

APPENDIX V

UNDP PROJECT PNG 82/002

REPORT ON VISITS TO FOUR PROVINCES IN PNG

**PORT MORESBY
May, 1983**

**Food and Agriculture
Organisation of the
United Nations**

**Department of Primary
Industry, Government
of Papua New Guinea**

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APPENDIX V

REPORT ON VISITS TO FOUR PROVINCES

Preface

A major component of the Team's work was week-long visits to four provinces. Our ideas have been very much moulded by these experiences outside Port Moresby. We are most grateful for the cooperation and assistance of provincial staff.

Our aims in the provinces were

- (a) To assess the food situation in the province
- (b) To review government activities relating to food production and consumption
- (c) To identify areas where new inputs could assist government activity relating to food production and consumption

Our choice of provinces was aimed at allowing us to see a cross-section of provinces. Using an index of socio-economic development prepared by Jackson and Berry (Interprovincial Inequalities and Decentralisation in Papua New Guinea; Third World Planning Review, vol. 3, no. 1 1981), and the number of young children under 80 percent of their weight for their age in 1978, provinces appeared to be clustered into four groups. These were:

- (a) The New Guinea Islands
- (b) The Highland provinces
- (c) The provinces largely dependent on sago
- (d) The remaining coastal provinces.

Following these clusters, we selected for our field visits one province from each group, respectively East New Britain, Western Highlands, West Sepik and Milne Bay provinces.

Our report on these visits is presented in four parts following the order in which we went to the provinces:

- Part A: Western Highlands Province
- Part B: West Sepik Province
- Part C: East New Britain Province
- Part D: Milne Bay Province

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PART A: WESTERN HIGHLANDS PROVINCE

Dates of Visit: 4-11 April 1983

Team Members : Eele, Kesavan, Lok, Morauta, and Kwamillon

Population : 265,656 (1980)

1. Provincial Review

1.1 Introduction

The Western Highlands Province was selected for a field visit because it was a highlands province with relatively good nutrition, although not particularly high average incomes. Team members visited two districts and agricultural projects and training institutions in the Mount Hagen area, and held discussions with provincial officials in Mount Hagen. In this visit the Team was rather feeling its way with fieldwork, and did not gather such detailed information as in subsequent provinces.

1.2 Food and Nutrition Situation

The province is not one in which nutritional problems among children appear to be severe or widespread. In the 1975 and 1978 surveys the province ranked in the best six provinces in terms of the proportion of children below 80 percent weight for age (29 percent in both years). However, the Jimi and to a lesser extent the Tambul District appear to be in a less fortunate position than the rest of the province.

The majority of the province's population live in the fertile central highlands plateau and sweet potato is the main staple. Gardening often involves mounding, and other crops such as aibika, other greens, pumpkin, etc are also grown. Pigs are highly valued in Western Highlands society and a considerable proportion of the sweet potato crop is fed to pigs. The province is well served by roads in the central areas and smallholder coffee is widespread. Incomes from coffee, the sale of vegetables, and in some cases commerce, enable many rural villagers to purchase imported food-stuffs. A recent study in the Simbu Province (Harvey and Haywood n.d.) has documented the improvement in nutritional status that was associated with rising coffee incomes, roads and the ability to purchase food, especially tinned fish. It is likely that a similar process is taking place in the Western Highlands

and that rural cash incomes are enabling smallholders to partially fill a gap in their traditional diets (in animal protein) with improved foods.

If there are areas of stress or potential stress in such a food system, they could be as follows:

- (a) A need to grow a wider mixture of garden crops for home consumption to supply nutrients not available from sweet potato
- (b) The opportunity to improve the diets of small children even further
- (c) With the advent of European vegetables for sale, there is a need for farmers to appreciate the relative nutritional value of traditional and introduced crops, for instance aibika and cabbage. There may be a tendency for people to equate what sells well with what is good to eat
- (d) When cash incomes rise, there is a need for villagers to understand the value of different imported foods for their nutrition and general health. There are often no traditional equivalents of new foods (e.g. highly sweetened tea or coca cola), and villagers have no background against which to evaluate these foods except by taste.

In the food systems of two districts, Tambul and Jimi, there are more stresses than elsewhere in the province. The situation in these two districts is discussed in sections 2 and 3 below.

1.3 Plans and Programmes

The Department of Western Highlands Province, like many of the provincial departments, faces considerable problems in relation to management and planning expertise. The Department itself recognises these difficulties and at the time of our visit was focussing its attention on improvements in this area. Unlike other parts of the country, the province has a well-developed road network and access to urban markets along the length of the highlands highway. Thus management is a more critical constraint on government activities than in provinces where access and communication problems are more serious.

The Division of Primary Industry is involved heavily in servicing cash-earning activities but also has a number of activities relating to food production. Seed multiplication for introduced crops is a large activity, and there are demonstration gardens. National DPI has research stations at Kuk and Tambul (see below) and two church organisations have also agricultural training programmes in the province. The Kuk research station works mainly on tea with a few projects on vegetables whereas Tambul is a high-altitude research centre.

There are two colleges that aim at training village farmers: The Christian Leadership Training College near Banz (CLTC), and the Yangpela Didiman Centre, at Banz. Both colleges were visited by Tseam members Lok and Kesavan, together with Kwamillon (DPI), on 05 April 1982.

The CLTC has an agricultural training course aimed at village farmers. This training with an intake of 20 students per annum lasts for three years. Students come from various parts of the country, most of them sponsored by missions. Each student is given a piece of land to practise traditional methods of farming with various components of intensification (such as use of poultry manure and composting), and use of buffalo for draft. Any profits they make from their gardening is given in kind at the end of the course to assist the student to start farming in his own village. The progress of the individual students in the villages is monitored by a follow-up programme by the college through quarterly or half-yearly visits for the initial 2-3 year period after graduation. This follow-up and careful monitoring of progress, it is believed, has increased the rate of success of CLTC graduates.

The Yangpela Didiman Centre offers agricultural training for 50 students per year who would act as village motivation leaders. There are two groups of trainees. The first group is composed of school leavers of mature age with at least a year's residence in a village. They are sponsored by missions or voluntary aid agencies for a two year training at the centre. The second group is aimed at married couples who can read and write pidgin and their training lasts for a year.

Components of training include use of draft buffalos, growing new crops such as legumes, cooking methods, terracing techniques to control soil erosion, and principles of maintaining soil fertility. A follow-up programme of trainees is also undertaken but is facing difficulties due to shortages of staff and finance. The centre has also published a series of booklets in pidgin with many illustration on individual crop and animal husbandry techniques. This series so far has 17 booklets.

Both CLTC and Yangpela Didiman Centre claim up to 80 percent success for their trainees participation as motivators in villages.

The Health Division conducts MCH patrols and clinics and a special emphasis has been placed on staffing levels and nutrition. The aim has been to have sufficient nursing staff at each health sub-centre or centre to enable one person to work as much time as necessary in the attached nutrition unit. Guidelines have been developed to identify children to be admitted to these units. The

children and their mothers remain in the unit for several weeks and the member of staff responsible instructs the mother in diet, feeding and cooking. A nutrition educator is based in the Division of Health in Mt. Hagen. Her main activities relate to nutrition units at rural health centres and Mt. Hagen hospital, school lunch programmes in which teachers encourage children to bring nutritious lunches to school or occasional meals are cooked at school, and public education through radio programmes, meetings and demonstration gardens.

The education division encourages schools to develop school gardens and school lunch programmes, although these are not organised at all schools.

The division has a relatively large non-formal education (NFE) section, which receives strong support, including considerable financial support, from the provincial government. The province funds seven Community Resource Centres (CRCs) that train Grade 6 and Grade 8 leavers to return to their communities with useful skills. The division sees there is a problem with the emphasis of CRCs and the four vocational centres on young people, since communities do not always accept and utilise the skills young people have to offer. The Provincial Development Plan says that NFE should be directed to adults not school leavers. The strong commitment to NFE could be used to make these resources part of a redesigned and more cooperative provincial extension programme, including nutrition and agricultural components.

2. **Tanbul** District

Dates of Visit: 6-8 April 1983
 Team Members : Eele, Morauta, and Kwamillon
 Population : 19,845 (1980)
 Elevation : 2,200 m (district office)
 Main Staple : Sweet potato

2.1 Visit Details

Team members had discussions with officers at Tanebul Station and visited by road the Alkena Yangpela Didiman Centre and Kiripia village where we observed an MCH clinic and gardens and had discussions with local leaders assembled for a village court hearing.

2.2 Food and Nutrition Situation

The 1978 survey showed 38 percent of children seen at MCH clinics to be below 80 percent of the standard weight for age. For the last four months of 1979 for Upper and Lower Kaugel areas the figure was 25 percent (covering 58 percent of eligible children). More recent figures which cover smaller proportions of

children, indicate much lower levels than those reported in early 1978. Cash incomes in the district have generally remained static or even declined in the past few years. Improvements in nutritional status, therefore, can largely be attributed to the effects of MCH services facilitated by the good road network.

The dominant staple in the district is sweet potato cultivated in mounds, supplemented by taro, greens, English potatoes, cabbage, onions, peas, pandanus, pig, a little game and some imported foods. Sweet potato is cultivated in very large mounds containing compost in the middle. This technique permits almost permanent cultivation.

The most serious food problem in the district is caused by severe frosts that periodically destroy the sweet potato crop and many other garden products. Such frosts occurred in 1972 and 1982. Although traditionally people responded to severe frost by moving temporarily to lower altitudes, in 1982 their main strategy was to make as much money as they could to buy food, including sweet potato from lower altitudes. They also ate more English potatoes and forest products than usual. Government officials and rural people felt that the problem was not yet adequately relieved.

It is possible that the **Tambul** diet lacks variety and that villagers would benefit from eating more greens and legumes. It may be that **Tambul** soils and gardening practices mean it is difficult to expand production of these crops, although there is no firm evidence on this point.

Although some officials thought there was a regular food shortage from July to September, villagers we spoke to did not support this view. There were no seasonal variations in child nutrition figures from MCH clinics.

2.3 Activities Related to Food Production

MCH and community school activities are much the same throughout the province. However, some **Tambul** community school teachers apparently felt they did not know enough about local conditions to have good school gardens. **Tambul** High School has a large vegetable and sweet potato garden and is self-reliant in these items.

DPI activity is focussed on pyrethrum and introduced vegetables. They sell vegetable seedlings to villagers, although in 1982-83 this was concentrated around **Tambul** Station due to transport problems.

The **Tambul** Research Station operated by national DPI in the district serves high altitude zones in Papua New Guinea. In the past it has conducted research on English potato, wheat, oats, sweet potato, pigeon pea, lupin and buckwheat. At present research is focussed on pyrethrum, while there is a seed potato multiplication programme for supplying smallholders (at K10 a bag).

The Alkena Yangpela Didiman Centre provides support and extension advice for farming 'motivators' in the district, these being ex-students of a full-time training course recently abandoned. The staff are also involved in growing frost-resistant crops and distributing seeds. The Centre teaches people to work with buffalo, and there are two animals at the Centre. The Centre is keen to cooperate with DPI and other government activities.

Recently a husband and wife team of vernacular literacy experts arrived in the district under the auspices of the Summer Institute of Linguistics. When they have mastered the language, they would be willing to assist government extension work.

