THE AGRICULTURE AND FISHERIES OF THE PURARI DELTA

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INTRODUCTION

The Purari River drains a large area of the Papua New Guinea Highlands and then flows south into the Gulf of Papua. Before the river enters the Gulf, it splits into a number of smaller rivers which spread out over a wide area called a delta.

The agricultural and fishing activities of the Purari Delta are mostly carried out at subsistence level. Efforts have been made, however, to help the people to develop a cash economy and a cash income was earned from agriculture and fisheries between November 1978 and October 1979.

This article describes the agriculture and fisheries projects in the area, their contribution to the cash income and plans for further development.

AGRICULTURE

Agricultural development has been slow in the Delta. This is due partly to health problems such as malnutrition and malaria, which often prevent people from working, and partly to a lack of government interest in the area.

Some of the main agricultural products of the Purari Delta are described below.

Sago

This is the main subsistence crop and also provides material to make walls, roofs, fish traps and other articles.

A fish trap made from sago frond mid-ribs and split cane

Sago was produced commercially until the Second World War and formed the basis of the Hiri.

This information was first published in Purari River (Wabo) Hydro-electric Scheme Environmental Studies Volume 13, *Published by the office of Environment and Conservation and the Department of Minerals and Energy.*

This was the annual movement of people from the Port Moresby area into the Gulf to exchange clay pots and shell jewelry for sago. Attempts to start the sago industry up again after the war were not successful but some sago is still produced for sale in Port Moresby.

Copra

This is the chief cash crop of the Purari Delta. It has been produced there for many years but only in small quantities. This low production caused problems for the village farmers because, by the time they had enough copra to sell, some of it had already gone mouldy or been attacked by insects.

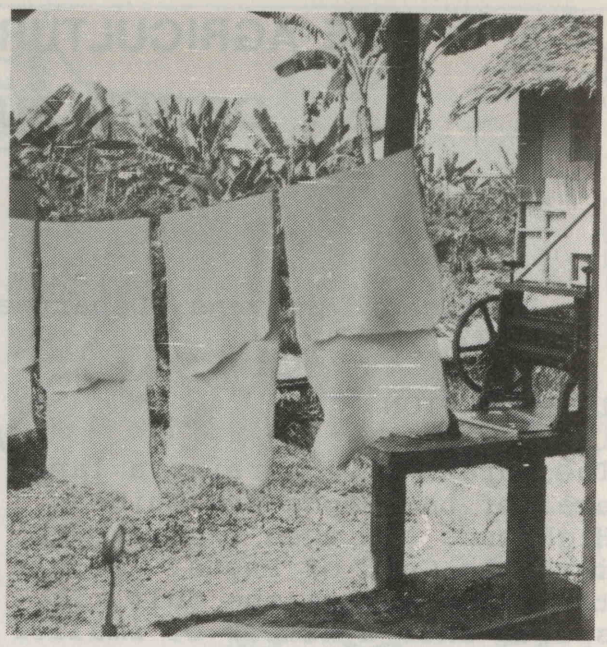
In October 1978, D.P.I. started to buy copra in small quantities from smallholders and, at the same time, the price paid for copra increased greatly. This resulted in a great increase in production. Less than 400 kg was sold to D.P.I. in November 1978, but this had risen to over 10,000 kg by April 1979 when it earned K2,358 for the growers.

In July 1979, D.P.I. stopped buying smallholder copra from this area so as not to compete with a village businessman who had started buying it.

A number of producers who were encouraged by the increase in price and by D.P.I.'s interest in their product, have started to send copra direct to Port Moresby. It is not known exactly how much copra is sold in this way, but at least 66,000 kg were shipped from the area between July and October 1979.

Rubber

This crop grows well in the Purari Delta and five smallholder rubber blocks have been planted in recent years. One of these, a community block at Kararaua near Baimuru was in production in 1979.



