

WESTERN HIGHLANDS PROVINCE

By Thomas Magei and Bob Thatcher*

The climate of the Western Highlands Province is characterized by fairly evenly distributed rainfall, ranging from a high of around 3 800 mm in the Jimi area, to a low of less than 2 500 mm in the Mount Hagen and Baiyer areas. The months through June to November are usually considerably drier than the other months, although this is not always the case.

Temperatures throughout most of the province average a maximum of 25° C and minimum of 15° C, although this pattern varies considerably according to altitude,

proximity to high mountains and the amount of cloud cover at the time.

The central feature of the province is the Wahgi Valley which extends from the Mount Hagen area eastwards to the Kerowagi area of the Chimbu Province. The lesser valleys of the Baiyer, Nebilyer and Jimi, together with the Tambul Basin make up most of the populated area of the province.

The province is separated from the Southern Highlands by the Kubor Range to the south, from the northern part of the country by the Wahgi-Sepik Divide to the north, and from the Enga Province by the Mount Hagen Range to the west.

Most of the populated areas lie between 1 500 and 1 800 m above sea level, although the Mul Council and Tambul areas range to above 2 200 m, and the lower Jimi falls to around 400 m above sea level.

A considerable amount of land bordering the Wahgi River is very swampy and cannot be used economically at the present time.

The central swampy areas are basically alluvial soils with scattered organic soils. Peat is commonly found here. Much of the province has volcanic soils. Soils of the Dei Council, Tambul and Minj areas are generally fine-textured alluvium with minor areas of sand and gravel.

The valley areas generally consist of grasslands with sword grass and some shrub regrowth. Much of the upper Jimi area and the mountain ranges are rainforest ranging down to grasslands at the lower altitudes.

With the exception of the upper Jimi area, road communications are adequate and pose no barrier to economic development.

The main airfield is at Kagamuga, 11 km from Mount Hagen and airstrips are located at Tambul, Togoba, Minj, Banz and Tabibuga.

All stations have two-way radio scheduled communications, with the central Mount Hagen, Minj and Banz area serviced by automatic telephones. STD facilities are available to other areas of the country.

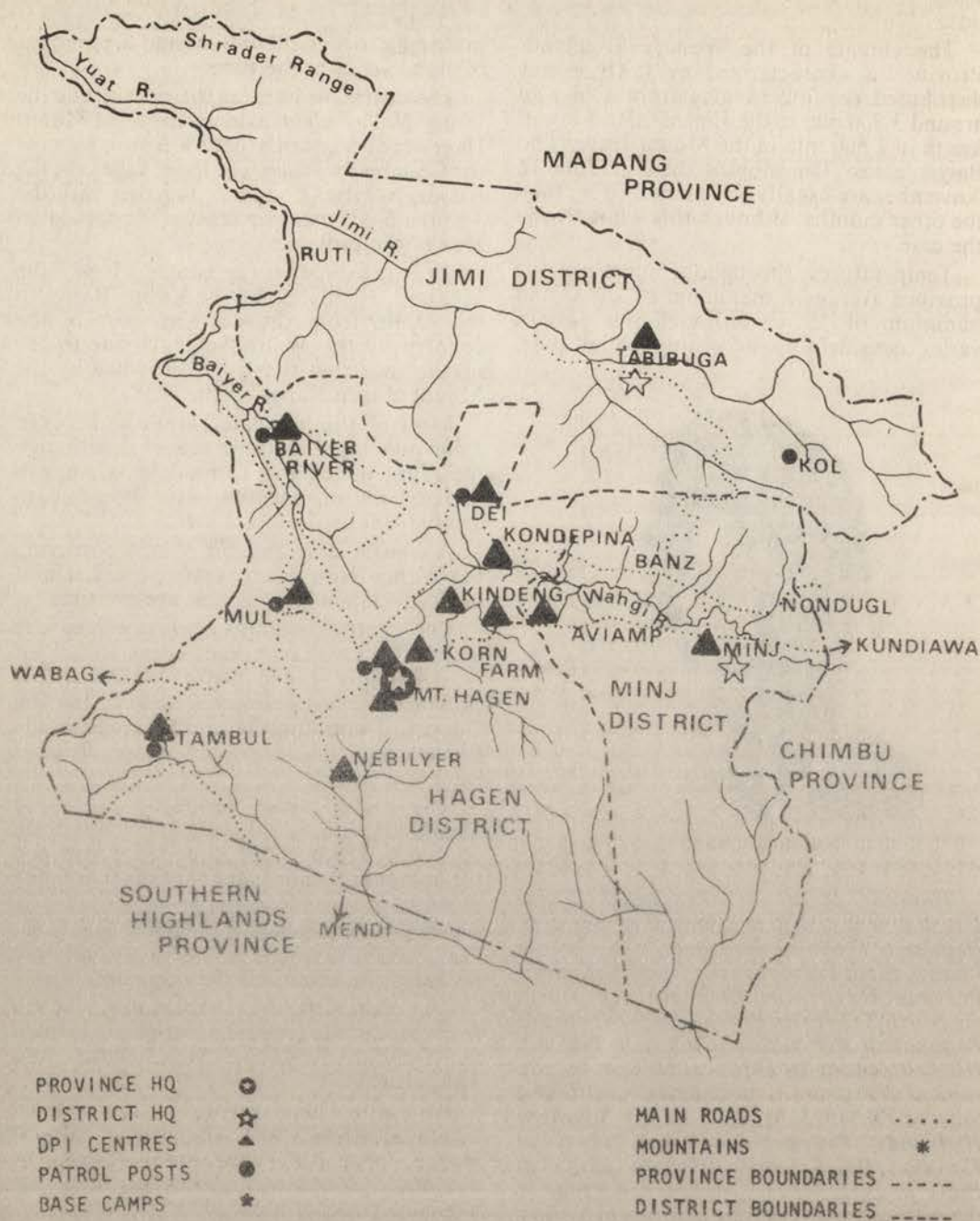
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Thomas Magei