3. Jimi District

Date of Visit: 6-8 April 1983
 Team Members : Kesavan and Lok
 Population : 25,743 (1980)
 Elevation : Varies
 Main Staples : Taro, sweet potato, pitpit, and sugarcane

3.1 Visit Details

The Jimi District stretches along the full length of the border with the Madang Province. It is an inaccessible area with the Sepik-Wahgi Divide in the south, and the Bismarck Ranges in the north. Only a few roads penetrate from the Wahgi Valley into this district. One road reaches Tabibuga, the district headquarters.

The district is divided into three subdistricts: the Lower Jimi, the Middle Jimi, and the Upper Jimi. Only two communities could be visited: Koinambe mission station (880m ASL) in the middle Jimi and Tsendiap village (500m ASL) in the Lower Jimi were chosen because they were reported to be in an area of great nutritional stress. It was not possible to visit the District headquarters at Tabibuga.

Both Koinambe and Tsendiap are isolated. Koinambe is somewhat further developed. The Anglican Mission there has its own land and is a dominant force. It operates a health clinic, with government support, and a trade store (last year turnover: K40,000). There are two expatriate volunteers (one as mission manager, and one a health sister) in addition to the mission father. In Tsendiap the Mission is much less noticeable. There is only a health aid post. Changes elsewhere in the province do not appear to have touched people's life very much.

Although the state of health is poor in both places (endemic malaria, pneumonia, anaemia), it appears worse in Tsendiap. Infant mortality is thought to be high. Mothers are not aware of Western ideas of child care. There is serious lack of environmental and personal hygiene. The people of Tsendiap are fortunate in one respect: they get their water from a nearby stream that flows throughout the year.

3.2 Food and Nutrition Situation

The Jimi District has a low nutritional status. According to MCH records the percentage of children below 80 percent of standard weight for age was 41 in July 1980, and 40 in October 1982. These figures are considerably higher than those for the central districts in the province.

Despite these figures, people in Tsendiap and Koinambe do not appear to go short of food, although short fallow periods (4-5 years) might signify some shortage of land. Only during the wet season (January-April/May) is there a shortage of tubers but there are still sufficient green vegetables. One group, Manaban, in the Koinambe area is said to be short of land, and armed conflict is apparently simmering over a land dispute with a neighbouring clan.

Excessive felling of trees since the introduction of the steel axe, short fallow periods, and burrowing pigs cause soil erosion. Land slips and slides are common.

Land is prepared by slash/burn/clear activities. Each family has two or three gardens between 30 and 40 square metres (sometimes bigger). The land is cropped for one year and then fallowed for 3-4 years. Yields are said to be declining. Some gardens are a long distance from homes.

Major food crops are: sweet potato, taro, banana, pitpit, aibika and sugarcane. Minor crops are: cassava, pawpaw, corn, yam, and beans. Tree crops are tulip, pandanus and breadfruit. Hunting, which takes place during the dry season only, provides wild pigs, bush fowl, cassowary, bandicoot and cuscus. Some fish is caught. There is enough labour to attend to the food gardens. In Tsendiap Team members were shown a garden with healthy taro.

In Tsendiap coconuts (talls) were planted about 15 to 20 years ago. Unfortunately people are in the habit of cutting fronds and many trees produce no more than three to four nuts a bunch. In 1982 about 500 coconut seedlings were planted. The resident Didiman (RDA) would like to get more. Recently a few coconuts were planted in Koinambe.

Pigs are common and there are some chickens. Each family has two to three pigs which eat a considerable quantity

of sweet potato each day. A family consumes less than half the amount eaten by pigs. Most of the sweet potato is thus grown for pigs. During periods of food shortage pigs eat wild figs and sweet potato that are no longer fit for human consumption. Pigs are eaten during feasts, and on special occasions (funerals), and when people are sick. There is a 5-7 year pig cycle.

There is very little cash income. Some coffee is sold in Koinambe at the mission trade store from where it is flown to Mt. Hagen. The nearest market place is a day's walk. There is no sale of excess food crops. Whatever cash is made is not used for food consumption but kept for compensation payments and bride-prices. Also in Tsendiap some coffee (Robusta) and chillies have been sold to the mission trade store. Tsendiap is a two-day walk away from Koinambe. There is much out-migration of male labour to plantations in the Wahgi Valley.

3.3 Activities Related to Food Production

In Koinambe DPI has no land but can use mission land. The RDT is new in this area and still has to develop rapport with the people. The mission has its own plans. It is keen on introducing new vegetables (apparently the DRDO does not agree), and is in the process of getting a CUSO volunteer. The RDT has submitted a work programme to the DRDO, and is waiting for a reply. There has been little patrol work.

The RDT visits the district office at Tabibuga every six weeks, where he gets pig wormer and seeds (mostly peanut, and winged bean). He would like to establish a seed multiplication plot. The community school does not have a food garden; the health clinic had one but it became neglected. The mission garden has several newly introduced crops, such as onions, beans, tomatoes, and sweet banana (which are doing poorly).

In Tsendiap the RDA has a large garden for demonstration purposes. People are not encouraged to visit this garden but when they come of their own accord the RDA shows them around. There are four labourers to work in the garden, and to assist during patrols, which are infrequent due to shortage of patrol funds. The garden has a wide variety of crops: coconuts are interplanted with taro, sweet potato, pumpkin, beans, pawpaw, peanuts, yam, sugarcane, cowpea, tobacco, aibika, banana, cassava, chillie, corn, and betelnut. There are also a few citrus trees. Recently planted Robusta coffee failed because of drought (possibly not watered).

The RDA is keen on getting more betelnut and peanuts. He also would like to get cardamom, mungbean, and dwarf bean. He would like to experiment with fertiliser because yields are declining.

Very little information could be obtained about health services and education. Both the MCH sister in Koinambe and the aid post orderly (Tsendiap) were on patrol, and teachers (Koinambe) were on leave because of school holidays. There is no school in Tsendiap.

The main cause of malnutrition in the district appears to be poor diet due to ignorance and disease, rather than constraints on production. This view was supported by health division officers in Mount Hagen. MCH patrols take place regularly once every three months under very adverse patrol conditions. There are 10 council areas to visit. In the past this was done once a month. Sick people still go first to a local traditional healers.

4. Suggested Strategies and Projects

4.1 Provincial Level

The province is forced at the moment to focus on management and administrative issues. It sees these as a priority before it starts anything new. At present this focus is not particularly directed to the district level or extension issues, but these will inevitably come under scrutiny later. We would agree, too, that in relation to food production and consumption, a review of objectives and then the better management of existing resources to meet these objectives would be a priority. These things, although not requiring new people necessarily, certainly cost money - money to bring in staff to workshops and meetings, to make available advisors and resource people, to produce materials and, if the provincial government so decides, fund new activities.

Our strategies in detail would be :

- (a) To strengthen DPI's extension and technical capability as a precondition for effective programmes relating to food production
- (b) To provide or support a framework for interdivisional cooperation with respect to food
- (c) To assist with planning in relation to food production and consumption
- (d) To improve the links between national research institutions and the province
- (e) To build on the existing provincial government commitment to Community Resource Centres as a base for agricultural extension and adult education programmes
- (f) To strengthen agriculture and nutrition teaching in community schools

We should like to recommend to national DPI the provision of more courses on food and food crop production so that officers whose technical knowledge may relate largely to perennial tree crops, can know about and thus promote food crops more. Such training cannot be done in a single programme for the whole nation, but in courses designed to meet the needs of particular environments.

Courses on management, project design and evaluation for DPI officers may need additional emphasis and financial support, and would help improve provincial DPI performance overall.

DPI 'in-service' workshops within the province need to be commenced, so that every officer spends one week of the year with some of his colleagues learning about new ideas and priorities, informing his superiors of his difficulties and developing a greater commitment to his role in the province.

When the province is ready to take on such an additional activity we recommend the development of a food and nutrition plan for the province and its constituent districts. Outside assistance could be made available and the emphasis would be on identifying nutritional and food production issues district by district, and designing programmes and redirecting resources to meet them. Such a plan would be drawn up for and under the direction of the Provincial Management Team.

We also recommend a review of the programmes at national DPI research stations and the setting up of mechanisms by which provinces can contribute to the design of such programmes.

At Tambul we suggest national DPI consider:

- (a) Abandoning the seed potato production activity and transferring it to provincial DPI as this is not a research function
- (b) Development of work on farming systems in villages rather than on the station
- (c) In particular work on pyrethrum and english potato must be related to the way they are grown in the villages (interplanted with other crops, rather than as a monocrop).

In addition national DPI should improve its methods for communicating the results of its research to extension workers, and the provinces must actively seek such improvement.

When a provincial food and nutrition plan has been developed, we recommend a review of CRC activities so that their outreach programmes are consistent with and build on provincial and district objectives. The plan may in fact propose new programmes for the CRCs.

The Team would also like to improve the quality of community school teaching of agriculture and nutrition, with a project that provides additional in-service courses and teaching materials with a provincial and even district content. The province has an active printery and is keen to develop its own materials to supplement the national community life syllabus.

4.2 Tambul District

With respect to frost, we think that the main strategy should be to continue to develop the resources of the district so that in times of frost the people are able to look after themselves at a satisfactory level. We recommend not only the development of appropriate food resources within the district, but also raising cash incomes so that in a frost season people can buy both local and imported foods from outside. Assistance with planting materials may still be necessary. We do not think government food rations should be issued because they are too expensive to have an impact on supplies to the district, and undermine people's willingness to find answers for themselves.

With respect to the variety of garden foods, research is needed to establish if this is a problem in Tanebul diets and, if it is, what if any are the agronomic constraints on production. Nutrition education in clinics, schools and DPI extension work should continue to emphasise the importance of mixed diets.

We would suggest that fewer resources are devoted to animal production and that priority be given to work on cash crops and food production for home consumption. Increased cash incomes and local production of legumes could well reduce the need for extension work on livestock, game and fishing. We feel that when resources are limited the best strategy is to concentrate on successful existing programmes, rather than trying to build up activities from a small base and which only reach a few families.

The Team does not know enough about national and provincial policy on support to pyrethrum prices to comment on the merits of promoting pyrethrum as a cash crop in the Tambul District. If DPI wishes to promote pyrethrum further, then more splits must be produced to meet demand from smallholders and these should be widely available. In the short run the District and Provincial Management Teams should work out a way for DPI to have enough cash at Tambul to buy all the pyrethrum offered for sale. In the long run we suggest DPI should get out of pyrethrum marketing because there are other tasks where its scarce specialist skills are more necessary. If the provincial and national governments can overcome the problem that Kagamuga Factory does not pay very quickly for the pyrethrum it buys, private buyers should take over pyrethrum buying. It may also be possible in the long run to have private individuals producing splits for sale.

DPI work on the production of planting materials should continue, but the geographical distribution of this should be extended. In addition DPI should provide regular advice on agricultural techniques to all areas of the district. We do not know how the prices of english seed potatoes and other vegetable seeds are fixed at Tambul. Perhaps prices charged to growers could be reviewed to make them consistent. If there are elements of subsidy involved, DPI must decide what crop, if any, it wishes to assist most.

There is a need for more coordination between the divisions in relation to extension objectives, programming of patrols, transport and joint patrols. Coordination with non-government agencies may be possible. A useful catalyst for such coordination might be a District Food Action Programme developed (perhaps with outside bodies) in collaboration with community leaders. Elements in such a project could include a review of existing data, formulation of strategies and design of a coordinated programme.