Sheets of rubber hanging up to dry

Unfortunately, the long wet season reduced the number of days on which trees could be tapped between June and October 1979. There were also some labour difficulties. As a result of these two factors, production during the year was only 1,164 kg instead of the expected 5,000 kg (2kg/tree).

The value of this rubber was still high enough, however, to keep up with the Development Bank loan repayments and the group was also able to buy shares in the PNG Investment Corporation.

The D.P.I. rubber demonstration block of 280 trees was cleared of bush growth during July, 1979 and tapping started in October. These trees produce an average of 12 kg per day's tapping.

Coffee

Robusta coffee can be grown in

the Purari Delta and, in 1979, coffee nurseries were started at Baimuru and Wabo, and at the D.P.I. extension bases in the Iari Census Division to promote coffee growing in the area.

Only one smallholder block was in production during the twelve months covered in this article. It was run by one farmer working part-time. The production from the block during this time was worth K527 which is a high proportion of the minimum rural wage.

Chilli

This crop grows very well in the Purari Delta and active encouragement was given to the people to grow Medium and Birds-eye chillies in 1978/9. This resulted in an increased production of dried chilli during the year. Total production for the twelve months covered by this article was 369 kg. This was worth K420 to the growers.

Rice

This is a new crop to the Purari Delta and seems to hold great potential. Three crops of rice were harvested from a trial at Baimuru during twelve months in 1978/79.

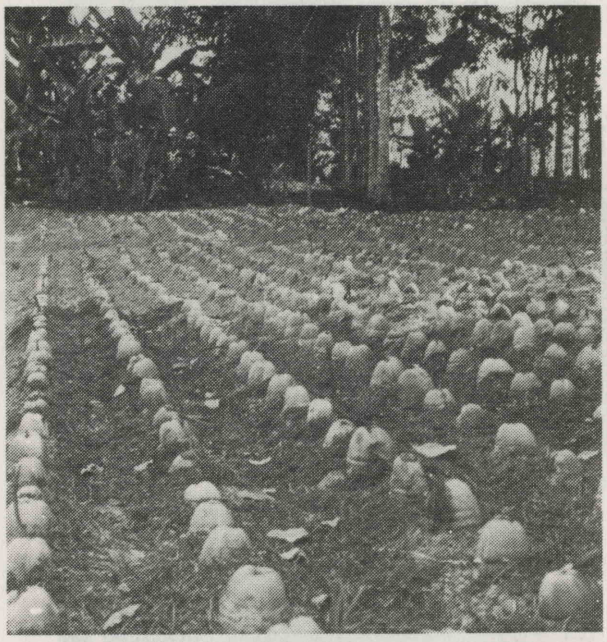
In February and March 1979, the D.P.I. office at Baimuru sold 25 kg of hybrid rice seed to 30 smallholder farmers. By the end of October, over 1000 kg of grain had been produced and sold to D.P.I.

Unfortunately, the return to the farmers is only 13 toea/kg. This is too low to encourage them to continue with rice production.

Future Development

In the next few years, it is hoped that copra production will increase again, this time due to the introduction of hybrid coconuts which have been specially bred to give high yields. A hybrid coconut seedbed and nursery were planted out at Baimuru in October 1979. The plants growing there will be ready to sell as seedlings in September 1980 and should start producing nuts in 1983/4.

More than 500 seedlings were distributed from the Baimuru rubber nursery in 1979, and one more of the smallholder blocks will begin production this year.



Hybrid coconut nursery

The D.P.I. station at Kikori has now started milling rice. It is hoped that this can be done on a contract basis so that the farmers can sell the finished product themselves. This will give them better profits and make the crop more interesting to grow.

A cocoa nursery was also planted in the Purari Delta in 1979. This crop should do well here and can be intercropped with coconuts or rubber.

Another possible crop under investigation in the area is nypa palm. This is thought to cover about 22,000 hectares of land in the Delta, between the coastal mangroves and the freshwater swamps. Traditionally the leaves are used to make thatch for houses but the palm also has a sweet sap which can be tapped from the flower stalk. This sap can be used to make vinegar for pickling fish, alcohol for industrial processes, or sugar. A three year investigation to find out if this would be economic was started this year (1980).

