# SOME FOOD MARKET INFLUENCES OF A LARGE-SCALE SMALL-HOLDER DEVELOPMENT IN THE WEST NEW BRITAIN AREA OF PAPUA NEW GUINEA

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## ABSTRACT

*The influx of over 10,000 settlers into the area around Kimbe in West New Britain through the development of a large-scale agricultural project has had profound influences on both the amount and variety of foods sold in local markets. The paper summarizes the results of a market survey carried out during 1977. The survey showed that some traditional foods for the area, i.e. coconuts, betel nut and seafoods were traded for root crops and vegetables produced by settlers, thus the diet of local villagers was supplemented from food grown by settlers. Settlers supplied 75% of food by weight delivered to one market.*

*The balance between the two groups is an important factor in the establishment of this and similar schemes. Food gardens in settler blocks are thus of considerable practical significance for personal subsistence and trade and for limiting increases in living costs.*

## INTRODUCTION

In 1968 the first plantings began for a large-scale development of oil palm (*Elaeis guineensis* Jacq.) in the region of Kimbe in West New Britain. This comprised a nucleus estate and seven major subdivisions of smallholder development, the latter being known as the West Nakanai Oil Palm Scheme. As the scheme increased in size so did the number of smallholders: the current estimate of total settler population of the area is over 10,000 people. The region has traditional agriculture but this was insufficient to meet the demands of such a large population expansion. In addition, particular requirements of individual ethnic groups had to be met. Smallholders were drawn from all over P.N.G. The major groups are Chimbu, Sepik, Tolai and Morobe with smaller numbers of smallholders from West New Britain, Papua, Irian Jaya, New Ireland and North Solomons. Each smallholder block contains 2-3 ha of primary forest at the back of the block available to subsistence gardening with the intention that this will eventually be planted to palms and the gardens will be rotated to the front of the block where mature palms are presently established. However, the obvious importance of food gardens now casts some doubt as to whether the full oil palm acreage should ever be planted (Benjamin 1977a).

On arrival in the settlements, establishment of subsistence gardens was a priority activity. It soon became apparent that both energy and crop preferences varied between the various ethnic groups (Benjamin 1976b). Once personal needs were satisfied, entrepreneurial opportunities began to be explored with the development of a flourishing trade in foodstuffs as the final outcome.

This paper examines the extent of this trade and its significance. Included is the trade activity of the small but important Dagi Coconut Settlement in the region of

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Kimbe and a group of squatter vegetable growers on land at Gigo close to the main market.

The local villagers and original landowners influencing the markets studied come from three area groups i.e. Nakanai, Bakovi and Kombe (*Figure 1*). Their produce is grown on village land and fished from traditional coastal fishing areas.

The survey was initiated to obtain quantitative knowledge of the settler impact on traditional food markets and of the interaction between indigenous and immigrant populations in relation to foodstuff production and trade.

## METHODS

The four markets selected for the survey were Kimbe, Mosa, Kavugara and Talasea (*Figure 1*). These markets were situated in areas adjacent to the settlements and villages where the people met and marketed their produce.

The markets of Kimbe, Mosa and Talasea were surveyed over a period of two weeks each during February and March 1977. Kavugara was surveyed in June 1977. All results calculated are presented in terms of a market fortnight. Recordings of types of food were made over the two week period for each market. The 2 week survey period was selected because there is an increased seller attendance on or immediately following pay days.

Each fourth to eighth seller who entered each market was selected giving a sampling intensity of 13%-26% (*Table 1*). All produce delivered was weighed and recorded under the following categories: sweet potato (*Ipomoea batatas* (L.) Lam.), taro (*Colocasia esculenta* (L.) Schott), bananas (*Musa* spp.), Chinese taro (*Xanthosoma saggittifolium* (L.) Schott), peanuts (*Arachis hypogaea* L.), green leafed vegetables such as *Amaranthus* sp., coconuts (*Cocos nucifera* L.), fruit and nuts, betel nut (*Areca catechu* L.) and maize (*Zea mays* L.). Cassava (*Manihot esculenta* Crantz) and yams (*Dioscorea* spp.) were also recorded grouped under the heading of "carbohydrate foods". Meat, fish and shellfish were another classification. Spring onions (*Allium ascalonicum L.*), tomatoes (*Lycopersicon esculentum* Mill.) and capsicum (*Capsicum grossum* Sendt.) were grouped as "other vegetables". Miscellaneous items were such articles as baskets, string bags, carvings and other non-food items.

