

Summary Sheet

Ex-Post Evaluation Conducted by JICA Malaysia Office

1. Outline of the Project		
Country: Malaysia		Project title: Project of Technology Related to Processing of Feed Based on Agro-Industrial By-Products of Oil Palms in Malaysia
Field: Manufacturing/Mechatronics/Computer and Electronics		Cooperation scheme: Project-type Technical Cooperation
Section in charge: Manpower Department, Ministry of Human Resources, Malaysia, Japan International Cooperation Agency (JICA)		
Period of Cooperation	i) March 15 th 1997~March 14 th 2002	<ul style="list-style-type: none"> Partner Country's Related Organization(s): Partner Country's Implementing Organization: Malaysia Agriculture Research Institute (MARDI), Ministry of Agriculture
	ii) March 15 th 2002~March 14 th 2004 (Follow up)	
Total Cost: 860 million Japanese yen		
Related Cooperation: none		

1-1 Background of the Project

The demand for livestock farm products in Malaysia is expected to increase substantially in the near future as the country embarks to implement its policy in increasing its rate of self sufficiency in livestock products. The self-sufficiency rate of beef is as low as 25 percent, and that of dairy products is less than 5 percent. This is because the country has had only a short history in livestock breeding and has not established a sufficient production system. To promote the livestock 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 resource conservation.

Basic research have been conducted on the use of the oil palm fronds (OPF), an agro-industrial by-products of oil palm which is a major crop in Malaysia, as coarse feed, and identified the nutritional value of this OPF. Based on this achievement, the Malaysian Government requested Japan to provide Project-Type Technical Cooperation to develop the technology in producing coarse feed using oil palm fronds (OPF) for livestock production in Malaysia.

1-2 Project Overview

(1) Overall Goal	Develop the livestock industry in Malaysia through the stable supply of quality feed produced from the use of agro-industrial by-products, namely oil palm fronds (OPF).	
(2) Project Purpose	Develop an effective, practical and viable method and system for converting oil palm fronds into processed feed for livestock production.	
(3) Outputs	1) The methodology for processing oil palm fronds into livestock feed is developed. 2) An appropriate method of animal feeding management on the use of the OPF feed is developed. 3) The viability of the feed for practical use is verified in preparation for its commercial use.	
(4) Inputs	Japanese side:	
	Long-term Expert	10 experts
	Short-term Expert	31 experts
	Counterparts training	34 persons
	Equipment	34million yen
	Malaysia's side:	
	Counterparts assigned	35persons
	Local costs	RM 4.8 million

2. Evaluation Team: PE Research Sdn Bhd (commissioned by JICA Malaysia Office)

Members of Evaluation Team	Yoshinobu IKURA (JICA Malaysia Office) Mr Chua Mok You Ms Aishah Aziz	
Period of evaluation	March 1– March 29, 2007	Type of Evaluation: Ex-Post Evaluation
3. Results of Evaluation		
3-1 Summary of Evaluation Results		
(1) Impact		
<p>The Project has contributed towards the viability in achieving one of the National Agriculture Policies that is in attaining higher self-sufficiency rates in livestock products in Malaysia from the present 20% to 21.6% by 2010 and 25% by 2015.</p> <p>Positive impacts are expected to be generated for small holders and FELDA (Federal Land Development Authority) settlers as they get additional incomes from selling the fronds. However, the number of beneficiaries can only be measured after FELDA begin its operation of its OPF plant as it will depend on factors such as distances of these small holders or settlers from the OPF plant.</p> <p>Feedback received by MARDI from the private sector which has used the OPF feed from the Pilot Plant is very encouraging. Milk production in dairy farming has increased to 15-20 litres/cattle/day compared to 8-10 litres/cattle/day by conventional feed; beef production has increased to 0.5-0.8 kg/cattle/day compared to 0.3 kg /cattle/day previously, and mutton (goat) to 170-180 g/animal/day compared to 80-100g/animal/day before.</p> <p>Such encouraging results on the use of the OPF feeds for beef and mutton production have prompted other land development organizations such as FELDA and RISDA (Rubber Industry Smallholder Development Authority) to examine the viability of commercialization of the OPF Feed production as well as livestock farming. FELDA has participated in the Incubator Program for the last 1 ½ year since December 2005 at MARDI-JICA Pilot Project Plant in Bangi, and is currently constructing its OPF Producing Factory in Pahang. Production of OPF feed at this factory is expected to begin in July 2007 with a capacity of 5 ton/hour.</p>		
(2) Sustainability		

Budgetary

MARDI is capable of continuing with the R&D activities as it continues to receive budgetary allocation and supports from the Ministry of Agriculture on its research on OPF feeds.

Institutional

Key researchers and operation managers who have worked with the JICA Project Team since 1997 are still being retained at the research unit in MARDI. This has enable MARDI to continue its research efforts and implement the commercialization program.