Nypa flower

Ginger and balsa may also be established as cash crops in the future. Ginger is a native plant of the Purari Delta and grows well there, and balsa could be used as a shade tree in cash nurseries before being felled for its valuable timber.

FISHERIES

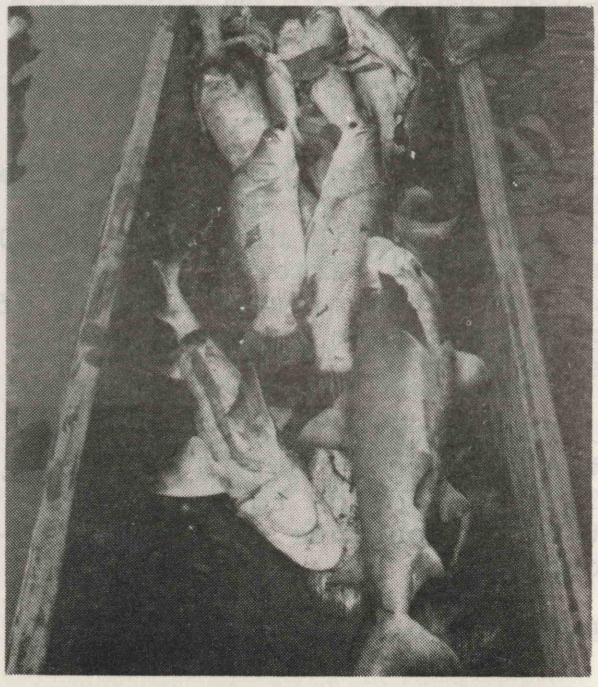
Traditionally, fishing in the Purari Delta has not been as important as the processing of sago except on Urama Island where sago does not grow and the people trade crabs and smoked fish for it.

Fisheries development projects currently running in the Delta are described below.

Smoked Fish

Smoked fish (smokpis) is seen as the best way of introducing commercial fishing to the villagers. The fish can be smoked in a copra drier and so can be produced by copra farmers with very little extra effort.

In 1978, the New Zealand Government contributed K11,099 towards the establishment of a smoked fish programme in the Delta. This money was used to buy equipment for village fishing groups.



A good catch

This programme has run into two main problems. The first is low earnings for the fishing groups because of low prices paid for smoked fish. While 5 kg of fresh fish are needed to make 1 kg of smoked fish, the price for smoked fish is only three times as high as that for fresh fish. At present prices, 1 tonne of fish must be caught and smoked to earn enough money to buy a new net.

The second problem is that quarrels within the fishing group often lead to the gear being left unused or unrepaired for long periods of time. This problem would probably be less serious if family or clan fishing groups had been formed rather than village groups. Unfortunately, there was not enough money for equipment to be supplied on such a large scale.

In future, it is expected that netting will be imported directly into Baimuru and that new nets will be made on site. This will lower their cost. It is also hoped to get a grant from F.A.O. to extend the scope of the project. Additionally, as the fishermen get more experience, production will increase and in turn lead to increased profit.

The advantages of the smoked fish project are that no knowledge of sophisticated technology is required and there are no processing or storage costs. Smoked fish is also seen as having an important place in the solution of the country's nutrition problems as it is very high in protein and a good source of iodised salt (salt with iodine in it). Iodine is a very important chemical in the diet.

Since smoked fish is light, it is also easy and cheap to transport whether by aeroplane from Baimuru to the highlands or by foot from the trade store to a remote village.

Fish ready for smoking

Freezer Barge

A freezer barge was chartered as a pilot project for four months in 1978. It went around the villages, staying for four or five nights in each. During this time, nets were lent to the villagers and the fish they caught were bought from them.