As the selected sellers left the market their original produce was again weighed and the amounts delivered, sold and unsold determined. Percentages of food sold and unsold could then be calculated. Village, settlement and ethnic origin were recorded.

Sample prices of food items were taken and estimates of the value of food items delivered and sold over a market fortnight were obtained. The data were then used to determine food patterns and social influences on the markets.

Kimbe Market results were representative of the trends for the four surveyed. These results will be discussed in greater detail than those from Mosa, Kavugara and Talasea.

## RESULTS

Four major aspects were determined from the data, i.e. those of proportional representation in market usage, food types in relation to ethnic groups and amounts and value of products sold and unsold.

### Relative representation and contributions of settlers and villagers

The proportional settler contributions to the four markets are shown in *Table 2*

*Table 1.*—**Seller attendance and representation during the sample fortnight period at each market**

| | Kimbe | Mosa | Kavugara | Talasea |
|---|---|---|---|---|
| Total sellers | 1148 | 621 | 725 | 470 |
| Villagers (%) | 47 | 15 | 56 | 77 |
| Settlers and other sources (%) | 53 | 85 | 44 | 23 |
| Sample size % | 13 | 13 | 26 | 18 |

*Table 2.*—**Weight of produce delivered (tonnes) per market fortnight**

| Source | Kimbe Market | Mosa Market | Kavugara Market | Talasea Market |
|---|---|---|---|---|
| Villages | | | | |
| Talasea (Bakovi) | 8.9 | 0.6 | 4.4 | 2.3 |
| Hoskins (Nakanai) | 2.7 | 3.0 | 0 | 0 |
| Kombe | 1.4 | 0 | 0 | 0 |
| Settlers | | | | |
| West Nakanai Oil Palm Scheme | 17.3 | 14.9 | 4.7* | 2.7* |
| Dagi Coconut Settlement | 3.3 | 0 | 0 | 0 |
| Squatter settlement | | | | |
| Gigo | 13.9 | 0 | 0 | 0 |
| Plantation employees | | | | |
| Mosa Plantation | 0 | 1.0 | 0 | 0 |
| Other sources | 2.3 | 1.0 | 0 | 0.3 |
| Total | 49.8 | 20.5 | 9.1 | 5.3 |

* Kavugara Oil Palm Settlement only.

and from these data their relative importance can be readily seen. Settlers from the oil palm and coconut schemes together with the Gigo squatter settlement comprised 53% of the total number of sellers (*Table 1*) attending the Kimbe Market but contributed 69% or 34.5 tonnes of produce in a market fortnight (*Table 2*).

Squatters from the Gigo area, living in close proximity to the Kimbe Market, had reduced transport costs for their produce. Much of the food (13.9 tonnes) was carried manually for sale (*Table 2*).

All oil palm subdivisions contributed food to the Kimbe Market. Oil palm settlers alone delivered 35% or 17.3 tonnes, of the produce (*Table 2*).

Mosa Market is built on the site of the nucleus estate and caters largely for the plantation and mill workers, many of whom have migrated from other areas of Papua New Guinea. The nearby population comes predominantly from the settlement schemes but villagers regularly attend (*Table 1*) comprising 15% of the sellers and delivering 18% (3.6 tonnes) of produce, mainly coconuts and betel nut. On the other hand, settlers, Mosa employees and others comprised 85% of the sellers and delivered 82% of the produce (16.9 tonnes), principally root crops and vegetables (*Table 2*) with oil palm settlers alone providing 73% or 14.9 tonnes.