4.3 Jimi District

In general the Team feels that adult education in relation to nutrition and child feeding, and health services can make the greatest contribution to welfare in the district, especially those parts away from present or proposed roads. Where roads are built improved public awareness and higher cash incomes will contribute to improved health and nutrition. New food crops might be introduced in remote areas, these might enrich the local diet, while in more accessible areas they can provide a source of cash income.

- The Team feels that the Jimi District is much in need of a district food plan and that, within the framework of this, it would be possible to set clearer objectives for DPI programmes in relation to food production. The plan might indicate, for example, that certain additions to the crops presently grown might be beneficial. New annual crops, such as onions, might be introduced in local DPI food gardens after a trial period. Tree crops such as peach palm, jack fruit, avocado and cashew nut may also be considered on a trial basis.

DPI programmes might also be directed to agricultural techniques. Some simple experiments could be conducted in local DPI food gardens, for example in row cropping of corn, composting and mulching. Management care of coconuts could be discussed more with villagers: correct planting distances, the effects of cutting fronds, and weeding.

Investigation of soil erosion and the incidence of land slips and slides could be undertaken by a small research team. Their findings could assist DPI in their advice to farmers. The school in Koinambe needs assistance with its food garden. DPI might undertake instruction in cooking techniques, for instance, with coconut milk. Where there are demonstration gardens, as at Tsendiap, a more active extension programme should be developed. RDAs or RDTs should encourage farmers to visit the gardens and should explain sound cultivation practices.

LIST OF PERSONS INTERVIEWED

Mt. Hagen

Mr. E. Titus, Administrative Secretary
Mr. T. Alu, Provincial Planner, A/Provincial Secretary, Political Arm
Mr. J. Yamai, Deputy Secretary
Mr. K. Wak, Assistant Secretary, DPI
Mr. L. Lupa, Provincial Affairs
Mr. P. Eapaea, A/Assistant Secretary, Health (9/4/83)
Ms. P.T. Eapaea, Nutrition Educator
Mr. K. Kukyuwa, A/Assistant Secretary, Health (prior to 9/4/83)
Mr. K. Tai, A/Provincial Health Extension Officer
Mr. L. Wek, A/Community Health Matron
Ms. R. von Boehm, Family Health Services and In-Service Training
Mr. P. Mark, NFE Officer
Mr. P. Wama, Assistant Secretary, Education
Father R. Lak, Catholic Education Secretary
Mr. K. Logan, Provincial Statistical Officer

Tambul District

Mr. G. Lessi, District Coordinator
Mr. M. Sikulaum, Health Extension Officer
Mr. M. Arigena, Agronomist, DPI Research Station
Mr. F. Kunamp, DPI
Mr. P. Masi, Patrol Officer
Mr. A. Waka, Deputy Headmaster, Tanibul High School
Mr. T. Mong, A/School Inspector

Jimi District

Fr. Brian Bailey, Anglican Priest, Koinambe
Mr. S. Krond, RDT, Koinambe
Mr. D. Kiera, Health Officer, Rural Health Centre
Mr. Robin, Counsellor, Koinambe
Mr. M.Kap, RDA, Tsendiap

The problems of a district like Jimi suggest that provincial DPI needs to review the provision for patrolling and patrol allowances. We were told that a lack of finance prevented DPI patrolling. The provincial government should find out if this is really a problem, and if it is consider ways of solving it. It may even be necessary to review the system of patrol allowances as well as the amounts of money allocated to that item.

Health work in the district should be maintained and extended, including MCH and work on personal and environmental hygiene. The formation of women's groups to assist in the process of education in cooking, hygiene and childcare should be considered.

PART B: WEST SEPIK PROVINCE

Dates of Visit: 11-16 April 1983
Team Members : Eele, Kesavan, Lok, Morauta, and Kwamillon (DPI)
Population : 113849 (1980)
Land Area : 31080 square km

1. Provincial Review

1.1 Food and Nutrition

Available data suggests that West Sepik is probably one of the most economically and socially disadvantaged provinces in Papua New Guinea. In the 1975 and 1978 National Nutrition Surveys 62 and 59 percent, respectively, of children under five years were below 80 percent of the standard weight for age. The 1975 figure was the highest, and the 1978 figure was the second highest of all provinces. In 1982, 45 percent of the children seen at MCH clinics were below the 80 percent mark, but this figure could be an understatement because coverage by these clinics is low, and those not attending are probably farther away and less healthy. In 1978 an estimated 42 percent of all children were seen; by 1982 coverage had declined to 30 percent.

In some areas cultural and social factors are major contributors to malnutrition, particularly in the more isolated areas. Food habits and taboos are particularly affecting the nutrition of young children. In Lumi district, for instance, young children between 6 and 26 months old are usually given only sago as a supplementary food because there are strong restrictions against feeding meat and green vegetables. In general there is little awareness of food problems among the population, and the growth of a child is not related to nutrients in a meal.

Sago is the main staple food in much of the province, although tubers and other food crops are grown in many areas. On the coast sago is supplemented with coconuts and fish, as well as vegetables. The worst areas of malnutrition are isolated communities inland where fish and coconuts are not available.

The main exception to the sago staple is in the highland district of Telefomin and in parts of the Nuku district in the east. In Telefomin the main staples are taro and sweet potato, and in common with other isolated highland communities the major nutritional problem is lack of protein. In Nuku the main staple is yam. This part of the province has fairly good communications with Wewak and other places in East Sepik province. Although there are areas of fairly high population pressure, it is relatively better off than other parts of the province.

1.2 Programmes and Plans

Subsistence Agriculture

An excellent description of agricultural conditions and practices is given in the West Sepik Integrated Development Study (WSIDS) which will become available shortly. As part of this study four projects related to subsistence agriculture have been formulated for NPEP funding:

(a) Training and Visit Project

The main objective of this project is the provision of travel funds that will allow monthly district visits by provincial senior staff of DPI, Forestry, Health and Education. Through these visits it is envisaged that field staff will be closely supervised, and field projects more effectively monitored. Funds from the project will also be used for practical in-service training for field staff in and outside the province. Through these activities it is anticipated that the project will raise the morale of "over-neglected and under-supported" DPI staff in the districts.

(b) Farmer Supply Project

This project aims at improving agricultural supplies in remote areas. The intention is to establish stock rooms at selected DPI District and sub-district headquarters, and stations, but only for items not carried by local trade stores. It is expected that there will be a demand for tools, implements, fencing wire, feedstuffs, and seed.

(c) Food Crops Project

The project will have three components.

A Food Crops Section will undertake market surveys on subsistence agriculture surplus production, promote food crop cultivation for subsistence and market sales, and work with community schools in nutrition education. For this work an overseas Provincial Food Crops Officer is envisaged.

At Lumi the project will support extension work and provide marketing assistance at about 800 meter ASL. The main purpose is to supplement the predominant sago diet. This component has started and is supervised by a volunteer. Funds were allocated by the provincial government.

Near Vanimo the project will initiate extension and marketing of food crops. A DPI station and market house will be established. Mechanical cultivation of taro (*Colocasia*) will be started.

Health

Health services are provided by the government and some missions. The latter look after most of the MCH services but coverage is uneven. It is best along the coast and near roads; it is poor in isolated inland areas where malnutrition is thought to be most severe. There is no formal health plan for the province, but its health services have been thoroughly reviewed as part of the WSIDS. One of the main conclusions is that MCH patrols based on health centres are not the most effective way to provide a service to mothers and young children. Instead it is proposed in the study that the aid post system be strengthened with the development of village health workers who are to be trained for low level services in rural communities.

The Division of Health is going to get assistance under an ADB-financed Rural Health Services Project. Details are still to be worked out but in general the project will aim at establishing a system of primary health care which would involve rural staff. Another aspect will be assistance to the Division in its collection of information at the vaccine posts.

The post of Provincial Nutritionist was vacant for two years before the arrival of an expatriate in April 1983. This person will be leaving again in May. A provincial nutrition committee was formed earlier in the year, and it meets regularly. The National Nutrition Survey got on its way at the time the Team visited the province. The results of this survey should make it possible to formulate a food and nutrition plan for the province. Some additional resources from outside the province may be required in this work.

Education

It was not possible to see the education chapter of the WSIDS, but a report called A West Sepik Education Strategy (Kelly, Moipu, and Weeks, 1982) was available, and discussions were held with the Assistant Secretary for Education.

The province has already prepared a Five Year Community Education Plan, but plans for secondary education and non-formal education (NFE) are not yet ready. The province is interested in upgrading its NFE Programme in the following ways:

- (a) Further work on Village Development Centres, partly through a National NPEP project on upgrading vocational staff in extension skills. There are eight centres in the province, plus a vocational school at Amanab.
- (b) Appointment of District Education Administrative Officers, whose responsibilities would include NFC (a submission has been made).
- (c) Possibly the appointment of District NFE officers (no action taken).

- (d) Continuation of an in-service training programme for development centre instructors, which started in 1982 and is already funded.

The province has a strong in-service training programme (160 hours/year/teacher) for community schools. It would welcome specialist advice and relevant material. The WSIDS provides for tools and cooking equipment to schools.

For Lumi District the province has prepared the Lumi Comprehensive Community Education Project (CCEP). Its main purpose is to reduce the district's economic and social disadvantages with emphasis on malnutrition among children. The project has five components:

- (a) Administration
- (b) A Village Development and Resource Centre
- (c) Staff development and training
- (d) Model village development
- (e) Evaluation and research

UNICEF has provided some funds for 1983 to support item (d) and to initiate items (b) and (c). The full cost of the project is estimated at K314,300 over four years, and has yet to be approved by the national government or submitted to donors. Two Peace Corps Volunteers have been working on the village demonstration component since December 1981, and they have been concentrating on activities with community schools. Activities already started or planned are:

- (a) A food garden and school lunch programme
- (b) A chicken and duck project
- (c) A small fruit nursery (distribution of seedlings)
- (d) Preliminary work on a fish pond
- (d) Construction of a store
- (f) Distribution of improved seed varieties.

This project should be seen as a pilot project to attempt an integrated approach to the problems of malnutrition and underdevelopment. If successful it could be replicated in other areas.

2. District: Amanab

Dates of Visit: 13-15 April

Team Members : Morauta, Kesavan, Kwamillon, Lok

Population :

Elevation HQ :

Main Staple(s): Sago

2.1 Visit Details

The Team members were largely confined to the district centre. Rains and lack of 4WD vehicle made travel to Kamberatoro impossible.

Some gardens in the vicinity of the centre were visited.

2.2 Food and Nutrition Situation

The soils in the Amanab area are generally poor. They consist of a silty clay that has poor internal drainage when wet. The nutrient level is low. Soil analysis indicated deficiency in nitrogen and potash, while phosphates have a tendency to become fixed (WSIDS).

The cropping system centers around sago (now mostly planted) which usually can be found in the lower part of food gardens. The size of these gardens varies between 0.5 and 0.75 ha. The villagers consider a good burn essential for a good crop. Planting is done in August and September. Common crops are taro, pitpit, sugarcane, yams, aibika, banana, and sometimes sweet potato, groundnut, winged bean, tobacco, and pumpkins. In January and February weeding takes place; the first harvest begins in March/April when at the same time tulip, coconut, and pandanus are planted. Harvesting continues till late in the year. Afterwards the plot is left for the tree crops, which are occasionally weeded. They become part of the bush fallow that follows. The fallow period varies between 20 and 40 years.