A total of K3,839 was paid to villagers during this period and a first class product was obtained since the fish were frozen immediately on purchase.

During future operations, villagers will be encouraged to catch fish for the village smoke house between visits by the barge. This should help the villagers to keep their interest in fishing and, eventually, a group of full-time fishermen will develop who can pass on their skills to their children.

A combined smoked fish and

freezer barge programme is seen as the best fishing system for the Purari Delta.

Baimuru Fishplant

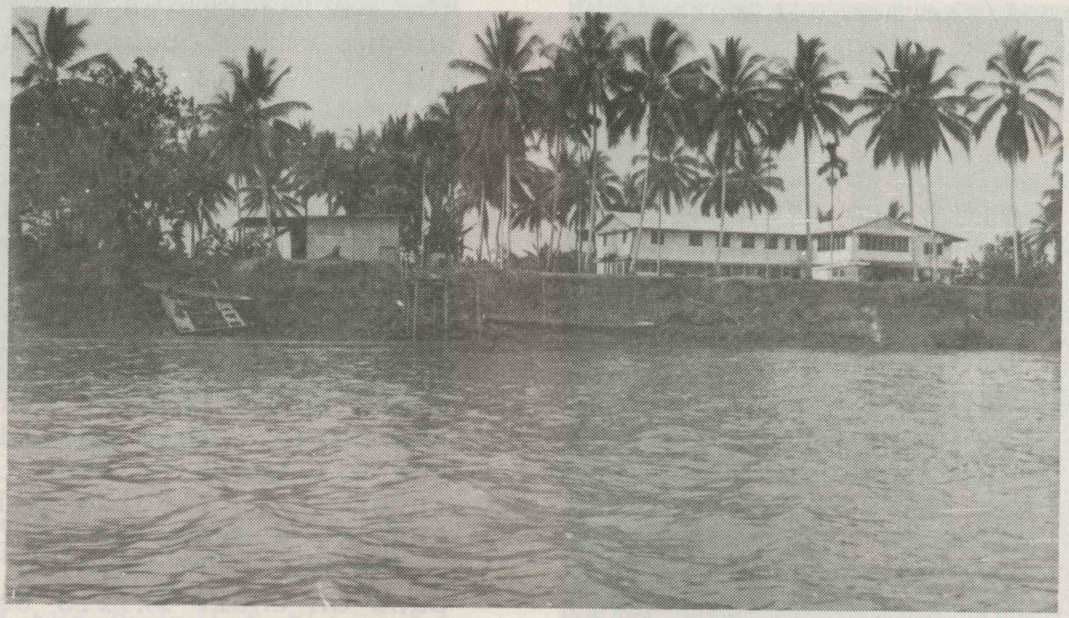
Baimuru is the most suitable place in the Gulf Province for the development of fish processing facilities (a fishplant), this is because there is no bar across the Pie River to prevent ships getting right to the station. There is also a 1000 m airstrip which is only 1 hour's flying time from the highland towns where there is a good market for fish and fish products.

The old Gulf Hotel at Baimuru is the site of the fishplant and has a number of advantages. For example:-
a) It is central to local fishing grounds.
b) It has abundant fresh water.
c) It is alongside the Pie river which is deep enough to take vessels up to 1500 tonnes.
d) It is alongside the airstrip.
e) It is on land which has already been purchased and so there are no land dispute problems.

The fishplant opened in February 1979 for the purchase of fresh fish from villagers for freezing. All species of fish are bought and the fishplant is open to accept delivery 24 hours a day.