Kavugara Market, situated at the community centre of the Kavugara oil palm subdivision, operated four mornings

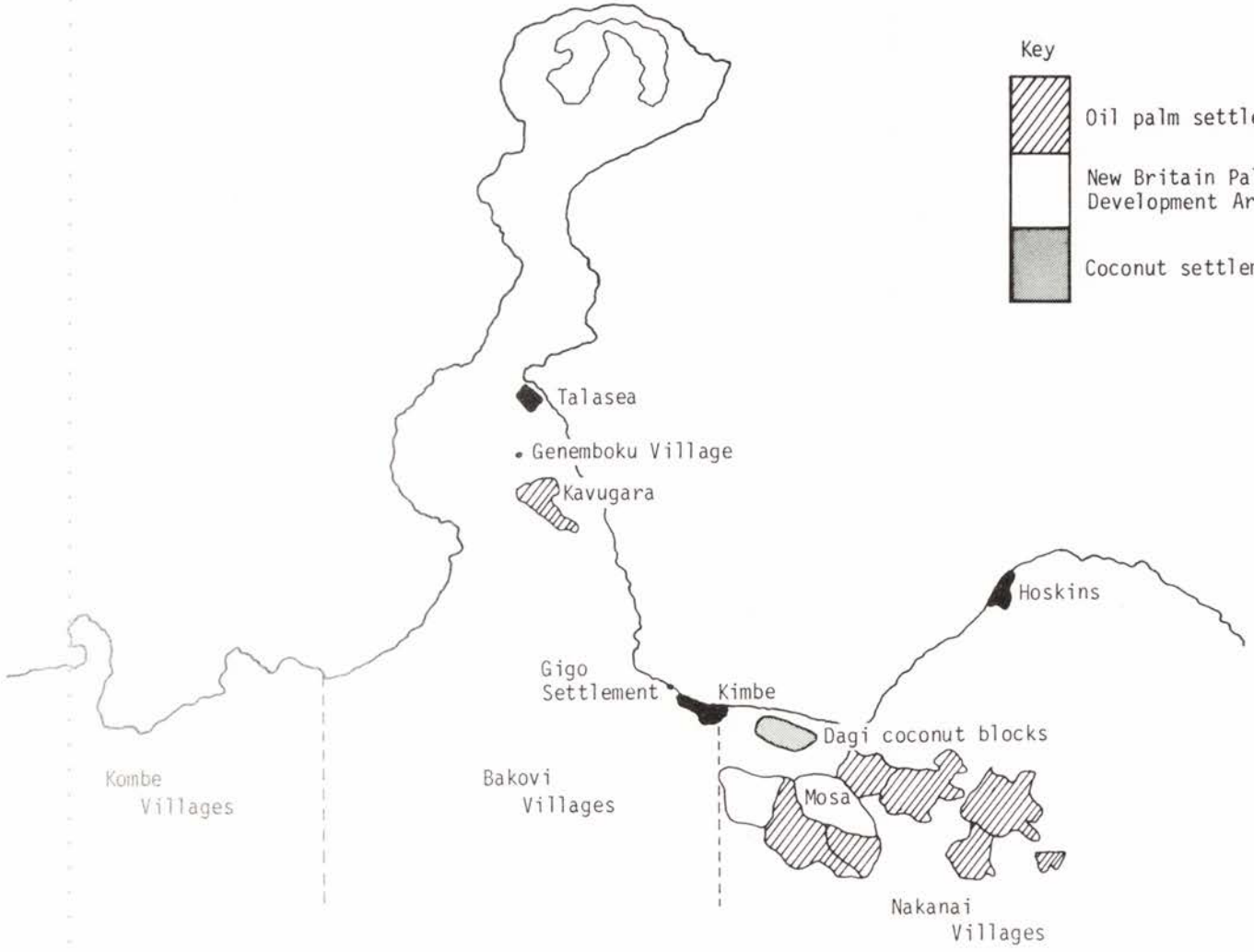


*Figure 1.*—**Surveyed market sites and areas of seller origin**

over the survey period and saw an active barter system between the Bakovi Village people and the settlers. The villagers, 56% of the sellers (*Table 1*) delivered 48% (4.4 tonnes) of produce during the period (*Table 2*) and settlers (44% of the sellers) delivered 52% or 4.7 tonnes (*Table 2*). The main village involved in this market was Genemboku (*Figure 1*) situated close to the settlement. People here have come to depend on the settlers for supplementing supplies of their traditional crop of taro. Chinese taro was also exchanged between settlers and villagers for betel nut and coconuts. Demand by sellers for coconuts and betel nut from the local villagers was very strong. Some money exchange for food at this market also took place.

Talasea Market had a large proportion of sellers originating from local villages ie. 77% (*Table 1*) but these people only contributed 43% (2.3 tonnes) of the produce delivered (*Table 2*) mainly being coconuts and betel nut. Although only 23% of the attending sellers were settlers from Kavugara their contribution of saleable food was high at 51% or 2.7 tonnes (*Table 2*), again being root crop staples particularly taro and Chinese taro and vegetables.

