic acid, butyric acid and propionic acid ($p < 0.01$) were lowest in diet2 with mean values of 7.97 kg./d., 54.20, 18.05 and 7.63%, respectively. However, average daily growth (ADG) and feed conversion ratio (FCR) were similar in all experimental groups ($p > 0.05$). The profit of feeding 3 experimental protein sources were 4.50, 21.58 and 7.89 % respectively. These results indicated that both dried and ensiled cassava leaves were effective for replacement of soybean meal in concentrate of fattening beef but dried cassava leaves gave the highest return.

Student's signature

Thesis Advisor's signature