

Terminal Evaluation

Asia

1. Outline of the Project

Country:

Malaysia

Project title:

The Project for Technology related to the Processing of Feed based on Agro-industrial By-products of Oil Palms Production in Malaysia

Issue/Sector:

Livestock Industry Promotion

Cooperation scheme:

Project-type Technical Cooperation

Division in charge:

Livestock and Horticulture Division, Agricultural Development Cooperation Department

Total cost:

602 Million Yen

Period of Cooperation

15 March 1997 - 14 March 2002

Partner Country's Implementing Organization:

Malaysian Agricultural Research and Development Institute (MARDI)

Supporting Organization in Japan:

Japan International Research Center for Agricultural Science (JIRCAS)

Related Cooperation:**1-1 Background of the Project**

The demand for stock farm products in Malaysia has been increasing. The self-sufficiency rate of beef is as low as 25 percent, and that of dairy products is less than 5 percent, because the country has had only a short history in stock breeding and has not established a sufficient production system. To promote the livestock ruminant industry, such as dairy cattle, the establishment of a stable supply system for coarse feed is essential, but the development of more grassland to acquire coarse feed has been difficult from the aspect of forest resources conservation.

Under the circumstance, JIRCAS and MARDI had conducted ten years of basic research on the use of the agro-industrial by-products of oil palm fronds (OPF), a major crop in Malaysia, as coarse feed, and identified the nutrition value of oil palm. Based on this achievement, the Malaysian Government requested Japan to provide Project-Type Technical Cooperation to develop the technology of coarse feed production using oil palm fronds (OPF) for practical use.

1-2 Project Overview

The project was carried out to stabilize feed supply in Malaysia. In the Project, techniques in establishment of production system, improvement of quality and overall plant management, in terms of the coarse feed utilizing agro-industrial by-products of oil palm, were transferred to the Livestock Research Center of MARDI. The economical value of produced feed was also evaluated.

(1) Overall Goal

The livestock industry in Malaysia is developed through making use of the agro-industrial by-products of oil palms to stabilize the feed supply.

(2) Project Purpose

An effective, practical and viable method and system for converting by-products of oil palms into processed feed are developed. An experimental feed preparation plant for stable feed production is developed.

(3) Outputs

1) The methodology for processing oil palm fronds and other by-products of oil palms into feed is developed.

- 2) An appropriate method of animal feeding management on the feed is developed.
 3) The viability of the feed for practical use is verified in preparation for its practical use.

(4) Inputs

Japanese side:

Long-term Experts	7	Equipment	317 Million Yen
Short-term Experts	25	Local Cost	24 Million Yen
Trainees received	24		

Malaysian side:

Counterparts	33		
Equipment		408 Thousand Ringgit (14 Million Yen)	
Facilities		2,589 Thousand Ringgit (91 Million Yen)	
Local Cost		952 Thousand Ringgit (33 Million Yen)	

2. Evaluation Team

Members of Evaluation Team

Team Leader: Kazuo NAKAGAWA, Managing Director, Agricultural Development Cooperation Department, JICA
 Agricultural Implement and Machinery: Koichiro OKAZAKI, Director, Department of Hilly Land Agriculture, National Agricultural Research Center for Western Region, National Agricultural Research Center for Western Region (WeNARC)
 Cooperation and Research: Hiroshi NABETANI, Deputy Director of International Research Division, Council's Secretariat, Agriculture, Forestry and Fisheries Research Council, Ministry of Agriculture, Forestry and Fisheries of Japan
 Project Analysis: Hidetaka FUNO, Deputy Director, Livestock and Horticulture Division Agricultural Development Cooperation Division, JICA

Period of Evaluation 9 October 2001 - 18 October 2001
Type of Evaluation: Terminal Evaluation

3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

The Government of Malaysia advocated the importance of food security and anti-inflation measures by promoting agriculture in the Third National Agricultural Policy (1998-2005) and is promoting the efficient and appropriate use of existent resources. Development of OPF feed utilizing by-products of oil palm, which covers 330,000ha of the land, far larger than the rice fields in Japan, is in line with the policy. Also the OPF feed processing is consistent with the policy and the Project was both timely and important.

(2) Effectiveness

Counterparts became capable to carry out their own research, as a result of technology transfer. They have presented more than 15 treatises related to the project activities, in and out of Malaysia, and are close to obtaining patents. Although considerable knowledge on the methodology of processing OPF into feed was acquired, the Project had not achieved the Outputs in the mechanization of the OPF material supply system, including collection, handling, transportation, and pre-drying of OPF material, and stable operation of the OPF feed processing plant, due to a delay in the planned construction and OPF specificity as a new processing material.