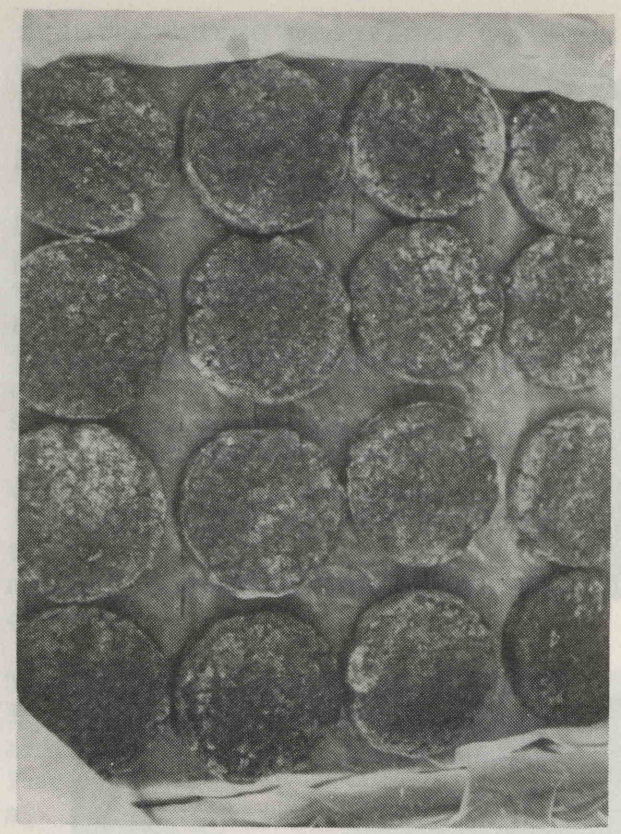
Barramundi is frozen whole after removal of the head and guts or is filleted and frozen in 10 kg blocks or 1 kg retail packs. Threadfin salmon is frozen whole and then sawn into cutlets. Flake fillets are sold in 10 kg blocks to 'fast food' outlets in the highlands where it competes successfully with barracuda fillet from New Zealand. Flake is also made up into fishcakes which are again proving popular for 'take-away' food.

Crabs were originally sent to the highlands alive, but this was not very economical so now they are also sold as retail packs of cooked meat. This means that freight charges are now much lower per crab since no waste (usually about 75%) is sent.



The big, white building on the right in this photograph is the old Gulf Hotel - now the Baimuru fishplant.

Traditional fishing methods



Flake and sago fishcakes produced at the Baimuru fishplant

While there are some difficulties in marketing the fishplant products, the worst of which is the high cost of air freight, the plant has so far proved successful in showing that a number of high quality local products can be made with only a little investment, trainee management and local labour.

The profit made by the fishplant will be used in expanding the scope of its operations. A net making shop and a bulk fuel installation have been under construction since mid-1980, while future plans include an outboard motor repair workshop and some accommodation facilities.

Future Developments

The outlook for fisheries in the Purari Delta is very encouraging. There will soon be 3 collection vessels operating in the area to pick up fish and crabs from the villages, and a freezer barge should be in regular service by 1981.

New products which could be developed include freshwater prawns (*Macrobrachium* sp.), clams (*Geboina coaxans*), mangrove oysters (*Saccostrea echinata*) and scallops. The prawns could be sold as frozen, uncooked tails and the others alive, frozen or processed into fritters.

It may also be possible to make more use of the Gulf's prawn stocks by using a fleet of trawlers operating from Baimuru. This would lead to the production of export quality prawns and a large quantity of trash fish (fish caught in the net with the prawns - usually about 84% of the catch). These fish could probably be sold in the highlands.

Fish waste is being used for feeding pigs, ducks and crocodiles on projects set up near to the fishplant.

CONCLUSION

During the period November 1978 to October 1979, the people of

Clams

the Purari Delta made K21,160 from the sale of their fisheries and agricultural products. This only includes sales recorded in Baimuru and quite a lot more money was probably made from direct sale to Port Moresby of sago, betelnut, copra, artifacts, logs and other products.

The National Government's policy of helping less developed areas of Papua New Guinea may lead in future, to more money and more trained staff being made available for agriculture and fisheries in the Purari Delta. The fact that the area has considerable potential for development in these fields is clearly shown by the work reported in this article. With a little help, this potential could be realised to the benefit, not only of the people who live in the Delta, but of the country as a whole.