Community Biodiversity Development and Conservation Program

Rice Seed Supply System Among Murut Communities in Dalit, Keningau, Sabah, Malaysia

Prepared By

Partners of Community Organisations (PACOS TRUST)

Final Report (May 1999)

Abstract

The aim of the research is to learn and understand better the rice seeds supply system of the Murut ethnic communities in Dalit, Keningau District, through the documentation of their existing traditional practices in seed maintenance; documentation of their seed movements; and the assessment of the strength and constraint faced by this traditional system. It is hoped that this understanding will assist in formulating appropriate policy regarding the introduction of new varieties to a particular community.

To monitor the movements of seeds from one farmer to another, traditional rice seed varieties from other villages were introduced to the three local farmers in Dalit, who were identified, based on their interest to try the new rice varieties. Non-participant observation and documentation of how these three farmers protect, nurture and select the rice seeds was done for three consecutive planting seasons.

The study shows that the informal seed supply system of the farmers in the Dalit area is a practical traditional system it does not cost very much as the farmers themselves are walking laboratories. New rice varieties acquired by farmers are assessed for their performance and if found suitable to their environment they are freely shared with their neighbors and relatives, which in turn shares them with others. This system of sharing allows a particular rice variety to be maintained within their circle, should the original owner of the variety stop planting due to unfavorable farm conditions. As farmers have the freedom to select the best seeds suitable to their environment, this system does not only allow the seeds to be conserved but is also capable of improving the seed varieties. The system functions well when farmers have some form of social relationship and will go on for as long as farmers are allowed to continue with their farming activities, in this case of hill rice farming. Some of the constraints faced by farmers in maintaining and circulating varieties are related to limited farm size and poor yields. The seeds tend to circulate only among neighbors and relatives and therefore the effect is localized

This study was unable to document the interaction of the informal and formal seed supply system especially in wetland areas. It would be interesting to study further how each system complements each other in a wetland area, where both systems are still at work. This knowledge will help in formulating appropriate policies that will allow the integration of both systems in the modern agricultural system.

Table of Contents

1.0 INTRODUCTION

This report is part of a larger study on community Biodiversity, development and conservation issues in Sabah. This report focuses on how local farmers get, distribute and maintain their planting materials in one of the CBDC project areas, and complements the other reports from this study. However, it could also be read on its own.

1.1 Background and Rationale of the Research

Informal seed supply system practices of the indigenous communities of Sabah have been passed down from generations to generations. During the 1994-96 crop diversity survey, it was found that farmers get most of their seeds from their own farm or from their neighbors and relatives. Exchange of seeds is quite common. Presently the formal system provides about 30 percent of the seed requirement in wetland areas. Hill rice farmers are totally dependent on the informal seed supply system as there does not exist a formal supply of seeds of upland rice varieties. Whether they realize it or not, this system has contributed to the conservation of rice varieties. This system has also helped to strengthen community ties.

The informal seed supply system complemented the new formal system that was created in the early 1970s. However, a significant number of indigenous communities (especially those planting wet rice) discarded the traditional system when the formal system was instituted (i.e. Ministry of Agriculture, with a department responsible for seed multiplication and distribution). Some wet rice farmers in Papar, Kota Belud and Penampang rely totally on the formal system for their planting materials. This dependency on formal institutions to supply them with seeds has badly affected their own diversity of rice varieties. Should there be a shortage of seeds from the formal sector, as has happened before, farmers will have nowhere to get their planting materials. To ensure that farmers have a secure seed supply, the informal seed supply system needs to be developed and integrated in the present modern agricultural system.

In order to understand how indigenous communities maintain the diversity of rice varieties, research on their seed supply system, including the exchange, selection and storage of seeds, is necessary. This understanding will assist in formulating appropriate policy regarding the introduction of new varieties to a particular community.

1.2 Objectives and Scope

The aim of the research is to learn and understand better the rice seeds supply system of the Murut ethnic communities in Dalit, Keningau District.