Technical

Its pilot plant is still working efficiently with the same initial capacity of producing the OPF Feed at 2 ton/hour or about 10-12 ton a day.

Since 2004, MARDI has continued to carry out R & D activities on achieving optimal OPF feed formulae for beef and dairy cattle, and goats. Development of new feed products using OPF for other livestock animals such as BOER goat and ostrich is also being conducted by MARDI at the pilot plant. Other activities include experimentation on dairy and meat production with the OPF feed by feed lot versus free farming.

MARDI has started an incubation program to provide training on the production of OPF feed using the Pilot Plant to interested private enterprises from 2005. FELDA was the first organization to participate in this program since December 2005 with two managers being trained by MARDI at the Pilot Plant. Similar MOUs have been signed by MARDI with a state owned company in Sabah (Sawit Kinabalu Farm Products) in April 2007 while negotiations are on-going with another private company in Sarawak (Sarawak Capital).

3-2 Factors that have promoted Project

(1) Impact

The consistent administrative and policy support from MARDI and Ministry of Agriculture has chiefly promoted the achievement of the above impacts. MARDI has given full support to the Project, with the continuous appointment of the same personnel in charge of the Project as the on-going operational and promotional officers at the Pilot Plant.

Strong efforts shown by MARDI's Officers and Project Director in disbursing the results of their experimental studies on the OPF to international and national seminars, thus attracting interests and attentions from land development agencies, feed manufacturers and livestock farmers. MARDI has also implemented the Incubator Program for training of interested entrepreneurs in OPF feed production.

Method using solar energy to reduce the water content of frond bits was further improved. MARDI is continuing with efforts to find ways to reduce the costs of the frond harvester by using local parts instead of the more expensive imported parts.

(2) Sustainability

MARDI and Ministry of Agriculture continues to provide sufficient funding for the continuation of the R & D activities at the Pilot Plant for the OPF feed development.

3-3 Factors that have inhibited project in the aspect of:

(1) Impact

One of the factors that potentially inhibit the lowering of OPF feed is the high cost of transportation of fronds from oil palm plantation to the OPF feed factory, especially if such distance is further away from the factory. Another factor is the possibility of plantation owners demanding higher prices for the supply of fronds to the factory in future when OPF feed become popular.

(2) Sustainability

Initial supply of oil palm fronds for the pilot plant was readily available at minimum cost in transportation. However, due to external factors, fronds which are the raw material for the OPF feeds need to be purchased and transported over a longer distance, thus incurring a higher operational cost. As land around the Pilot Plant at MARDI in Serdang began to urbanize, the Pilot Plant may face the problem of readily available raw material from sources within reasonable distances.

3-4 Conclusion

The overall goal for this OPF Project requires longer time period to achieve and definitely not within the JICA Cooperative Period. However, the achievements of the OPF research using the JICA-MARDI pilot plant have contributed towards the attaining of higher self sufficiency target rates in livestock products set by the Ministry of Agriculture of Malaysia.

The JICA-MARDI OPF Project is well sustained by policy emphasis and budgetary allocations from the Ministry of Agriculture for its continuing R/D activities since the end of the JICA Cooperation Period in 2004.

The commercialization of the OPF feed is currently being actively pursued by MARDI through its INCUBATOR PROGRAM with FELDA, a state-owned company in Sabah as well as a private enterprise in Sarawak.

3-5 Recommendations

(1) Recommendations for Malaysian Government

For further impact of the project, the following recommendations are suggested:

- (1) To expand the incubator program using the Pilot Plant for training of participants. Ensure sufficient personnel in MARDI itself to provide training as well as follow up technical supports to all Incubator Program Participating Companies.
- (2) To examine further the viability of overseas market for 100% OPF cubes and the shortage of raw materials to the Pilot Plant by cooperating with small holders nearby, such as sharing the profit from sale of final OPF products, which is another way of publicizing OPF feed to local users; or to work closely with future incubator program participants whereby they would supply the raw materials to the plant during the training period.
- (3) To begin preparing detailed technical guidelines or specification requirements for constructions of OPF plant.
- (4) Results from its future R&D efforts as well as results from the FELDA factory in Pahang should be disseminated to other potential interested organizations or industry.

3-6 Lessons Learned

For more effective and efficient of the similar project in the future,

- (1) The setting of the project goal at the initial project planning stage should consider carefully the achievability of such goals within the project period as to attain the final commercialization of the technology and large scale production.
- (2) To study carefully the underlying legal, institutional and operational constraints of the counterpart agency in future cooperation projects and better coordination between Japanese and Malaysian sides in view of policy, regulation and financial is essential..

3-7 Follow-up Situation

MARDI continues to conduct its R&D on OPF at the Pilot Plant and to accept other potential participants to its Incubator Program.