### Food delivered by ethnic groups

It can be seen that the villagers were the major suppliers of coconuts, betel nut, meat, shellfish and fish (*Table 3*). The Nakanai, Bakovi and Kombe villagers who are all coastal people, contributed all of the 0.6 tonnes of fish and shellfish delivered to Kimbe Market. Only a small quantity of root crops were delivered by the villagers, these being sweet potato, taro and tapioca. The Bakovis delivered more fruit and nuts than any other group (0.4 tonnes).

The settlers (Chimbu, Sepik, Tolai and Morobe people) were the major suppliers of root crops, green leafed vegetables, such as *Amaranthus* sp., pumpkin tops (*Cucurbita* sp.), aibika (*Abelmoschus manihot* (L.) Medikus), karakap (*Solanum nigrum* L.), fruit and nuts, and other vegetables such as beans and spring onions. Settlers and villagers alike contributed quantities of yam and cassava or "other carbohydrate foods".

The Sepiks supplied sweet potato, Chinese taro and green leafed vegetables. Chimbu settlers sold largely sweet potato, peanuts, greens and vegetables. The Morobe people delivered great quantities of taro, mostly being grown on the squatter settlements at the back of Kimbe Township. The amount of taro contributed was important for exchange with betel nut and coconuts from villagers, the taro being a traditional crop of the villagers. The amount of food delivered by this group was 15.4 tonnes, or 30% of the total. Many Morobeans came from the Gigo squatter settlement and Morobeans represented 13% of the total sellers therefore their impact on the market was very strong. They delivered individually the greatest amount of sweet potato of 6.4 tonnes (*Table 3*). The Tolai sold more bananas, Chinese taro and peanuts than any other group, this being 1.6, 3.0 and 0.7 tonnes respectively. It should also be recorded that part of the 0.3 tonnes of betel nut delivered by the Tolais was shipped from East New Britain. Often this method is used to pay shipping fares and other travelling expenses from Rabaul to Kimbe, a pattern also noted in Bialla (Wapi 1978). The Tolais delivered significant amounts of coconuts mainly from the Dagi Coconut Settlement Scheme. Tolais representing 16% of sellers at Kimbe Market delivered 21% or 10.7 tonnes of produce for sale (*Table 3*). The quantity and variety of foods delivered for sale to Kimbe Market by the Tolais was substantial, with many market sellers originating from the Dagi Settlement Scheme.

The total amount of food delivered to Kimbe Market by the 1148 sellers over the survey period was approximately 50

*Table 3.* – **Quantity of food types delivered for ethnic groups in Kimbe Market (tonnes) per market fortnight**

| Ethnic origin | Sweet potato | Taro | Banana | Chinese taro | Peanut | Greens | Coconut | Fruit & nut | Betel nut | Maize | Other carbo-hydrate foods | Meat, fish, shell-fish | Other veg. | Miscell-aneous | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Villages Kombe Bakovi Nakanai | 0.34 | 0.32 | 0 | 0 | 0 | 0 | 4.48 | 0.43 | 4.66 | 0.08 | 0.99 | 0.56 | 0.45 | 0.42 | 12.73 |
| Sepik | 2.48 | 0.32 | 0.11 | 0.81 | 0.13 | 1.28 | 0 | 0.26 | 0 | 0 | 0.19 | 0 | 1.63 | 0.61 | 7.82 |
| Chimbu | 1.35 | 0 | 0.03 | 0.10 | 0.25 | 0.75 | 0 | 0.10 | 0 | 0 | 0.01 | 0 | 0.97 | 0 | 3.56 |
| Morobe | 6.40 | 4.12 | 0.13 | 0.34 | 0.10 | 1.16 | 0 | 0 | 0 | 0 | 2.08 | 0 | 0.94 | 0.08 | 15.35 |
| Tolai | 1.27 | 0.16 | 1.64 | 2.98 | 0.74 | 0.40 | 1.67 | 0.20 | 0.34 | 0 | 0.34 | 0 | 0.52 | 0.40 | 10.66 |
| Total | 11.84 | 4.92 | 1.91 | 4.23 | 1.22 | 3.59 | 6.15 | 0.99 | 5.00 | 0.08 | 3.61 | 0.56 | 4.51 | 1.51 | 50.12 |
| % Unsold | 20.00 | 49.00 | 27.00 | 9.00 | 1.00 | 16.00 | 15.00 | 8.00 | 6.00 | 0 | 24.00 | 11.00 | 11.00 | 14.00 | 18.00 |

tonnes. This figure gives an indication of the fortnightly requirement of traditional vegetables and their importance to Kimbe Township.