On the other hand, the Project has completed assessing the physical, chemical, nutritional and toxicological properties of OPF products and has established a simple evaluation system of chemical composition and nutrition values. Efficient feeding technology for beef and dairy cattle was also verified at the experimental level. However, the economic value of the feed management system for OPF products has not been fully evaluated. Though efficient feeding technology for beef and dairy cattle was studied at small-scale farms and institutional farms, the feeding management system for large-scale farms has not yet been established. Thus, Project activities have been delayed considerably and it can be concluded that it is difficult to complete the Project on schedule.

(3) Efficiency

The expertise of the experts and the provided equipment were considered well before the launch of the Project and were appropriate. The Malaysian side allocated operating funds for the maintenance of Plant and Project activities and assigned the counterparts efficiently.

However, there were some problems in the timing of inputs, such as the delay in the installation of some equipment for the OPF processing plant. As a result, the Project needed to revise the plan of operation, and some activities could not be conducted.

(4) Impact

The Overall Goal "the promotion of a livestock industry through stabilizing the OPF feed supply" has not been achieved, since the Project Purpose has not yet been satisfactorily realized. In addition to the Overall Goal, it is highly likely that in the future, there will be such side-impacts as the prevention of forest destruction and topsoil erosion due to grassland cultivation, promotion of low input sustainable agriculture (agriculture aiming at contributing to the safety food production and securing productivity and profitability by reducing the amount of agricultural chemicals and fertilizer), and securing the income of oil palm farms in case of a decline in the price of oil palm. The evaluation team also found the following impacts:

- 1) Development of basic techniques of OPF processing and method of animal feeding management for beef cattle attracted the attention of concerned people.
- 2) Although there were difficulties in supplying a sufficient feed due to the limited land in Malaysia, the production of OPF feed is contributing greatly to the promotion of livestock breeding.
- 3) The project contributed to finding a new economical value of a large amount of agro-industrial by-products through OPF feed production.

(5) Sustainability

The Malaysian side has supported the Project appropriately, in terms of allocating counterparts, securing a management system and covering the local cost, and this support is expected to be sustained. Many of the counterparts are excellent researchers with academic degrees from universities in the U.S. and other foreign countries. The technology has been transferred smoothly and the activities that were started in the Project are expected to be continued. MARDI is planning to disseminate the transferred techniques by itself.

3-2 Factors that promoted realization of effects

(1) Factors concerning Planning

The utilization of agro-industrial by-products of oil palm is in line with the Malaysian policy, which intends to promote stockbreeding despite the limitation of land. The plan was timely and very important.

(2) Factors concerning the Implementation Process

MARDI and JIRCAS had conducted basic research on the production of OPF feed prior to this Project, which was utilized in the activities. The technology transfer was carried out smoothly as the Malaysian side allocated excellent counterparts and a sufficient input of the local cost.

3-3 Factors that impeded realization of effects

(1) Factors concerning Planning

In order to achieve the Overall Goal, it was necessary for the Project to have the economical and political support of the Malaysian government, as well as the development of feed production methods. However, consideration here was insufficient at the time of Project planning.

(2) Factors concerning the Implementation Process

The Project activities were delayed in the operation of the OPF processing plant and in feeding management using OPF feed.

This was due to the fact that the OPF was a completely new processing material and the delay in installation of the OPF plant.

3-4 Conclusion

In terms of the Efficiency, Impact, Relevance of the purpose and Sustainability, the Project was highly evaluated in general, although there still is room for improvement. It must be emphasized that MARDI's organizational capacity was improved and that OPF feed gained the interest of those who are in the related fields. However, it is difficult to achieve the Output in the area of stable operation of the feed plant, the mechanization of material supply and feeding management, due to the delay of installing the feed plant and the specialty of OPF as a material. Therefore, a two-year extension in the cooperation period is required.

3-5 Recommendations

- (1) In order to achieve self-sustainability, it is necessary for MARDI to establish a committee consisting of the concerned people and to propose to the Malaysian government its master plan for wide dissemination of OPF feed.
- (2) A method to grasp the indicator of the achievement of the Project Purpose must be established before the end of the project.

3-6 Lessons Learned

In technical cooperation with an installation of a plant, the delay of installation has a huge effect on all of the technical transfer activities. Therefore, it is better to start cooperation at the stages after the installation of the plant or at the stage when all of the planning for the installation is finished. In cases where the recipient country is in charge of the building, and the Japanese side is in charge of the equipment, both parties should keep in close contact in planning and implementation.

3-7 Follow-up Situation

Following the conclusion of this evaluation, a two-year follow-up is being conducted in the areas of improvement of material supply, improvement and evaluation of processing production, improvement of feed quality, development and evaluation of feeding management methods, and improvement of economical evaluation of OPF feed production. The follow up cooperation will continue until March 2004.