Specifically, the research seeks to:

1. Document existing traditional practices of farmers in maintaining their seeds.
2. Document on how seeds move from one farmer to another; and
3. Assess the strength and weakness of the informal seed supply system.

1.3 Research Activity

The following activities were carried out:

1. Traditional rice seed varieties from other villages were introduced to three local farmers, who were selected based on their interest to try the new rice varieties.
2. Non-participant observation and documentation of how these three farmers protect, nurture and select the rice seeds was done; and
3. The transfer of rice seed varieties from one farmer to another and its progress was carefully monitored.

Dalit area was chosen as the case study site because PACOS have been working here for some time and therefore know most of the farmers well. The 1994 crop diversity survey also showed that the Murut farmers maintained a high diversity of traditional rice varieties.

2.0 BACKGROUND OF DALIT AREA

2.1 Socio-economic and Cultural Aspects

Dalit sub-district is located approximately 45 kilometers from Keningau town (see Figure 1) and is comprised of 16 villages, including the village of Dalit (henceforth Kg. (village) Dalit. Dalit village is a cluster of five villages, with 69 houses and total population of about 580 people.

Most of the villagers are from the Murut Paluan ethnic group. They are full-time subsistence farmers, but they also depend on forest resources for a large part of their daily needs. Only a small number are employed in the private and government sectors.

Dalit is the sub-district administration center. It has a primary school, clinic, a community hall, the local branch of the Agriculture Department (currently closed), the office of the Rural Development Corporation (Koperasi Pembangunan Desa, or KPD), a church and a Native Court. Many villagers from Kg. Malaing and Kg. Aloh have migrated here.

The cluster of five villages in Kg. Dalit has maintained close links with one another. Thus, in any activity or social gathering, the villagers visit each other and cooperate. They also established their farms close to each other. The close linkages facilitated the farmers' seed exchange, i.e. replenish lost seed stocks and disseminate of seed of new interesting varieties.

2.2 Physical Environment

Approximately 60 per cent of Dalit sub-district is hilly and the remaining area is low land. The lowlands are fertile and suitable for cultivation. The highlands are dry and porous, thus unsuitable for growing short-term crops. The temperature is warm and dry. The annual rainfall in most parts is low whereas the foothills and surrounding areas receive much more rain.