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WESTERN HIGHLANDS PROVINCE



People

The total population of the province is about 204 000. The population is generally concentrated in the river valleys, the main population being located in the Wahgi, Nebilyer, Tambul and Baiyer valleys, and the upper Jimi area. There are three main languages, Medlpa, Tembuga, and Mid-Wahgi, with five other languages. Some minor language groups and hybrids between main language types are spoken throughout the area. Most people speak Pidgin with the exception of quite a few women and some of the older men.

Generally speaking absence of people from the village is not such a problem as it is in the less developed areas of the highlands such as Chimbu, Southern Highlands and Enga Provinces.

The traditional leadership structure revolves around "bigmen" in the different extended groups and clans. Public speaking ability and personal possessions such as pigs and coin are important in the leadership struggle.

The names of some important leaders are: Wamp Welya and Komp Dei (Hagen Mogi clan); Rumints and Pena Ou (Jiga clan); Tuman (Minj), Koyle, Wingui, Thomas Kavali (Jimi), Manembi (Kotna), Olik (Tega), Pung (Koibuga), Koim (Kuta), Pianalu (Baiyer River), Parua (Kotna), Maip (Muglamp), Mek Nugints (Mul) and Kaibelt Diria (Minj).

Two of the first prominent Hagen business leaders to emerge were Kup Ogut and Doa Mints. Kup was in the Legislative Council, a director of Hagen Coffee and the first of the Western Highlands people to be allocated a large holding on Madan subdivision. Doa, who died in 1975, had his large cattle, tea and coffee holdings converted to legal title. Paul Pora of Yamiga is on the board of directors of Air Nuigini as well as having a large trade store and approximately 250 ha of vegetables and cattle land.

Church leadership is significant in many areas, the main denominations represented being Roman Catholic, Lutheran, Nazarene and Anglican.