The failure rate of taro is high. Tubers often do not develop adequately. Because of poor soils and low yields people establish many gardens, and thus they find sites that are more productive than others. Some of these supply sago, others greens from tulip and nuts from pandanus, still others provide garden crops.

There are indications of serious malnutrition in the Amanab area. The Team members observed school children's poor state of health. The teachers mentioned that children frequently feel sick, sleep in class, pay no attention, and are hungry. The rate of absenteeism is high. Major causes appear to be disease (mainly malaria and intestinal parasites) and poor diets. Protein is said to be in short supply. DPI staff thinks that enough game is in the forests but that food taboos and habits do not permit pregnant and lactating women, and children, to eat such food. Young infants may also go short of green matter as a result of parental suspicion of resulting changes in colour and consistency of stool. If women are sick and under-nourished, and continually on the move then it may be difficult for them to pursue the arduous task of extracting sago, or undertake long journeys to food gardens. An in-depth investigation would be required to establish factors and linkages that are related, directly or indirectly, to the prevailing problem of malnutrition.

2.3 Programmes and Plans

The DMT is primarily concerned with public works projects, which at present entails mostly house construction for government workers.

The DPI staff spends considerable time on cash crop production: mainly rubber. As part of a border development programme that excludes coffee and cocoa for quarantine reasons, rubber was introduced in 1976, and the trees are now ready to be opened for tapping. Transportation is a problem. As matters stand at present rubber in the form of cuplump will be flown to Vanimo and then shipped to a block rubber (TSR) factory in Angoram (East Sepik). Eventually a road may be built from Amanab to Green River, and from there the rubber can be taken by barge, together with the rubber from the Green River area. The duration of transportation by barge is about 10 days. As long as the national government will subsidise the cost of transportation, rubber may provide a much needed cash income for the Amanab area, but should such a subsidy cease, and costs are to be absorbed by the primary producer then it may no longer pay to tap. The province is understandably cautious about expanding the rubber growing area.

The soil is well suited for fish ponds, and several were established in the Amanab area. But they are neglected and unproductive. A DPI fishery officer has recently been appointed to improve and develop fish ponds, and to facilitate marketing of salted fish from the Green River area.

People in the Amanab area do not live permanently in villages. Instead they have several bush camps, and move from one to another, as they go hunting and attend to their gardens. The district staff has been trying to settle these people, or at least to reduce the number of moves they make in a year; already semi-permanent settlement would make it much easier to provide them with available government services. Settlement would also make it easier to introduce cash crops. So far these efforts have met with only moderate success. In connection with these activities the DPI staff has been trying to introduce sweet potatoes. Although the latter contain a modest amount of protein (2-3%), its main role would be to replace sago. The DPI staff has also given cooking demonstrations. DPI is facing two main problems: long distances to be covered to reach bush camps (2-3 days walking), and reluctance of people to change their mode of living.

The MCH clinic in Kamberatoro is actively undertaking patrols (Volunteer) but the one in Amanab has not been effective due to insufficient staff. With two male nurses recently recruited improvements may be on the way.

The Community School is trying to get a school garden going. The vocational school is seriously handicapped by lack of funds, and adequate facilities. An attempt is made to start village motivation activities.

2.4 Summary of Constraints to Improved Nutrition

- (a) The absence of an integrated district plan, involving DPI, and the Divisions of Health, and Education, dealing with prevailing malnutrition. Among government officials planning is thought of as physical planning, and rural development refers to public capital works, such as roads and bridges. The DMT does not discuss recurrent projects, and has yet to deal with the problem of malnutrition. The only nutrition project was requested by the Green River council. It has been approved and is funded for 1983.
- (b) Official perception is that people are uneducated and not receptive to change. It is no doubt true that a low level of education prevails, but changes are taking place. Some people do visit the health centre, and send their children to school.
- (c) An incomplete understanding of the food system (supply of food and feeding habits). Without a better understanding it would be difficult and risky to introduce change.
- (d) Under the present system people move about a good deal, and it is difficult for government staff to provide them with available services.
- (e) Most DPI staff are not from sago producing areas, and will have difficulty in understanding people's customs.
- (f) The people do not have cohesive social units with clear leadership.
- (g) There are only limited opportunities to produce cash crops.
- (h) There is a high degree of isolation; virtually no roads exist.
- (i) The soil has a poor structure and is low in fertility.

3. Suggestions

- (a) The Team suggests that the subject of malnutrition enters discussions of the DMT, and that it be recognised as a high priority item that requires a coordinated efforts between DPI, Health, and Education. A district plan that deals with malnutrition should be developed, but the Team recognised that the DMT may require assistance to do so. In designing activities that aim at changes towards a sedentary life, the people themselves should be consulted.
- (b) DPI should reconsider its efforts of introducing tubers into a sago based cropping system. This system is not well understood, and should become a subject for investigation by the national

research staff. The weak and strong points of this system should be identified. The Team also questions the practice of burning. The improvement of the soil depends on the accumulation of organic matter but each time after a lengthy fallow period this matter is burned to ashes with subsequent loss of nitrogen of which the soil is deficient. The Team appreciates the convenience of burning to the cultivator and its role in controlling pests (including weeds), and diseases. The Team is not in a position to offer an alternative to burning but feels that this practice should be investigated.

- (c) The economics of rubber production in the Amanab area should be determined, particularly in view of high marketing (transportation) costs. The Team recognises that non-economic criteria may justify a marketing and processing subsidy from the national government to keep this industry viable from the rubber producers' point of view, but believes that the long-term commitments of government should be clarified before decisions on rubber expansion are taken.
- (d) At present much DPI efforts are concentrating on cash crops. There is only one officer from a sago producing area. The Team suggests that in making transfers the need for familiarity with a sago based system is taken into account.
- (e) The Team believes that the Amanab area is well suited for fish ponds. Present ponds are neglected and non-productive. The Team supports the appointment of a Fishery Officer with anticipation of fish pond development.
- (f) The Team finds further evidence that the whole matter of patrol allowances (which now stand at a high K6.75 a night for field workers) should be reviewed, and that consideration should be given to the introduction of isolation allowances.
- (g) The Team believes that people are willing to change. But long-term problems require long-term solutions, and people have a long way to go.
- (h) The food problem has many facets, and a strategy aimed at easing this problem, has to be multi-pronged.
- (i) The Team supports the view that instead of changing food taboos it would probably be simpler to replace the food in question by other foods with the same nutrients.
- (j) The Team suggests that solutions to the problem of malnutrition should be sought first of all in immediate and medium term improvements to food production, and that DPI should consider shifting its emphasis from cash crops to food crops.
- (k) The Team appreciates the difficult and time-consuming task of motivating people, and to make them realise that they have a

problem: This task should be a continued effort of the divisions involved. Consideration should be given to a mobile motivation unit that is equipped with educational slides, movies, and pamphlets.

Government Officials

Mr. J. L. Latta, Deputy Secretary

Provincial Secretariat

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Other

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Department of Social Services

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

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Mr. J. L. Latta, Provincial Secretary

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Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Other

Provincial Affairs

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

Other

Mr. J. L. Latta, Provincial Secretary

Mr. J. L. Latta, Provincial Secretary

LIST OF PERSONS INTERVIEWED

VANIMO

Government (Cabinet)

Mr. J. Enda , Deputy Premier

Provincial Secretariat

Mr. Mel Kapaith, Provincial Planner (Acting)

Mr. Paul Yapei, Research Officer

Mr. P. Bisambe, Provincial Statistician

WSIDS

Mr. Robert L. Hubbard, Economist

Mr. Richard A. Brittain, Agronomist

Mr. John P. Kelly

Department of West Sepik Province

Mr. James Makain, Asst Secretary DPI (Acting)

Mr. Edward Laboran, Asst Secretary, Education

Dr. M. Wabum, Asst Secretary, Health

Mr. I. Nonori, Provincial Health Extension Officer

Ms. K. Tobudi, Community Health Nursing Supervisor

Ms. S. Chapman, Provincial Nutritionist

Mr. R. Bleadly, Livestock Officer Lumi District

Mr. and Mrs. John and KimSmith (Peace Corps Volunteers), LCCEP

AMANAB

Provincial Affairs

Mr. Somata Ebue, OIC

Mr. Peter Tavun, ADO

DPI

Mr. Nappoti Buru, DRDO

Mr. Philip Lopal, RDO

Amanab Vocational Centre

Mr. Florian Paine, Manager
Mr. James Weapin, Instructor

Amanab Rural Health Centre

Dr. Claire Badui
Nurse Alphonse Uriam

Amanab Community School

Headmaster and Teachers

Note: In Wewak team members Lok and Kesavan met Mr. Luke Blangaard, Manager East Sepik Integrated Rural Development Project (ADB)

PART C: EAST NEW BRITAIN PROVINCE

Dates of Visit: 18-23 April 1983
Team Members : Eele, Lok, Morauta, Kesavan and Kwamillon
Population : 133,197 (1980)
Land Area : 15,816 square km

1. Provincial Review

1.1 Introduction

It was not possible to visit all parts of the Province. After initial discussions with various officials in different divisions two members of the Team visited Pomio District for two days, and were based at Palmalmal District Centre. The other members of the Team visited parts of the Gazelle Peninsula and the Bainings Area by road and also undertook a one day visit by boat to the Duke of Yorks Islands. They also visited the Lowland Agricultural Experimental Station (LAES) at Keravat. The visit to Pomio is covered in more detail in section 2.

1.2 Food and Nutrition Situation

In 1978 the National Planning Office (NPEP 1979) classed East New Britain as the most economically and socially developed province. The province is a major producer of both cocoa and copra, and just over 50 percent of both of these crops are produced by smallholders. The Gazelle Peninsula area in particular has had a long history of involvement in the cash economy and has a well developed infrastructure, with a large number of all weather roads linked to the major urban centre of Rabaul. In both the 1975 and 1978 national nutrition surveys the province had the lowest percentage of young children, seen at MCH clinics, who were below 80 percent of the standard weight for age.

Within this overall picture of a relatively high rate of development, there are, however, considerable disparities between different parts of the province. The Gazelle is the most developed area, densely populated and intensively cultivated, with good communications, and is well integrated into the cash economy. The Duke of Yorks Islands, while less developed, have extensive coconut plantings and the population are able to fish regularly. In the Bainings area development is occurring where roads exist and the population are actively involved in planting cocoa. In the more mountainous areas where communications are not so good the people are more isolated and there is less cash cropping, although Cardamom is planted in some area of North Bainings. Pomio District is generally the most

disadvantaged area of the province. There are few roads and the only links with the provincial centre are by sea or by air. The area is thinly populated and government services are at a lower level than elsewhere. The inland areas of the district are particularly isolated and display the most serious food and nutrition problems.

Although the Gazelle area is densely populated food is produced for own consumption and a considerable amount is marketed, mainly in Rabaul. Food problems that do exist are those associated with higher levels of development, e.g. inappropriate food items and possibly overconsumption. The two main production problems are a highly erodible soil, and land pressure arising from a high population density and the expansion of cash crops.