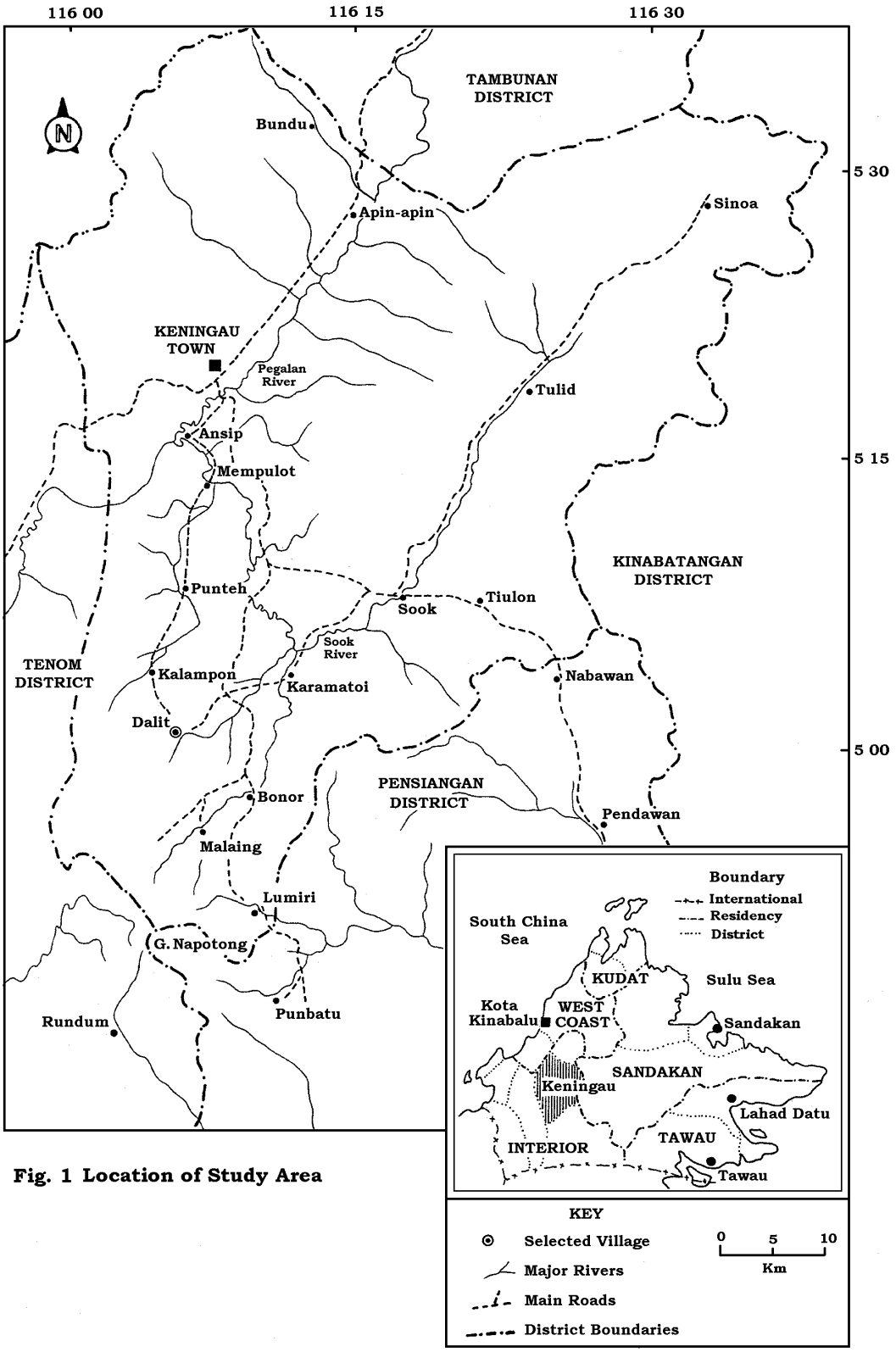

Fig. 1 Location of Study Area

3.0 TRADITIONAL PRACTICES OF FARMERS IN SEED MAINTENANCE

3.1 Seed Acquirement

Most farmers have their own traditional rice seeds, acquired from their ancestors or from their neighbors, from nearby villages or from other districts. A farmer maintains an average of three varieties, depending on the size of their fields. Some farmers, like Lauri, plant 5-6 varieties every year. Despite the number of varieties they have, most farmers are keen to plant new rice varieties, to add to their existing collections.

3.2 Seed Exchange

Exchange of rice seeds is common among the farmers, especially the sharing of seeds between those with close ties. The amount of seeds shared is not fixed. The portion shared by a farmer with another is about 0.2 or 0.4 kilograms (1-2 milk tins) if the seeds supply is limited, and two kilograms or more if the supply is abundant. However, the amount shared is according to the farmers' needs and agreement. Farmers share their seeds not only to strengthen their social relationships but to make sure that suitable planting materials are maintained within their circle and are always available should their own fail to perform during unfavorable conditions.

3.3 Seed Selection and Storage

Normally a farmer will get the best rice seeds by selecting the stalks individually or the rice seeds that have fallen off into the container called *takinan* during the harvesting in the field. The criteria required will be observed during the selection of the ears and collection of the rice seeds. The selection criteria are based on the maturity, health and size of a seed coming from a healthy stand from all the varieties available in a particular field. New varieties that may appear due to natural crossbreeding among their different varieties are carefully selected to be planted the following year. The main motive why farmers do the selection is to improve their yield during the coming season.

The selected rice seeds are kept safely in a container away from rats, pests and the rain. The containers for storing rice seeds are called *lingkud* and *kulimbong*. The seeds are kept in a dry place until they are planted during the next season.

