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Study on the effects of different harvest intervals on cassava foliage (cassava hay) and root yield and effects of sunflower oil supplementation in cassava hay based-diets for lactating dairy cows

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Introduction

Dairy farming in Thailand began around 90 years ago, and the introduction of extensive dairy development took place in the early 1960s. It started with the establishment of the Thai Danish Farm and Training Centre at Muaklek, as a joint venture between the Thai and Danish Governments. The approach was clearing land, purchase of cattle, construction of farm buildings, training of farmers, development of a dairy colony, provision of extension services and development of a small dairy plant, as well as a marketing system for pasteurized milk production. In 1971, the Thai Government took over responsibility and the project was organized under the management of the newly established government enterprise, under the name "Dairy Farming Promotion Organization of Thailand (DPO)."

The Thai Government's plan for the development of dairying is aimed at a reduction of foreign exchange for the purchase of imported milk powder and dairy products but also to provide the farmers with the opportunity to earn increased and more regular incomes and generate employment opportunities in farming, milk processing and manufacturing industries. In the past decade, there has been considerably increased activities in dairy extension and production. Examples include government policy supporting dairy extension and dairy production; the Dairy Extension Project improving the structure of agricultural products; the Milk Consumption Campaign; the School Milk Program; the establishment of a dairy plant; bank loans to establish dairy farms, etc. According to statistics the number of dairy farmers has increased from around 6,600 in 1987 to 17,893 in 2003. Similarly, during this same period the number of dairy cattle increased from around 75,500 to about 392,625 head (Office of Agricultural Economics, 2004).

Although dairy farming started in 1960, Thai farmers still can not produce enough raw milk to meet the demand of the whole country. As reported in 2004, Thailand produced 731,923 tons of raw milk and imported milk and milk products equivalent to 183,726 tons (Office of Agricultural Economics, 2004). The major constraints on the raw milk production have been many, for example the high cost of feed, unfavorable climatic conditions (Vercoe, 1999), weak disease control and herd management (Aiumlamai, 1999) and poor nutrition. In tropical developing countries, due to the high population pressure, ruminants are fed mainly with crop residues. Normally, these types of feed are very poor and unbalanced in nutritive value and with low digestibility. Feeding dairy cattle in the tropics is often difficult because of deficiencies in feed supply, in both quality and quantity (Wanapat and Devendra, 1992). However, using available crop residues in ruminant production to reduce the food – feed competition and build up

a sustainable production system is a good strategy for development (Wanapat and Devendra, 1999; Preston and Leng, 1987).

The use of local feed resources to improve the nutritional conditions for ruminants on crop residues-based diets is very important for tropical developing countries. Cassava is a vitally important feed resource, which is abundantly available in the tropical countries. In Thailand, traditional cassava cultivation is for root production, as a human food and energy source for animals. Recently, managing cassava for foliage production had been found to have more potential as it is a good high by-pass protein source for animals, especially for ruminants and can improve production and reduce feed costs. Therefore, planting cassava for both root and foliage production could be more advantageous. Nevertheless, factors that affect the yield and quality of cassava root and foliage have to be researched to find out the most suitable practices for higher quality and quantity of cassava root and foliage.

Cows in early lactation and high-producing cows are typically in negative energy balance. In order to balance the ration, the use of fat or fat-rich feedstuffs was a logical step for increasing the energy content of rations. Fat has more potential in high energy concentrations to meet the requirement for early lactation and for high producing cows. It can increase the energy density of the diet, and consequently increase milk yield and milk quality. Other possible advantages would be to improve palatability and to reduce dustiness. Feeding fats to lactating dairy cows by using sunflower oil in the concentrate with cassava hay could be a way to meet the energy and nutrient requirements and to improve rumen ecology as well as milk yield and quality.