Also in the Duke of Yorks Islands there are no serious food problems. People have access to coconuts and fish as well as staple food crops. The soil is derived from coral and is light with some humus in depressions. Gardens are cultivated more or less continuously and crops grown include sweet potato, tapioca, aibika, and sugarcane. Coconut yields are low and could decline further because of low levels of management; problems include thick undergrowth, volunteer germination of nuts, and overcrowding of palms.

In the Baining region cultivation is more extensive along the roads. Settlement schemes in this area are important suppliers to the Rabaul market. In general food production is adequate, except possibly during prolonged rainy periods. Further inland where there are few cash crops, protein shortage is likely to be a problem. Taro is the preferred staple, but sweet potato and aibika are also common. The main food problems appear to be due to pests and diseases. The most important ones are: leaf blight and taro beetle in taro, snail and caterpillar damage in aibika, and stem borer in corn.

In 1975 and 1978, 23 and 22 per cent respectively of children under five seen by MCH clinics were below 80 per cent of the standard weight for their age. In 1982/83 preliminary results from the national nutrition survey indicate that 36 per cent of children are below that level. This survey is based on a well designed sample of all villages and is likely to be more representative of the population at large than the two other sources. It is likely, therefore, that undernutrition of young children even in this province is more serious than previously thought. In conformity with already established patterns it was shown that the South Coast/Pomio area has the highest rate of under-nutrition.

1.3 Programmes and Plans

With the possible exception of one or two other provinces East New Britain probably has the best established and most sophisticated system of provincial government in the country. A five year development plan for 1982 to 1986 has been drawn up but has yet to be approved by the provincial assembly. Food and nutrition is seen as a community problem and the main approach is interdisciplinary. In the more disadvantaged areas the main political pressure seems to be for better infrastructure, particularly roads. The provincial administration feels, however, that there is need for specific action on nutrition related problems in the short term. But while there has been plenty of talk about food and nutrition the province generally has found it difficult to identify viable projects and programmes.

There has been a programme of resettlement in the Gazelle Peninsula for some considerable time. All existing schemes were set up by the national government. The province has identified 27 old plantations that could be used for resettlement and is looking for finance for this scheme. The emphasis in these schemes is on cash crop production, but the province does not intend to ignore food production. Some schemes in Malasait are important suppliers for Rabaul market, but there is some pressure from the national government for all land to be devoted to cocoa. Investigations have also been made into possible changes to land laws which would particularly affect the Gazelle. Proposals have been drafted and submitted to the national government.

The Division of Primary Industry has concentrated most of its resources on the development of cash crops, but has also had some food and nutrition programmes. There is a provincial Subsistence and Nutrition Officer stationed in Rabaul and two RDT Subsistence and Nutrition Officers in the districts. DPI projects in recent years have included:

- (a) Cocoa redevelopment
- (b) Coconut rehabilitation and planting
- (c) Cardamom
- (d) Ice making and marketing services for fishery
- (e) Poultry for meat production
- (f) Piggeries
- (g) Subsistence and nutrition
- (h) Water buffalo
- (i) Soil conservation.

In the area of subsistence and nutrition the main emphasis has been on the distribution of planting material which it distributed free of charge in Pomio District, but a small change is made in other areas.

The Division of Health is currently preparing a provincial health plan and it is expected that nutrition activities will receive support. The two main priority areas that have been identified are:

(a) Services for children

(b) Services for women

A set of community health rules have been prepared and will be presented eventually to community government presidents. Under these rules offenders will be liable to prosecution in village courts and fines will accrue to community governments. A provincial health board has recently been set up. It is proposed that a sub-committee of this board will look at nutrition policy using the results of the 1982/83 national nutrition survey. The position of Provincial Nutritionist is currently filled by a Canadian volunteer.

A community nutrition unit has been set up in the Duke of Yorks Islands. This was built and is being financed by the community government. A local person has been hired and was trained by the Provincial Nutritionist. It is considered that this project is working well and could be repeated in other areas where the population is fairly concentrated and there is strong support from the community government.

There is no strong emphasis on nutrition or school gardens from the Division of Education. In the Gazelle land is short and so very few schools have gardens. In other areas gardens do exist and are used in the community life syllabus.

Lowlands Agricultural Experiment Station (LAES), Keravat.

LAES is an important DPI research station for the lowlands of PNG. Although research work here is concentrated on cocoa and coconuts, attention is paid to food crops and farming systems. The crops studied are: sweet potato, taro, cassava, and traditional vegetables. In each of these crops, a sizeable collection of germplasm has been evaluated, and agronomically superior varieties have been identified. The food crops agronomists and other researchers are now planning to try these varieties in farmers' fields in different parts of the island provinces.

Another major activity is breeding and developing clones resistant to taro diseases. This work is undertaken as part of an FAO programme on root crops in the Pacific with collaboration and exchange of breeding material from Solomon islands. The results of this work

are anticipated to benefit taro cultivation in critical areas of PNG which suffer from severe attacks of blight and virus diseases.

Under farming systems research, results are now available on suitable composting for sweet potato, and work is in progress for developing suitable agro-forestry techniques using Leucaena and Gliricidia species as fallow plants. Experiments are also carried out on recycling of crop residues, such as cocoa pods and other waste products.

The area horticulturist located at the station co-ordinates extension of research to various provinces through adaptive trials, supply of planting material and seeds, and organising short in-service and farmer training courses.

2. District: Pomio

Dates of Visit : 20-22 April
Team Members : Eele and Morauta
Population : 25,683 1,980 citizen only
Elevation HQ : Sea level
Main Staple(s) : taro

2.1 Visit Details

The Team members stayed at the District headquarters at Palmalmal and also had a chance to visit nearby villages in Jacquinot Bay. Because of the shortage of time it was not possible to visit any of the inland villages. Discussions were held with officers of DPI and the Education and Health Divisions.

2.2 Food and Nutrition Situation

Pomio District is generally recognised as the most disadvantaged district in East New Britain Province. Preliminary results for the 1982/83 National Nutrition Survey indicate that in Pomio 49 percent of all the children under 5 years that were seen by the survey team were under 80 percent of the standard weight for their age (as compared with 36 percent for the province as a whole). There appear to be significant differences between the inland and coastal villages. In the inland areas 63 percent of the children in the sample were below the 80 percent mark while in coastal areas the figure was 37 percent, or about the provincial average.

The district is quite sparsely populated and land pressure is not evident. In general people follow a cropping system based on taro colocasia and taro xanthosoma. A slash and burn system is used and on the coast quite short periods of bush fallow are employed

(an average 3-4 years). In inland areas fallow periods are usually longer, but even so may be as short as 5-6 years. Soils are thought to be poor, although only a few soil analysis has been made. In addition to taro, people also grow sweet potato and cassava; aibika is thought to be the most important green vegetable.

The planting pattern is largely determined by the seasonal variation in rainfall. The district has a high level of rainfall most of which falls in the period of May/June to September/October during the time of the south-east trade winds. During this time the weather is very wet and the seas are rough. Fishing is restricted, and communications throughout the district are very difficult. Rivers are liable to flash flooding and where roads exist bridges are liable to be swept away. Burning of gardens usually takes place in February/March/April followed by planting before the wet season starts. In the eastern part of the district yams and bananas are more prominent.

The food system faces several problems. In the wet season cultivation is difficult. Prolonged periods of rain towards the end of the period can cause rotting of taro. In addition much of the district is affected by taro leaf blight on taro colocasia. Many areas report considerably reduced yields because of this blight. In addition xanthosoma taro also appear to be diseased. These two problems (weather and disease) are considered to be the most severe by DPI officers.

There are in addition a number of social, cultural and political factors which affect the food system and constrain the ability of DPI and other divisions to improve the situation. Food habits and food taboos are important in restricting the foods available to pregnant and lactating women and young children. In inland areas traditionally most food is baked or roasted. People are not used to using cooking pots or making soups or stews.

Since 1969 a political movement known as the Pomio Kivung movement has had considerable influence in most parts of the district. One of the effects of this movement has been to deter villagers from involvement in government (national, provincial and local) activities, particularly economic development. This has had considerable effect on the ability of DPI to promote copra and cocoa. While people still work in their food gardens, DPI has also found it difficult to advise villagers or introduce new crops or techniques.

Difficulties in communications caused by a low level of infrastructure and the severe wet season as well as the low level of economic development have undoubtedly been major factors in the high level of malnutrition in the district. This is illustrated by the contrast between the inland and coastal areas. The coastal people have access to regular supplies of fish, they are able to

consume coconuts and they can have some cash income from the sale of cash crops. In the inland areas none of these possibilities exist. Lack of protein is thought to be a major problem inland. In the National Nutrition Survey only five out of 150 inland families interviewed reported eating any animal protein in the previous 24 hours.

2.3 Plans and Programmes

DPI is well established in the district. There are two RDO's, eight RDT's and 6 RDA's currently in position. In addition to the district headquarters, staff are located at three other stations on the coast. A base camp at Ganbe in one of the three inland population centres is being established in 1983 and will be started by one RDT. Priority is given to establishing two more base camp at Nuture and Aona to serve the other two inland areas. One RDT is currently designated as Subsistence and Nutrition Officer and she is fully involved in promoting food and nutrition programmes. DPI's main activities in food and nutrition include:

- (a) Establishment of seed multiplication plots (four were set up in 1982)
- (b) Establishment of a nursery and orchard for fruit trees at Palmalmal
- (c) Food crop trials in conjunction with LAES to investigate varieties of sweet potato and cassava and control of taro blight.
- (d) Talks and cooking demonstrations in villages
- (e) School nutrition gardens
- (f) Establishment of dryland sago at Palmalmal with a view to distributing planting materials (public acceptance of taro could be a long term problem).

In addition DPI has also undertaken other activities. Seed coconuts were distributed to inland areas in the 1960's and again in 1982. Investigations are made into the possibility of introducing fish to inland rivers and to the establishment of goats in inland villages. The fisheries RDT is encouraging the establishment of youth groups in coastal villages to catch fish for sale locally.

The district is well provided with health services; there are eight health centres for a population of about 2500 people. Each centre provides a family health service and in March and April

the MCH clinics covered about 30 percent of all children under 5 years. Six of the centres, including all those in the inland areas, are run by Catholic Church. Each Health Centre operates more or less independently without an officer in charge of health services for the district. This makes cooperation between DPI and the MCH service quite difficult. Community schools are under the control of two inspectors. There is a high school at Palmalmal. There are no community education or informal education activities.

There is no District Management or Development Team as such in existence at present. It is proposed to hold a district development workshop in June of this year and it is hoped that such a team will be set up afterwards. Staff do patrol fairly regularly and there are also regular patrols by staff from Provincial headquarters. Combined patrols between DPI, Education and Community Government were carried out in 1982.

3. Suggested Strategies and Programmes

3.1 Provincial

Given the fairly sophisticated planning and administrative procedures already developed in East New Britain we consider that the main strategy for food and nutrition should be to support and develop existing programmes and projects. Three main areas were identified in the course of the Team's visit and were discussed briefly with officials.

Firstly we would strongly support the proposal to develop a provincial food and nutrition plan. It is proposed that this will be developed by a sub-committee of the Provincial Health Board using mostly the results of the national nutrition survey. In practice this is likely to prove quite difficult. Both Health and DPI staff are fully committed to existing projects and these would undoubtedly suffer if they were to be neglected for some months. In addition the data from the NNS is likely to be very extensive and complex, and it will probably require some considerable statistical expertise to make the best use of them. For these reasons, we would suggest that some additional inputs could well be required for a few months to help produce a provincial food and nutrition plan.