4.0 SEED SUPPLY SYSTEM

4.1 Seed Introduction

At the end of September 1996, a total of nine hill rice varieties were introduced to three farmers (Table 1). Of these, only seven varieties were used whereas two varieties (*Purak* and *Tambunan*) were not planted as the farmer involved, Jaffry, did not have enough space for planting. Three rice varieties, i.e. *Silou*, *Pulut* and *Pulut Adong* were shared by the three farmers with different farmers in the area. These three varieties were the best seeds according to the observations of the farmers. The yield of four varieties was low and thus did not attract the farmers. Nevertheless, the three farmers continued to grow the seven varieties

in the following farming season (1997/98) to re-assess them and to check their performance and yield.

Table 1. Rice Varieties Introduced to Three Selected Farmers in Kg. Dalit, Keningau (1996/97)

Farmer's Name	**Rice Variety Name (Originated from Kg. Bundu, Keningau)**						
	Kemabong	*Kendinga*	*Pulut*	*Silou*	*Gondolot*	*Timbowongi*	*Pulut Adong*
Jaffry Atan				✓			
Kinabar Oulou	✓		✓		✓	✓	
Lauri Kulayas		✓			✓		✓

4.2 Seed Movement – Stage 1

During the 1996/97 planting season, the three farmers (Photos. 1-3) replanted seven traditional varieties as well as shared seeds of the three best ones with ten different people. The selection of the three varieties was based on the assessment (*pulut, pulut arong* and *silou*) for planting in the 1997/98 planting season (Table 2).

Table 2. Seed Supply System Among the Murut Farmers in Dalit, Keningau (1996-99)

Variety Name & Origin	**1996/97 Season**	**1997/98 Season**	**1998/99 Season**
1. *Silou* (Kg. Bundu)	**1. Jaffry Atan** (Kg. Molosok)	1. **Jaffry Atan** (Kg. Molosok, Dalit)	Not planted
		2. **Dominic Undul** (Kg. Molosok)	**Dominic Undul** (Kg. Molosok)
		3. **Satangah Kukuoh** (Kg. Molosok, Dalit)	Not planted
		4. **Ansieng Rawoh** (Kg. Kalampon)	Not Planted
		5. **Jubin Marlon** (Penampang)	Not Planted
2. *Pulut Arong* (Kg. Bundu)	**2. Lauri Kulayas** (Kg. Dalit)	1. **Lauri Kulayas** (Kg. Dalit)	1. **Lauri Kulayas** (Kg. Dalit)
			2. **Alisimah Jupirin** (Kg. Dalit)
		2. **Raiting Laraman** (Kg. Dalit)	Not planted
		3. **Margaret Laraman** (Kg. Dalit)	Not planted
		4. **Salimpat Kulayas** (Kg. Dalit)	Not planted
		5. **Simon Susuru** (Kg. Dalit)	1. **Simon Susuru** (Kg. Dalit)
			2. **Azlinawati Ensin** (Kg. Dalit)
			3. **Maria Benedict** (Penampang)

			4. **Doris Losimbang** (Penampang)
3. *Pulut* (Kg. Bundu)	**3. Kinabar Ulou** (Kg. Molosok)	1. **Kinabar Ulou** (Kg. Molosok)	1. **Kinabar Ulou** (Kg. Molosok)
			2. **Simon Susuru** (Kg. Dalit)
			3. **Linaub Tuning** (Kg. Dalit)
		2. **Rostina Insu** (Kg. Dalit)	Not planted
		3. **Ambakul Antibak** (Kg. Dalit)	**Ambakul Antibak** (Kg. Dalit)
		4. **Ansieng Kukuoh** (Kg. Kalampon)	Not planted
		5. **Salimpat Kulayas** (Kg. Dalit)	Not planted

The *silou* variety that was introduced to Jaffry (Molosok-Dalit) was shared with four different farmers, namely Dominic from Kg. Molosok, Satangah from Kg. Molosok, Ansieng from Kg. Kalampun and Jubin from Kg. Tampasak.

