

Smith Yimmongkol 2009: Research and Development Projects on Improvement of the Potential Use of Dried Cassava Pulp and Cassava Leaf Meal in Concentrate of Feedlot Cattle. Doctor of Philosophy (Agricultural Research and Development), Major Field: Research and Development in Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Lerchat Boonek, Ph.D. 122 pages.

Six consecutive research and development projects were carried out to improve the potential use of dried cassava pulp and cassava leaf meal in concentrate of feedlot cattle. The first project was a survey study on general information of cassava pulp produced in four cassava starch factories and of cassava pulp and leaf meal used as cattle feed by farmers in the central area of Thailand. It was found that wet cassava pulp were produced approximately 0.112, 0.058, 0.096 and 0.09 million tons/year for factory No.1, 2, 3 and 4, respectively and price of wet pulp varied from 150 - 700 baht/ton while dried pulp varied from 1.4 - 4.4 baht/kg. Wet cassava pulp was used as feed supplement in feedlot cattle and mixed in form of concentrate for dairy cattle while dried cassava pulp was never used. Local feedlot and dairy producers had no idea on using of cassava leaf meal in concentrate due to the price of other protein sources was not too high. The second project was preliminary evaluation on various methods of using ensiled cassava pulp as main energy source for feedlot cattle. The animals were randomly assigned to 3 groups and received ensiled cassava pulp mixed with either leucaena leaf meal, corn stover or corn stover, leucaena leaf meal and sugarcane bagasse as sources of roughage. The results indicated that ensiled cassava pulp should not be used as the main feeding diet to the feedlot cattle due to its high moisture content which resulted in low dry matter intake and performance of the cattle. The third project aimed at replacing cassava chips in concentrate with dried cassava pulp (DCP) at a level of either 10, 20 or 30 % for feedlot cattle. The animals were randomly allocated to 4 groups and fed experimental diets *ad libitum* supplemented with 3 kg. of para grass per head daily. It was found that feedlot cattle fed experimental diets showed no significantly differences on feeding performance and carcass quality. Therefore, DCP could be included at the levels of up to 30% in concentrate without any adverse effect on productive performance. The fourth project was conducted to determine the effects of feeding DCP as a main source of energy at a higher level in concentrate on feeding performance, carcass quality and economic return of feedlot cattle. The animals received either control concentrate (CTRL), concentrate in which cassava meal was replaced by dried cassava pulp (DCP) at 50 (DCP50) or 100% (DCP100) by weight. The results indicated that feedlot cattle on CTRL showed the best feedlot performance and carcass quality as compared to the other groups. However, the difference was not statistically significant ( $p>0.05$ ). The DCP50 had higher economic return compared to the CTRL and DCP100. The fifth project was conducted to study the effects of cassava leaf meal (CLM) in concentrate on feeding performance, carcass quality and economic return of feedlot cattle. It was found that feedlot performances of the cattle fed concentrate with either CLM or conventional protein sources were similar. Also, carcass qualities, carcass composition and some beef eating qualities of the feedlot cattle were not significant different. The final project was conducted to evaluate farmer's adoption and comments on the research projects' results after transferring technical knowledge to the farmers via training courses. The results showed that farmers accepted the concepts and had more confidence to use dried cassava pulp or leaves as feed ingredient to reduce the production cost when the price of cassava chips or other protein sources was high.

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Student's signature

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Thesis Advisor's signature