Several organizations based on self-help principles have sprung up within the province. These include: the Piblika Action Group based at Wurup near Mount Hagen, which is largely political; the Kopun Development Corporation formed by Thomas Kavali, MP,

in the Jimi area; the Minj-Jimi Development Authority based in the Mid-Wahgi-Jimi areas; the Wahgi Tualo based at Minj, and Yangpela Didiman which operates throughout the province. Associations such as the Western Highlands Cattlemen's Association, the Mid-Wahgi Cattlemen's Association, the Wahgi Blokman's Association, and the Iambuga Vegetable Co., all agriculturally biased, exist throughout the province.

Areas in the Jimi area still cling to primitive beliefs such as sorcery which is strongly feared throughout the Jimi area.

Strong feelings of nationalism are emerging throughout the province, particularly among the younger generation. These feelings manifest themselves in the desire to acquire expatriate plantations, and the formation of such organizations as the Minj Group who are developing Olubus village with a view to improving the social and economic conditions at village level.

The province is renowned for its tribal fighting, most of which springs from perennial land disputes such as that between the Jiga and Yamuga groups near Mount Hagen. Such disputes tie up large areas of potentially productive land and are accentuated in the Mount Hagen to Nebilyer and Baiyer areas.

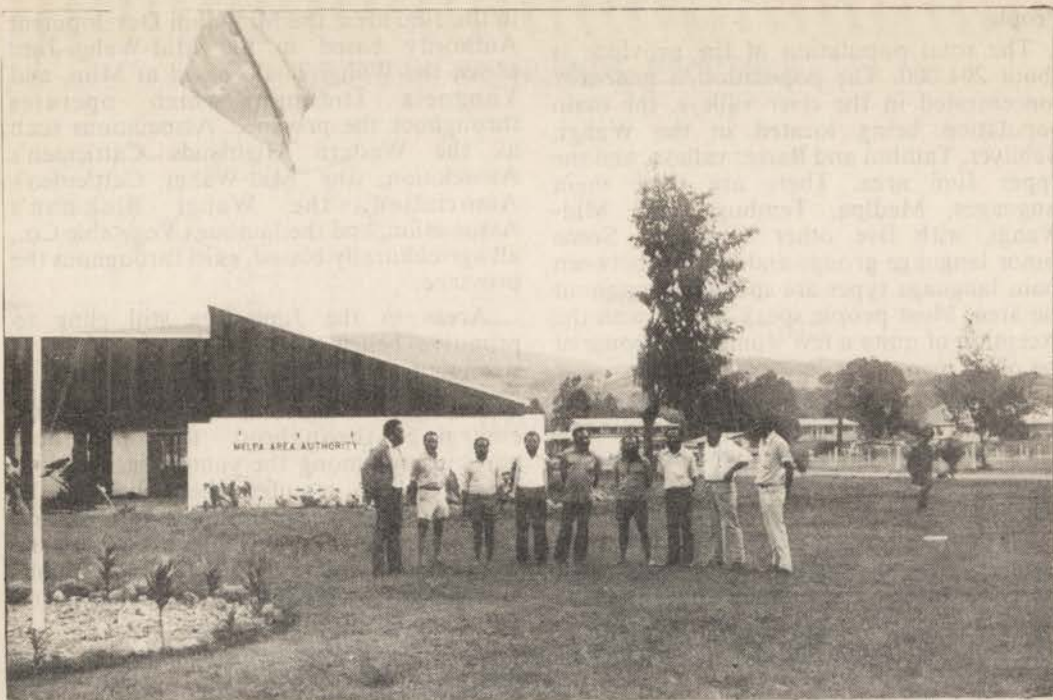
The province is well served by community schools, and has over 12 000 students attending 96 community schools, 1 teachers' college, 5 secondary schools and 1 technical college. Literacy programmes among older people are being carried out with reasonable success by mission groups.

There are five vocational centres which provide vocational training in agriculture, carpentry, mechanical skills and handicrafts.

At Korn Farm, near Mount Hagen, the Highlands Agricultural College has been established.

Yangpela Didiman is an active and successful organization which provides education and extension with a rural bias throughout the province. The aim of the organization is to achieve self-sufficiency in food and perhaps some cash income from the sale of surplus. The people in the Tambul and Wahgi areas are identified with this organization.