The *Pulut Arong (Adong*) variety that was first planted by Lauri (Kg. Dalit) was shared with four other farmers, namely Raiting from Kg. Dalit, Margaret from Kg. Dalit, Salimpat from Kg. Dalit and Simon from Kg. Dalit.

The *Pulut* variety planted by Kinabar (Satangah's spouse) from Kg. Molosok was given to five farmers, namely Ansieng from Kg. Kalampun, Salimpat from Kg. Dalit, Rostina from Kg. Dalit and Ambakul from Kg. Dalit.

From Table 2 it can also be seen that three different farmers (Ansieng, Satangah and Salimpat) were given two varieties by PACOS.

During the 1997/98 planting season, most of the varieties grew well. Because the number of seeds shared was few and the three varieties introduced by PACOS matured slower than the traditional seeds, birds attacked them, and the yield was lower. Farmers who were given these varieties were unable to share them with others (Table 3).

Table 3. Observation of the Introduced Varieties by the Three Selected Farmers in Kg. Dalit During the 1997/98 Planting Season.

Farmer Name	Observations
Dominic Undul B. Angaat	He was unable to share the *silou* variety given by Jaffry, as the amount was too few. However, he has re-planted the same variety in the 1998/99 planting season.
Satangah B. Kukuoh	The *Silou* variety he received from Jaffry was grown in the 1996/97 planting season. As the introduced variety was similar to the traditional variety he used, called *Aliah merah*, he did not give it to other farmers.
Ansieng B. Rawoh	The *Silou* and *Pulut* varieties he obtained grew well but their yields were lower due to attack by birds and the effects of the long drought resulting from the *El Nino*.

Jubin B. Lawrence Malon	The *Silou* variety he obtained from Jaffry was not planted, as he could not prepare the fields in time for the planting season.
Raiting Bte Laraman	During the early stages of ripening, birds attacked the *Pulut Arong* variety she grew and thus they were no yield.
Margaret Bte Laraman	The *Pulut Arong* variety given to her by Lauri was too few, but they grew well and healthy. However, during the ripening stage, birds and pests attacked those which matured earlier and thus there was no yield.
Salimpat B. Kulayas	The *Pulut Arong* and *Pulut* varieties he planted did not grow well and the yield was not good, thus he was unable to share them with other farmers.
Simon Susuru B. Antibak	The yield performance of the *Pulut Arong* variety he obtained was very satisfactory. He shared it with three different people, Azlinawati from Kg. Dalit, Maria and Doris from Penampang.
Rostina Bte Insu	The *Pulut* variety she planted did not grow due to poor soil and the effects of the long drought caused by El Nino. As a result, she did not get any yield.
Ambakul Bte Antibak	The *Pulut* variety she obtained from Kinabar was planted during the 1997/98 planting season and they yielded well. However, the seeds were too few, so she kept them for herself to use for the 1998/99 planting season.

4.3 Seed Movement Stage 2

The *Silou* seeds given to Jaffry were only planted in the first and second year. He was unable to plant the seeds during the third year as his rice field was limited (Table 4).

The *Pulut Arong* seeds obtained by Lauri was shared with Alisimah Bte. Jupirin for planting during the 1998/99 season. Simon also shared the seeds he got with Azlinawati, Maria and Doris for the 1998/99 planting season. The *Pulut* seeds planted by Kinabar were shared with Simon and Linaub for the 1998/99 planting season (see Table 2).