The second area of support follows on directly from the first. Provincial planning procedures are already making considerable demands on the data generating capacity of the province and some programmes are in hand to help increase this. The Provincial Statistical Officer is currently trying to reestablish the provincial data system and hopes to be able to cover all districts by the end of 1983. The Provincial Nutritionist has been investigating the

nutritional surveillance information provided by the MCH clinics and she is considering ways in which this might be improved. In both cases the amount of information needed for detailed local planning is likely to be considerable. Resources available for data processing are very scarce and trained personnel are not available. There is a real danger that resources devoted to the improvement of data collection might be wasted if the results are not made available to the planners in time for them to be of use.

To this end, therefore, we would recommend that support be given to improving the data processing capability of East New Britain Province. Given present limitations on staffing this is almost certainly going to mean the provision of computing facilities of some sort. A number of alternatives are possible and should be investigated, the most important thing though is to develop a system that can be operated by existing local staff. National level support will almost certainly be needed in deciding what equipment is required in purchasing and support of both hardware and software and particularly in training staff.

Thirdly the provincial staff feel that they do not have much expertise in project formulation, planning and evaluation. This is true for a number of subject areas and does not only concern food and nutrition. We would recommend, therefore, support for training in this area and feel that this could usefully form a national project. The demand from East New Britain province is likely to be for one or more such courses a year for its own staff, although there could well be possibilities of combining with other provinces for the training. Such training could well be carried out under the auspices of the National Planning Office.

3.2 District

The main long term strategy for the development of Pomio District, preferred by both district and provincial staff, is to provide infrastructure in the form of roads and to promote economic development by encouraging the growth of cash crops. While we would have no argument with this as a long-term programme, we feel that there are a number of things which could be done to improve the food situation in the short-term. In the first place we would suggest that considerable effort be invested in improving the planning capability at the district level. We feel that the individual divisions are generally working quite effectively and they have some important and enterprising programmes. Given the apparent severe nutritional problem, particularly in the inland areas, and the multidisciplinary nature of the tasks to be undertaken, we consider that any effective programme must involve several divisions working closely together. In particular we would suggest that there be much closer cooperation between Health and DPI.

To provide a framework for this interdivisional cooperation we would suggest that the District staff, in cooperation with people from the Province, develop a district food action programme. The proposed development seminar, planned for June, could well be a suitable time to discuss this. The priority area for action appear to be the inland villages and we would strongly support the purpose of strengthening of DPI services here by the establishment of base camps at Nuture and Aona. Other possible areas of action could be the promotion of coconuts, and protein rich crops such as peanuts should be investigated. As roads to these areas are opened up from the coast we would also suggest that the marketing of fish be encouraged. Some form of simple preserving of the fish such as salting may well be appropriate.

Of the possible projects that have already been identified in other areas of the country the support for district food action programmes would appear to be most appropriate for Pomio. The results of the National Nutrition Survey are likely to be available soon, and while they may be of limited value to detailed planning for the district, they should indicate major areas of concern and problems that may need further investigation. The District staff themselves feel that this should be the first major step in tackling the food problems of the area.

A second project that would need outside financial support is the establishment of village nutrition workers. This would follow the model already developed in the Duke of Yorks. Given the problems of travelling throughout much of the Pomio district and the consequent difficulty in providing MCH services to about two-thirds of the population we feel this approach is an important alternative. The purpose of the project would be to finance a training programme for these workers, provide basic equipment for cooking demonstrations and for making nutrition gardens and to finance a district coordinator to help develop the programme. The recurrent costs of the workers themselves will be met by those community governments willing to allocate funds for such officers. Because these people will work closely with DPI, Health and Education personnel we feel they should not come under any of these departments, rather they should report to a district nutrition coordinator who is responsible directly to the District Development Team.

The problem of blight in both colocasia and xanthosoma taros appears to be quite serious for the whole district and we feel there should be specific support for research to overcome this. The LAES station at Keravat has been conducting research to develop resistant varieties, but possibly more short term solutions could be found. Finance may well be needed to help pay for on-farm trials in the worst affected areas.

The establishment of seed multiplication gardens and programmes for seed distribution should be encouraged and this may require specific project support. Seed multiplication is already being done on small scale, but could be more effective with greater resources. The problem of distribution of seeds and planting material should be carefully investigated. At present it appears that only those farmers with easy access of the District station are being provided with material. Ideally each base-camp should have a seed multiplication garden.

The drawbacks of the data currently collected by MCH clinic are well recognised, and other data on nutritional status are required for regular monitoring. We consider that a pilot project should be set up in Pomio District to encourage the anthropometric measurement of children attending community schools. The project would provide for the development of training materials for the teachers, for simple scales and tape measures and a system for collecting the data at Provincial Headquarters. It is felt that such measurement would have a number of benefits for a firstly small initial outlay. It would provide regular data probably on an annual basis on the nutritional status of children from the age of seven to about 14 years. It would provide very useful material for teaching the nutrition component of the village life syllabus to higher grade students. It would provide practice in measurement in the maths syllabus and it should provide children and teachers with material to monitor the nutritional status of the community and compare this with other areas.

LIST OF PEOPLE MET IN EAST NEW BRITAIN

East New Britain Provincial Government

O. Tomano, Deputy Premier
J. Waninava, Minister for ARI Primary Industry
M.N. Paliu, Provincial Secretary

Division of Primary Industry

O. Latain, Assistant Secretary
M. Joseph, RDO Subsistence/Nutrition

Division of Health

, Assistant Secretary
P. Pohai, Special Projects Officer
C. Hull, Provincial Nutritionist

Planning Division

A. Enos, Provincial Planner
A. Hazelwood, Provincial Statistical Officer
C. Petri, Community Government Research Officer

Division of Education

J. Hevema, Assistant Secretary

Malasaet District

T. Torong, ARI DPI
P. Luluai, DRDO
D. Liu, DRDO

Various Subsistence farmers in the villages of Rangulit, Radingu and Malasalt.

Pomio District

O. Labi, District Officer in Charge
A. Ava, DRDO
S. Ati, FDT Subsistence and Nutrition
K. Kabuala, RDT Fisheries

Palmalmal Health Centre

Coleman, Nursing Sister
Terry, Nursing sister

Education

L. Saura, School Inspector

Assorted persons including Komiti, community government members, headteacher and other of Galume village.

LAES, Keravat

A. Leng, Farming System Agronomist

R. Craydon, Area Horticulturist

L. Kurika, Agronomist

S. Gunawardhavan, FAO Agronomist

PART D: MILNE BAY PROVINCE

Dates of Visit: 24-30 April 1983
Team members : Eele, Lok, Morauta, and Kwamillon
Population : 127,891 (1980)
Land Area : 16,194 sq. km.

1. Provincial Review

1.1 Milne Bay Province was chosen as one of the four provinces to be visited because it was a coastal province with a high level of malnutrition indicated in the 1975 and 1978 surveys, and a relatively low level of economic development. Within the province the Team learned that Losuia, Misima, and Rabaraba districts were thought to have the most serious nutrition problems. Two members went to Losuia in preference to Misima and Rabaraba because of convenient schedules of air services and because travel within the district was easier. DPI at Alotau had kindly arranged in advance for members of the Team to visit the Samarai District by boat so two Team members did this. One Team member spent one and a half days in road travel in the Alotau district visiting Nigila village and the Divinai area, inspecting food gardens and government activities. Talks were held with government officials at Alotau.

1.2 Food and Nutrition Situation

There have been a relatively large number of nutrition surveys in the province. The 1975 and 1978 national surveys both showed 54 percent of children under 80 percent weight for age, a similar provincial survey in 1979 59 percent and a zone sample survey in 1979/80 48 percent. These are high figures by national standards but the 1979/80 zone sample survey provides additional data that suggests we should be cautious in concluding that Milne Bay has serious nutritional problems. This survey found that the main problem was height for age rather than weight for height: that Milne Bay children were generally short for their age rather than thin for their height (Milne Development Study, Volume 3, Table 11.4). Although 21 percent of the 695 children seen were stunted, only 7 percent were wasted and 2 percent stunted and wasted. From the point of view of diseases and mortality, being too thin is more serious than being too short, although being short reflects the fact that a period of nutritional stress has occurred in the past. Nevertheless the surveys show nutrition is worse in some parts of the province than others, notably in mountainous country over 6000m where 18 percent of children were wasted, and, probably, in some island communities.

The subsistence food systems of the province vary between ecological zones. In lowland and island areas yams are often the staple, supplemented by other tubers, bananas, pumpkin, greens and coconut. Fish is a most important part of coastal diets. In inland areas and other lowland areas sweet potato or taro are the main staple. Of recent years, blight has affected taro crops. Sago is often harvested when garden crops are not available.

The province today faces several problems in relation to food production and consumption, at least some of which are linked to the nutrition figures already presented. In some areas the range of foods produced regularly does not provide a balanced diet for rural communities. This is for example, the case in areas where animal protein is scarce, and vegetable proteins inadequate. In other areas, the subsistence system does not provide a continuous supply of energy foods throughout the year, because of drought. Rainfall in the islands is not very consistent between years, and periodically garden crops are lost because of a lack of water. In such cases traditionally Milne Bay people traded fish or pots or other items for the food they needed, turned to alternatives such as sago, relied more heavily on coconuts or moved away temporarily to other areas. Additional strategies today are earning cash to buy rice and seeking free rice rations from the government. Drought also causes water shortages on some islands that have no catchments, tanks or developed ground water sources.

Another strain in the subsistence food system is beginning to make itself felt now, but will be more important in the future. A few areas of the province are or will be short of land on which to make gardens under existing agricultural technology. Three census divisions in the Losuia District, Kilivila, Kuboma and Kitava, have the highest number of people per sq. km. (68-79), while in the islands of the Misima District, the mountains mean there is a shortage of easily cultivable land (MBDS, vol. 3).

As in many parts of the country, food consumption habits also affect nutrition. Beliefs about what are proper foods for babies, young children, pregnant and lactating women can restrict diets even when the food supply is capable of providing what is needed for good nutrition. For example, in the Trobriands mothers eat only plain boiled yam and drink hot boiled water for 7-10 days after the birth of a child (Leonard 1980). Children under 12 months are rarely fed animal protein in the Trobriands (Ibid., Table 5). These restrictions are designed to promote the health and growth of children. They are indications of the concern and care of parents, but Western medical knowledge suggests they may well have a detrimental effect.

1.3 Plans and Programmes

The Provincial Government is engaged on and has plans for a large number of activities that bear on subsistence food production and nutrition. The effectiveness of all government activities

is limited by certain constraints. Provincial government is relatively new and the province is only slowly developing administrative structures and management skills to suit its needs. The population of the province is widely dispersed and transport costs are very high to reach outlying populations and, indeed, the majority of its population live on islands rather than the mainland of Papua New Guinea. On the mainland there are few roads to assist extension services.

The education division has a number of activities related to food production. In addition to teaching the community life syllabus, most community schools have gardens, although in many cases these are limited by the amount of land made available by the community. In the past the provincial nutritionist has attended in-service courses for teachers. After the 1975 National Nutrition Survey many school nutrition programmes had been developed, but since then enthusiasm has waned somewhat. The national Department of Education plans a Community School Agriculture Extension Project in the province commencing 1983. For a trial period of few years in four provinces the project provides additional staff to support improved school gardens and teaching based on these gardens, with the aim of developing positive attitudes to agriculture in children. Five schools on Misima Island will be involved in the pilot project, Misima being chosen because it was an island environment and for easy transport arrangements between Port Moresby and Misima and between the schools.