The staple food throughout the province is sweet potato, with various greens and local fruits making up the rest of the diet. Famine is



PRDO Thomas Magei with finance committee outside Area Authority Building.

rare in the province, and is usually caused by an extra-dry season when frosts are more frequent and insect build-up is accelerated.

The Jimi area is characterized by an extremely seasonal availability of food crops due to the traditional gardening method of the people.

Generally speaking, the major health problem throughout the province is malnutrition. This has been unrecognized by most authorities and most people throughout the province until very recent times. In the Jimi area, some 67 % of children attending clinics are undernourished. The province average is 24 % of all children attending clinics, obviously a severe problem. Many measures are available to combat malnutrition. However, the basic problem is that malnutrition is not accepted by the village people as being a problem, and an educational programme has been mounted in order to overcome this problem.

Political

All areas of the province are covered by local government councils.

The Mul, Dei and Baiyer Councils have given considerable assistance to the Department of Primary Industry in the provision of machinery and staff for agricultural projects.

Agricultural committees have been formed in most councils. Some of these are becoming successful as a means of communication with local people.

The Melpa Area Authority has given strong financial support to agricultural development throughout the province through grants and the purchase of machinery.

Members of the National Parliament are: Regional, Raphael Doa; Kompam-Baiyer, Traimya Kambipi; Jimi, Thomas Kaval; Dei, Parua Kuri; Mul, Mek Nugints; Hagen, Pena Ou; Wahgi, Kaibelt Diria OBE; Tambul Nebilyer, Koitago Mano.

Economy

Coffee is the major crop by far throughout the province. However, plantings are concentrated in the Mount Hagen and Wahgi areas. New plantings in the upper Jimi area are flourishing.

Tea is another important crop. Most smallholder tea is planted on land settlement schemes at Kindeng, Kondepina, Nondugl and Avi. Land rationalization schemes are important also.

Some pyrethrum is grown in the Tambul area, although the acreage continues to decrease slowly.

Fresh foods are shipped to Port Moresby, Lae and Wewak.

The cattle industry is fairly well established, both expatriate and local sectors of the community being well represented. Pigs and poultry projects are of small importance. Sheep were doing well at the Avi land settlement scheme but have now been repositioned at Goroka in line with national research programmes. Peanut planting is increasing.

Moves are being made in the Minj area to grow tobacco as a major commercial crop and assistance is being sought from W D & H O Wills (PNG) Ltd with the project.

The Department of Primary Industry has two research stations, at Tambul and Kuk. At Tambul the main work is investigation into vegetable varieties, the establishment of a seed potato scheme, and improved high-yielding pyrethrum, while Kuk is mainly concerned with the development of clonal tea varieties and vegetable research. The province also has access to specialist staff from the Highlands Agricultural College.

There are about 500 Papua New Guinean owned trade stores with an estimated turnover of K350 000 per annum.

Cottage industries include the manufacture of stone axes for the tourist trade and wool weaving.

There are numerous markets for buying and selling local produce.

There is a continuing increase in participation by Papua New Guineans in trucking activities and produce buying.

It is estimated that about 40 % of businesses in the province are Papua New Guinean owned.

There is no large-scale mining in the province. A small amount of alluvial gold and silver is produced by local miners from the Pogera River.

There are six land settlement schemes, at Wurup, Avi, Kindeng, Madan, Kondepina and Nondugl. The main activity on these schemes is tea with a little diversification to

coffee and market gardens.

AGRICULTURAL DEVELOPMENT PROGRAMME

Coffee

There are approximately 48 000 smallholder growers producing 8 000 tonnes per annum. The estimated average size of smallholder plots is 0.57 ha, with 1 396 trees, 8 % immature trees.

There are 45 plantations producing 5 000 tonnes from 2 500 ha.

There is increasing participation by Papua New Guineans in coffee buying.

In the past the Department put coffee extension work on a low priority as growers were familiar with correct cultural practices. Recent developments in the International Coffee Agreement indicate that the government should more actively promote the crop, to take advantage of higher prices and the suspension of quotas.

Current policy is to continue expansion in lesser developed areas and to consolidate and improve quality in the better developed areas.