Table 4. Comments by the Three Traditional Farmers on the Seed Varieties Introduced to Them

Farmer Name	Observation
Jaffry B. Atan	He only managed to grow the *silou* variety out of the four varieties he obtained. The other three varieties were *Purak*, *Tambunan* and *Gondolot*. He was unable to grow these three varieties due to limited rice field. Thus, he was unable to share the seeds with others.
Kinabar Bte Ulou	She planted all four varieties she obtained (*Pulut*, *Timbowongi*, *Kemabong* and *Gondolot*) during the first and second year. She was unable to continue growing them in the third year due to limited rice field, and also, the yield in the second year was not good. She only shared the *pulut* variety with other farmers (see Figure 2).
Lauri Kulayas	She obtained the *Gondolot*, *Pulut Arong and Kendinga* varieties during the 1996/97 planting season and has continued to grow them in 1998/99. She shared the *kendinga* seeds with Tinarik from Kg. Dalit during the 1997/98 planting season and Jaitah from Kg. Dalit. The rice looked healthy, but they matured late. The yield in the last planting season was not so good.

5.0 OBSERVATION AND LESSONS LEARNED

5.1 Strength of Informal Seed Supply System

The informal seed supply system of the farmers in the Dalit area is a practical traditional system. The farmers do not need a high cost in using this system. They also do not need to depend on scientific experts, laboratories and storage places, as most scientists and researchers do. The farmers themselves are the scientists, walking laboratories and sustainable storage places. For as long as farmers are allowed to continue with their farming activities, the system will continue. The system also functions well when farmers have some form of social relationships, where new planting materials circulate easily among them.

The farmers can get their seeds easily and are free to select and grow seeds of any variety of their choice without being coerced or pressured. They select the seeds of the best variety or plants from within varieties that can produce high yields for their particular farm size. Thus, this system does not only allow the seeds to be conserved but also capable of improving the seed varieties.

5.2 Constraints Faced by Farmers

Farmers can only maintain a certain number of varieties based on their farm size. They pass on their seeds only when they see the need to do so. When they have limited number of seeds, especially during unfavorable conditions, most of the seeds are kept for their own use. Those seed varieties that do not perform in their particular area are not planted anymore and will be lost. The sharing of seeds is mostly confined to neighbors and relatives, thus is quite localized. This may be considered a limitation when assessing the potential of the local seed system to diffuse improved seeds or seed technologies.

Farmers usually do not keep a record of the origin of their seeds and their purity is not known. The name of a particular variety changes as it moves from one ethnic group to another. Farmers are unsure whether the seeds that they receive from relatives are worth their time. Diseases from a variety could be easily transmitted to another area.

5.3 Challenges Faced by the System

The system is intricately linked with the traditional farming system of the Murut communities. If the farming system is not practiced anymore, the seed supply system will also cease, and there is a great possibility that hill rice varieties will be reduced. Natural disasters, such as unfavorable weather conditions and pest attacks could easily wipe out the reduced number of varieties.

6.0 CONCLUSION

The informal seed supply system, through the constant exchange of suitable varieties among farmers ensures that planting materials among the Murut farmers are maintained and easily available.

7.0 FURTHER STUDIES

The interaction of the informal and formal seed supply system, especially in wetland areas, has not been covered in this study. It would be interesting to study further the impact of the formal system on the informal system and how each system complements each other in a wetland area, which is where both systems are at work. This knowledge will help in formulating appropriate policies that will allow the integration of both systems in the modern agricultural system. It would be useful also to find a mechanism whereby farmers, such as those in Papar and Kota Belud, can easily access to good planting materials, besides getting them from the formal institution.

Acknowledgement

PACOS appreciates and values the contributions of all the farmers involved, directly or indirectly, in this research. Their participation has made this research possible. PACOS also appreciates the hospitality of all the farmers and their families who provided us with a home during the period of field research. The technical support provided by SEARICE has been very helpful. Mary Siambun provided valuable guidance and advice throughout the research period while the Agricultural Research Centre in Tuaran provided rice seeds to be introduced to the farmers.

Reference

PACOS, 1996. *Agricultural Diversity of Food Crop in Sabah, Malaysia.* CBDC Project in Sabah, 52p.

Photographs Taken in Dalit

1, 2 & 3. Participating Farmers in Dalit.
4. Introduced Traditional Rice Varieties (*Pulut*)
5 & 6. Local Traditional Rice Varieties


1


2


3


4


5


6