*Figure 2* shows clearly the types of food each group delivered to Kimbe Market and emphasises the villagers production of coconuts, betel nut and fish foods and the settlers' contribution of food crops. The relative proportion each group contributed is shown diagramatically.

### Amount of produce sold and unsold, and estimated value

*Table 3* shows the amount of produce delivered and unsold for each food group in the Kimbe Market over the survey period. Chinese taro, peanuts, fruits and betel nut, meats and fish all were in demand and sold well, 1%-11% being unsold of the total delivered.

Other items such as sweet potato, bananas, vegetables, coconuts and other carbohydrate foods sold moderately well with between 16%-27% of the total delivered being unsold. Calculations from a price survey conducted concurrently with the market survey gave an estimated total value of food delivered, sold and unsold for each of the four markets. *Table 4* shows the results of this and the monetary importance of each market. Kimbe Market with an approximate value of K6000 per fortnight was the major market. The value of food sold was just over K5000. The Mosa Market food deliveries amounted to almost K2000 per fortnight in value, mostly purchased by Mosa plantation employees. The value of produce delivered at Kavugara was K700 per market fortnight. This represents a major part of the cash and barter economy between the villagers and settlers in an area where both settlers and villagers are far from retail outlets. Talasea Market with only K375 worth of food delivered and approximately K350 worth sold per fortnight was a small market.

## DISCUSSION AND CONCLUSION

The settlement schemes and squatter areas have been shown to provide the surveyed markets with the major proportion of traditional food and vegetables. This important factor is likely to reappear in similar settlement schemes within the country, e.g. Bialla and Popondetta Oil Palm Schemes, and should be regarded as a benefit offered by such schemes to the surrounding communities.

In this situation, the squatter population provides substantial food supplies and thus deserves recognition within the community.

The villager-settler food interrelationship and balance is an important result of settler introduction in the Hoskins-Talasea area. This pattern is apparently being followed in the new oil palm settlement scheme at Bialla (Benjamin unpubl. data). From the results of these four market surveys, the importance of settler food crop contribution can be clearly seen. The balance that exists between villagers, contributing coconuts, fish and betel nut with settlers contributing food crops and vegetables has also been demonstrated. Other examples of people from settlement schemes supplying town areas occur elsewhere in the country, such examples being Mt. Hagen and Rabaul markets (Bourke, pers. comm. 1979).

Settlers are providing plentiful supplies of reasonably priced traditional root crops and vegetables to the markets supplying the towns and major industries in the area surveyed. Abundant supplies should be a major factor in restricting increases in the cost of living by avoiding situations of low supply and high demand presently seen in other large population centres.

The food crops delivered by the various ethnic groups reflect the major garden produce grown on the settlement blocks by each group.