The four high schools in Milne Bay all teach agriculture in the normal syllabus. There are currently five vocational centres, but plans are being developed to convert these into village demonstration centres, along the lines of the Lumi project in the West Sepik District. No definite proposals have been made yet, but the aim will be to coordinate extension activities to serve village people. The change is planned because the division feels present vocational centres are ineffective. We do not have information on the activities at the other four centres, but our visit to Sideia Vocational Centre suggests that that centre has for many years made a large contribution to the education of village women from all over the province. The centre was opened by the Catholic Mission in 1968. It caters for 80 girls who have completed Grade 6. Girls stay for two or sometimes three years taking a course comprising agriculture, sewing, home economics (cooking and nutrition), craft, mothercraft and home health. The programme is directly aimed at better living in the village and most graduates do in fact return to village communities. The practical work in agriculture includes crop rotation, each girl having her own plot in the second year, permanent cultivation techniques and new high value food crops. The sister in charge of the programme felt the girls would bring long-term benefits to their communities when they as adults and mothers practised what they are being taught. Two graduates of the course had started an extension project with women in Daidia village on Goodenough Island. The scheme was sponsored by a community leader and the girls were paid by the national Village Development Fellowship Scheme. Part of the programme of current trainees is to help

establish three community development centres on Sideia Islands working to improve village water supplies, diets, incomes and life-styles.

The Division of Primary Industry has several food production programmes. While cattle projects are largely aimed at raising cash incomes, there is a project to improve village poultry by introducing new kinds of chickens into villages. There is a programme to promote fruit and nut trees, with one RDT responsible, and seedlings are distributed on a small scale. DPI assists school garden projects by providing seeds. There is a demonstration and seed multiplication garden in the Alotau District, and one may be established in the near future in the Samarai District. In addition DPI is involved in the promotion of cash crops (cocoa, coffee, cardamom, rubber etc) and a hybrid coconut scheme, although these have a low germination rate in the seednut garden and the seedlings are heavily infested with insects (*Brantispia* sp). The Milne Bay Fisheries Authority both operates as a commercial venture with national government support and conducts fisheries extension work on behalf of the provincial government. It has a base freezer and freezing plant at Samarai as they are caught by villagers and buys fish from dories fitted with ice boxes.

There is a new project to be administered through DPI and funded as part of the 1983 NPEP project entitled Milne Bay Development Programme. The Small Islands Project aims to diversify cash cropping and improve subsistence and nutrition in three small populations in the Marshall Bennett, West Calvados Chain and Amphlett island groups. In each group, two expatriate volunteers and one national officer will be stationed to investigate farming and nutritional problems and set up appropriate projects. The total population served is in the order of 3,000 for the whole project.

The Division of Health conducts health education, maternal and child health and nutrition education programmes that have relevance for food and nutrition. The province has a health education programme, based on patrols by health education officers, that includes some work on nutrition. MCH services operate throughout the province, although they face difficulties on patrolling in some areas because of difficult walking conditions, a shortage of boats and rough seas. The MCH supervisor receives monthly reports from MCH clinics on a form designed for provincial use. Under nutrition this form provides information only on those children under 60 percent weight for age, and not those under 80 percent. A good feature of this provincial reporting system is that a quarterly report by health centre and sub-centre is distributed to all MCH clinics, so the figures can be compared between centres. Information on the proportion of children under 80 percent weight for age is not, of course, included. In the 1983 NPEP programme, the Rural Health Services Project will enable the division to upgrade or open

two health centres, four sub-centres and 13 aid posts.

The provincial nutritionist conducts patrols to health centres and community schools and is currently preparing, with some difficulty, a set of nutrition extension materials for MCH sisters. She is working on a tape/slide show with vernacular tapes, durable pictures of Milne Bay foods that make up a balanced diet and large posters on the food groups. The one nutrition film available in the province is damaged and not in use at present. She would like also to develop vernacular radio programmes. The Health Division has organised a provincial nutrition workshop for 5th May, to open up discussion between divisions on activities and plans relating to nutrition and to discuss the best methods of coordination. It has been timed to coincide with a meeting of all DRDOs in the province, so they will also be able to attend.

The Milne Bay Development Programme NPEP provides two district nutrition educators for the Misima and Losuia districts. Although the original project document proposes that these officers will work on nutrition education and in-service training in nutrition for the various divisions, present plans are focussed more on nutrition education within the context of community development. The Health Division is seeking expatriate volunteers for these positions.

The Field Services Division contains two kinds of programme relevant to our study. The Community Services section is concerned with programmes for women and young people. One of its main activities is to run short courses for women representatives or youth leaders in a particular district. These courses frequently contain components on agriculture, nutrition and food preparation. For instance, a two week workshop for women at Esa'ala planned for September 1983, will spend seven of 20 half-day sessions on these topics.

The Field Services Division also coordinates the work of the Provincial Food Emergency Relief Committee in its role relating to 'surveillance.' The Division reports its activities in this area to the National Surveillance Centre in Port Moresby. In the 1983 Milne Bay Provincial Government Budget K40,000 was set aside for famine relief, of which K19,461 had been spent by the end of the first quarter. The normal procedure is for reports of a food shortage from villagers to be investigated by the DOIC of the District concerned. Ideally the divisions of health and nutrition are asked to comment. In cases where relief is approved at Provincial headquarters, the standard ration is one third of a 25 kg bag rice per person per month. Tinned meat or fish is not supplied because it is assumed that in island areas to which relief largely goes fresh fish is available. Rations are only issued for one month at a time, and a second investigation is required to warrant an extension to a second month. Food is distributed by the DOIC in the district concerned. At the time of our visit food was being

distributed to some of the islands in the Samarai District. For the first time in 1983 corn seeds were handed out with the rice, to enable people to plant a fast-growing food crop once the rain came. On occasion the relief service also delivers water to remote islands where supplies have run out.

2. Losuia District

Dates of Visit: 26-30 April
 Team Members : Eele and Kwamillon
 Population : 21,238 (1980)
 Elevation : nil (sea-level)
 Main Staple : Yam

2.1 Visit Details

During the visit Team members had discussions with representatives of various government divisions, visited Nabusa Agricultural Demonstration Centre and also looked at gardens in villages, a community school and the high school on the island of Kiriwina.

2.2 The Food and Nutrition Situation

Losuia District is made up of the islands of Kiriwina, Kaibeuna, Kitara, the Marshall Bennett Group and Woodlark Island. During the period of the visit it was only possible to visit Kiriwina and so most of the remarks of this section apply only to this island. The main staple is yam which is grown throughout the island. Gardens are cleared in July/August and will be planted with yams in September and October. The harvesting season is from May to June. After the yam harvest most gardens are planted with sweet potato, tapioca and a variety of green vegetables. Both cooking and sweet bananas are also cultivated. Once the sweet potatoes are harvested, the garden is generally allowed to revert to bush, although bananas will continue to be collected. Fallow periods were formerly about 10 years but now are usually about two to four years. The soils are considered to be fertile, although gardening is hampered by the presence of a large amount of coral rock.

In addition to yams and other vegetables most people fish regularly and also have access to coconuts. Pests and diseases are not considered to be a significant problem. The main problem faced by the food production system is drought, although it is only severe enough to seriously affect food production about once in ten years. A prolonged period of drought occurred in 1982 and the Government distributed rations to the outer islands although this was not done in Kiriwina.

There are strong cultural and social traditions throughout the Trobriand Group, based on a system of hereditary chief. Yam cultivation plays a very important role in this system and numerous ceremonies are associated with the different stages of cultivation.

Despite the apparent strength of the production system there is evidence of considerable under- and malnutrition, particularly among young children. In 1978, 48 percent of children under five were found to be below 80% of the standard weight for age; in 1980 and 1982 the corresponding figures were 38 and 43 percent respectively. District staff acknowledge that undernutrition is extensive and consider that pregnant and lactating women are also seriously affected although there are no data documenting this. The main cause of malnutrition is thought to be constraints placed by the social and cultural system on the consumption of some foods by certain groups of people. Food taboos are said to particularly affect the diets of pregnant women and young children.

In common with many other societies in Papua New Guinea people do not appear to link food intake with health or well-being. Mothers who bring malnourished children to the Health Centre say that their children are suffering from 'Indian Sickness'. It is ironic that there should be awareness of the plight of starving children in India but not of the cause of the problem. Another contributing factor is thought to be the method of cooking. People use cooking pots but tend to boil all the food together so that the nutrient value of greens may be reduced by overcooking. In addition, most families generally only cook one main meal a day which is eaten in the evenings. Leftovers may be eaten for breakfast and snacks for lunch, but food intake for young children in particular may not be regular enough.

2.3 Government Plans and Programmes

DPI has five qualified staff in the District including one Assistant Forestry Officer. There is no specialist food and nutrition officer. As well as the district centre at Losuia there is a base camp at Gausopa in the Woodlarks and another being established at Nabusa on Kiriwina. Two RDA's have recently resigned from Gausopa and have not been replaced although funding exists for these posts.

Over the past four or five years DPI has undertaken a number of food and nutrition related projects although these have tended to be in response to specific requests and not part of any overall plan. A number of nutrition gardens have been started at community schools and a demonstration plot was established at Losuia station although this no longer exists. Recently most efforts have been put into establishing a demonstration centre at Nabusa, near Siraketa village in the South of Kiriwina Island. This is an approximately

22 hectares of land that was previously owned by a mission. Some housing has been built and a number of blocks planted to different crops. There is a nutrition block where a variety of crops are being grown as well as a small poultry unit. Not much demonstration or extension work has been carried out so far by the centre and it is still being established. One problem is transport as it is located about two hours drive away from the main centre of population. Problems have also occurred: about 60 percent of the chickens delivered to the centre died soon after arrival and a number of food crops failed because of drought. No development plan for the centre has been drawn up, but a senior RDT is being posted there in May 1983.

The health division has only one health centre in the district at Losuia and this runs MCH clinics. These are effectively restricted to Kiriwina Island. Services will be improved in the near future with the establishment of a Health Centre at Guasopa in the Woodlark Islands and a sub-centre on Kitara Island. The present level of coverage of the MCH clinics in the district is quite low, about 12 percent in 1980 and 8 percent in 1982. Problems are encountered with staffing and with transport. There are 22 clinics on Kiriwina, but it is presently only possible to visit each one about once every three months. MCH have one trained nurse, one nursing aid and two aid post orderlies, but patrols are not always possible because of staff shortages at the health centre. In the five years since 1978 there appears to have been little or no improvement in the level of undernutrition in children under five.

There are 21 community schools in the District and one high school. Many schools have some kinds of nutrition garden, but problems exist in some areas because of a shortage of suitable land. Projects run with the help of DPI officers who supply seeds and advice. In some cases not all requests for seeds or planting materials are met and teachers may purchase their requirements in the trade stores. Schools also run nutrition days where children bring food which is then discussed in terms of its value for nutrition. The main requirements were thought to be posters and other materials which could be used in lessons. There was considerable support for the idea of schools monitoring the nutritional status of their pupils.