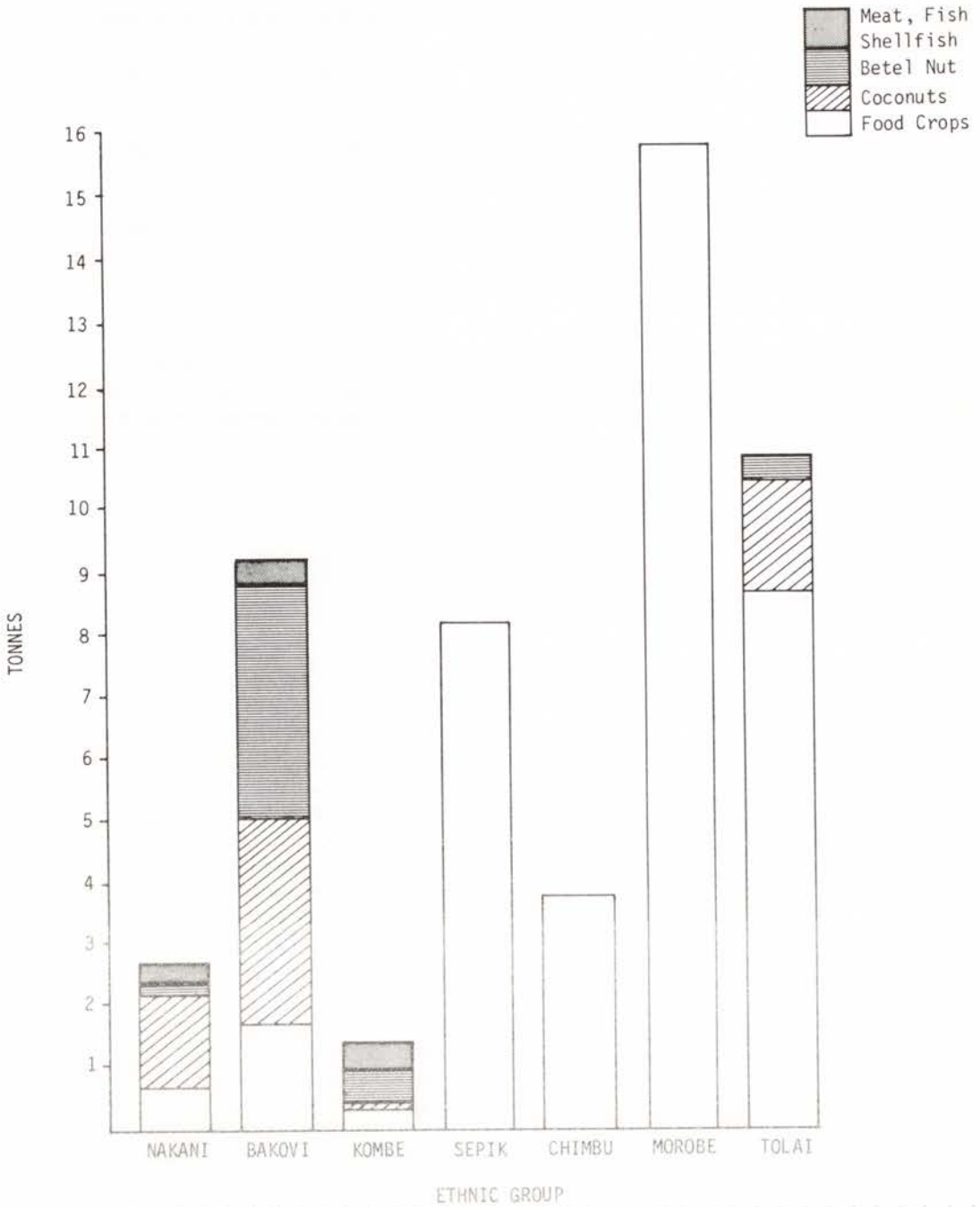


*Figure 2.* — **Quantity of food types delivered by various ethnic groups to Kimbe Market per fortnight (February 1977)**

*Table 4.* — **Estimated value of produce delivered and sold (Kina) per market fortnight**

| Market | Kimbe | Mosa | Kavugara | Talasea |
|---|---|---|---|---|
| Produce delivered | 6,000 | 1930 | 700 | 370 |
| Produce sold | 5120 | 1765 | 660 | 350 |
| Value of unsold produce | 880 | 165 | 40 | 20 |

The importance of maintaining areas (2-3 ha) set aside for subsistence cropping on settlers' oil palm blocks is vitally important for the food supply to the settlers and the markets alike. In a survey conducted by the Department of Primay industry on the West Nakanai (Hoskins) Oil Palm Scheme (Benjamin 1978) an average of 55% of all block holders stated that food was sold from their gardens in the markets with 56% of this group making sales more than twice weekly.

Food crops can be successfully grown or intercropped with oil palm only in the first two or three years of planting the palms; after that the canopy closure creates insufficient light for successful food crop cultivation. It is therefore important that areas set aside for subsistence gardening on the oil palm blocks are not drastically reduced by further cash cropping or the consequences may be that the balances and benefits discussed will be severely affected to the detriment of the community.

## ACKNOWLEDGEMENTS

The author would like to thank Dr Peter Turner, Dr Russel Stephenson and Mr Michael Bourke for suggestions and assistance in the writing and presentation of this paper.

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