There is a District Coordinating Committee which meets once a month. It is made up of officers in charge of divisions, some of the local chiefs and a representative of local businessmen. Most of the business discussed concerns the operation of the Government Station, and the problems faced by the various officers. Transport is coordinated to a certain degree. The Committee had met only once in 1983 up to the end of April.

The Province is planning to change the role of the DOIC and replace him with a District Coordinator who will have specific responsibility for all Government operations in the area. When

this change occurs it is expected that the DCC will take on a wider planning role. Community governments do not exist at present, but there is a Council of Chiefs. It is planned to set up community governments later this year and there is likely to be a bicameral set-up with the Chiefs making up the upper house.

Two provincial projects with a specific impact on food and nutrition are planned to be implemented in 1983. A Nutrition Education project will be set up in Losuia which will have an expatriate volunteer nutritionist and a local counterpart. It is envisaged that this project will use Nabusa for demonstration purposes, but this is likely to pose a number of transport problems. A component of small islands project described in 1.3 above will be set up in Iwa Island.

3. Samarai District

Dates of Visit: 25-27 April
 Team Members : Lok and Morauta
 Population : 11,804 (1980)
 Elevation : 0-600 metres
 Main Staples : Yam and banana

3.1 Visit Details

Team members visited Sideia Catholic Mission and vocational centre, Sideia Health Sub-Centre, Sawasawaga village and a garden nearby and Samarai Island itself. Discussions were held with officers from the various divisions represented at the district headquarters and the manager of the fisheries authority.

3.2 The Food and Nutrition Situation

The district consists of the Suau coast of the mainland and what are known as the Samarai islands, extending east to the Engineer Group. The current system of food production in the district is based on yams supplemented by bananas and other garden crops and sago. Fish is widely available to those living on the coast. In earlier times, trade of non-food items and fish for sago and garden food was an important element in maintaining food supplies in islands where gardens had been affected by drought. Today cash incomes are used wherever available to buy food, particularly rice. However, cash incomes are not high in the villages of the district being derived mainly from copra and fish. It was suggested that in some islands there was more cash available, earned in situ from fish sales, than there was food, particularly rice, in trade stores. Hence supplies to trade stores in outlying areas may be a constraint on food available.

The main difficulties faced by the food system in the district are periodic drought, taro blight and perhaps some population pressure on cultivable land. Team members are only in a position to suggest this latter factor based on casual observation of the way gardens are moving up steep hillsides and much flat land is occupied by coconut groves in islands near Samarai itself and a filed report on declining soil fertility at Gunubarabara Island. The Samarai District is one of the main recipients of provincial government food relief. If drinking water is considered an element of the food system, small islands have problems in drought years with their water supply. Pigs and cattle are found in surprisingly large numbers in the district. Pigs compete directly with humans for starchy foods in a time of food shortage, and both cattle and pigs damage food resources when, as is frequently the case, they are not adequately fenced.

Many people described to us food taboos and practices which meant that mothers and young children were not receiving the benefit of all the foods available within their communities. Restrictions were most common in relation to fish and greens, and some people observed that it also extended to imported tinned fish.

3.2 Activities Related to Food Production

Many of the programmes described for the province as a whole operate in this district as in others. DPI staff in the district at the end of 1982 consisted of the DRDO, four RDTs and two RDAs. There is no subsistence/nutrition officer. There are currently staff in three locations and two new centres or camps are proposed. The strategy is to disperse staff in an area where communications are so difficult. A vegetable seed multiplication, extension and production centre has been started in cooperation with the field services division at Alotau with the Loani Youth Group. A similar project for Gadaisu where a DPI base camp is delayed because of problems in acquiring land.

Divisional heads we talked to were enthusiastic about nutrition education programmes to combat poor diets due to beliefs and practices rather than supply problems. In relation to drought, we found some opposition to the system of government rations, although officers we talked to were involved in administering the system. Alternative or supplementary suggestions made were:

- (a) A planting materials programme from DPI
- (b) Commerce department to check rice supplies in outlying trade stores
- (c) Government to supply locally purchased goods such as sago, rather than rice

- (d) Promotion of traditional style trade and exchange in drought times
- (e) Government could help with transport for villagers to make their own sago elsewhere
- (f) Government should concentrate on raising cash incomes so that people can buy food.

The Education Division in the district did not have a large number of school gardens and was interested in receiving help with its nutrition-related programmes. The Health Division had both health and MCH patrols, but these were restricted by transport problems.

The district as a whole is moving towards a District Coordinating Committee (DCC) system, in which public servants, community and mission representatives all had a voice. They have begun to move towards general district planning by calling for information on the activities of all divisions. This information is now being prepared.

The missions provide many important services in the district: MCH and health work, schools, the Sideia Vocational Centre and even the community development outreach programme described in 1.3. The missions are represented on the DCC, and it would clearly be desirable to have maximum cooperation between them and government, particularly in extension work.

4. Suggested Strategies and Projects

4.1 Provincial

Our first priority in relation to food and nutrition in the Milne Bay Province would be to provide commonly agreed although area-specific objectives for and coordination between existing activities in the province. There is a lot going on already and more funded or already proposed for funding. The first need is to use these already available resources more effectively. While the province has itself identified coordination as a problem, we would stress equally the importance of rationally derived objectives appropriate to particular localities. All the coordination in the world will not provide a worthwhile result, if programmes themselves are headed in the wrong direction. To date the province has thought in terms of province-wide schemes and messages, with the result that sometimes inappropriate project (see 1.3 above) advocated a garden/piggery/poultry format for every location. At one of these, Sudest Island, there are ample supplies of food, a likely shortage of land and a tenuous supply

of staple foods in a drought. Pigs would not meet a nutritional need on the island, and may produce more negative than positive effects overall.

In relation to the drought problem, we are in agreement with the public servants we met who were critical of the rice ration scheme. Such a scheme, as Wohlt et al have pointed out (Wohlt et al 1982), is likely to undermine people's willingness or ability to find their own answers to the drought problem and is difficult to administer fairly. We would urge the province to review its policy on famine and drought, and as soon as possible establish and publicise alternative responses from government to drought. It would certainly not be acceptable to simply discontinue rations, but a positive alternative programme should be developed. Perhaps a 'Drought Action Programme' could be devised, which identified areas subject to drought and publicly outlined what the government's strategy and inputs would be in each area. It would be important that rural people know well ahead of a drought what their options might be, since this information might affect their own food production and income strategies. For a year or two, it may be possible to use the money normally used for rations for other inputs - such as planting materials.

The province has itself identified nutrition education as a priority. Since much of the poor nutrition in the province is not caused by a poor food supply but by the inappropriate distribution of available food within the community, we support this provincial emphasis. However, it is important to realise that changes in strongly-held food taboos are likely to come slowly, and that nutrition education must therefore be long- as well as short- term. Thus we support not only health and nutrition education in patrols to rural communities and on radio, but also a strengthened nutrition programme in schools, and particularly for girls in vocational schools. Nutrition education programmes must, in part, reflect the needs of particular areas. For instance, peanuts and legumes may not be important in fishing communities.

As far as agricultural policy goes, we see this as fitting within the framework of district and local area planning. If an area is identified as being short of protein, then DPI activities must focus on vegetable proteins and perhaps eggs or small livestock. In the islands DPI work on intensification, food preservation drought-resistant crops may be more appropriate.

If we consider what type of projects we would recommend for funding in the province, we would give priority to

- (a) Assistance to the development of provincial and district food and nutrition plans. Such plans could be developed in conjunction with the two new district nutrition educators, and could take account of new projects now coming on line. They could also include a review of drought

relief programmes, inputs needed might be outside technical assistance, travel costs for workshops and consultation within the province and printing and distribution of plan materials.

If, as a result of (a) and its own priorities, the province was able to accept additional resources in the area of food and nutrition, we would suggest projects such as:

- (b) Support for nutrition and agriculture education in community and vocational schools: possibly, development of province - specific materials, funding for extra in-service for teachers and equipment for schools. Such work to be coordinated with the national education department's project at Misima.
- (c) Support for broader community education programmes run by the health and field services divisions: especially assistance with coordinator's extension booklets, posters, displays, tape/slide shows, films and radio programme materials.
- (d) Design and development of materials for monitoring nutritional status of school children as part of school programmes.
- (e) Possibly assistance, if and when province so wishes, in the training or posting of community nutrition or health workers.
- (f) Support for DPI activities relating to the production of eggs for children to eat, using existing village poultry.
- (g) Technical assistance in improving water supplies.

Our work in the province has also suggested to us two needs at the national level where new projects may be of assistance

- (h) support of research on atoll agriculture, its constraints and possibilities
- (i) support for higher level training for Papua New Guineans than presently exists in the fields of nutrition and food planning. These would most possibly be support for overseas study.

4.2 Losuia District

In addition to the strategies and projects identified for the province as a whole, we suggest one additional project, within the guidelines of a District food and nutrition plan

- (j) Further development of the Nabusa centre as an extension for food production. Present horticulture there needs to be

improved so that the gardens are demonstrably better than those of village farmers. When this is so, a strong extension/demonstration programme could be developed with dormitory accommodation for short courses and a seed and planting material programme. Emphasis should be given to relations with community leaders and some consideration given to an adaptive research programme aimed at improving village horticulture.

4.3 Samarai District

No specific projects are suggested for this district apart from those likely to be of benefit to the whole province. However, it should be noted that the urgency for a review of the famine relief programme is much greater in this district than in several others, and it should be a priority in the work programme of the new District Coordinating Committee.

PERSONS SEEN IN MILNE BAY PROVINCE

Alotau :

L. Watson, Premier
D. Daduwe, Deputy Premier
L. George, Provincial Planner
R. Leleibuna, Assistant Secretary, Primary Industry
M. Sakiasi, PAO, Primary Industry
V. Sefala, RDT, A/Subsistence and Nutrition Officer, DPI
F. Pawa, A/Assistant Secretary, Health
O. Moase, Provincial Nutritionist
M. Panta, Provincial Statistical Officer, Planning and Coordination
Division
P. Evura, Education Superintendent
M. Todogieta, Curriculum Adviser
A. Monies, Inspector (Alotau Rural)
K. Inawara, Senior Professional Assistant
P.J. Kaiyo, Community Services Section, Field Services Division
J. Standing, Field Services Division

Samarai District:

K. Bwaleto, DOIC, District Services
E. Ede'Ede, DRDO, Primary Industry
T. Towowoda, RDT, Primary Industry
S. Poigeno, Inspector, Education Division
R. Abaijah, Manager, Milne Bay Fisheries Authority
E.W. Niccodemus, A/HEO, Health Division
Sister Patricia, Sideia Vocational Centre
Sister Margaret, Our Lady of the Sacred Heart, Sideia
Sister Catherine, Sideia Health Sub Centre
Sister Helen, Sideia Health Sub Centre
E. Nadie, United Church, Sawasawaga Village
Community members, Sawasawaga Village

Losuia District :

G. Beona MP, National Member of Parliament

Health Division

S. Wiyawa, Health Extension Officer
L. Luvakasa, Health Inspector
A. Albert, MCH Sister
W. Edoni, MCH Sister
P. Lalabu, Staff Development Officer
S. Kabcuya, Business Development Officer

A. Moliola, DOIC
W. Phillimon, School Inspector
P. Katumapula, PRDO, DPI
E. Nigea, RDT, DPI
J. Mora, RDT, DPI