In 1976-77 extension staff contact with growers will be increased by basing staff in the main growing areas. Staff will encourage farmers to maximize production.

Patrolling in remote areas (Jimi, Baiyer, Mul, Nebilyer) will be increased and nurseries will be established. New plantings of 100 ha will be made at Jimi and another 100 ha in other areas.

Nurseries will be established at Pugmi, Minj, Banz, Kambia and Nondugl.

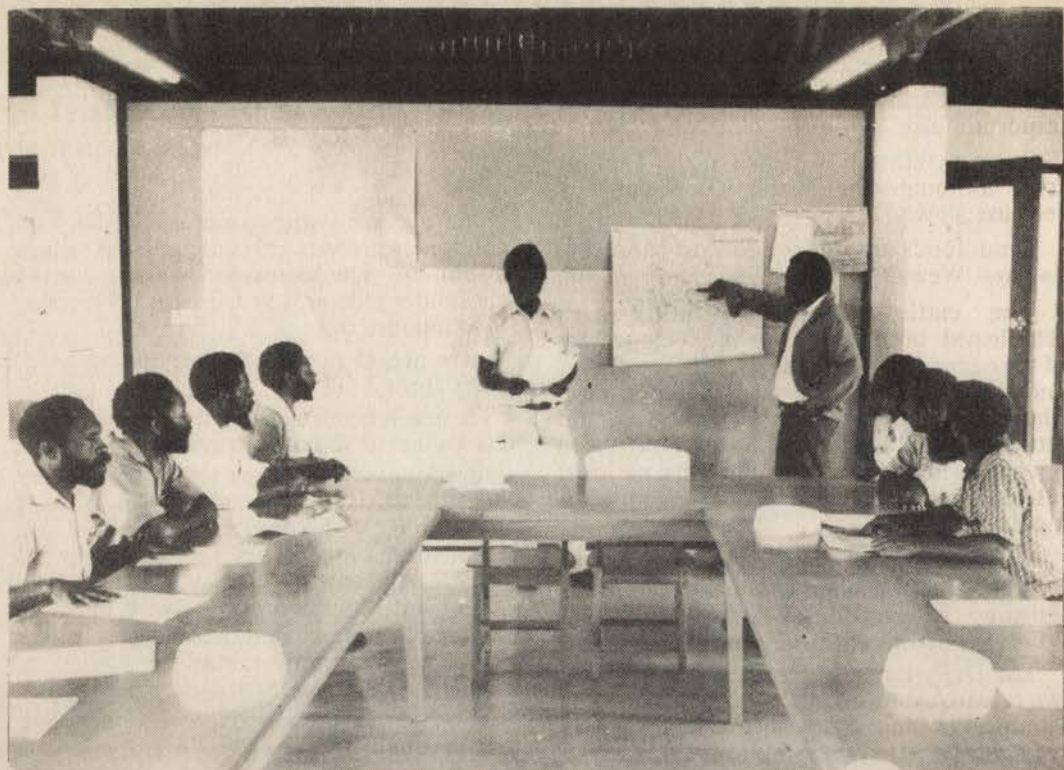
Eighty ha will be planted among 300 smallholders on all land settlement schemes—Kindeng, Avi, Madan, and Kondepina.

Farmers will be encouraged to combine coffee with other activities, e.g. tea and coffee, vegetables and coffee and, when possible, cattle and tea.

In 1977-78 it is anticipated that a central coffee mill will be established at Tabibuga to handle present parchment production. It is planned that the government will buy one of the best plantations in the Wahgi Valley to be used as a training centre for prospective local plantation managers and assistants.

Plantings in remote areas will continue, with 120 ha at Jimi and Baiyer River.

In 1978-79 the government will develop a



Thomas Magei presenting agricultural development programme to the Melpa Area Authority finance committee

plantation management training scheme. It will train 20 to 30 managers and assistants a year.

In 1979-80 possibly half of the plantations will be purchased by local people or companies.

Tea

There are 410 smallholder growers now harvesting tea, from 166 ha. The main areas are Minj, with 33 ha, all land settlement schemes (Kindeng, Kondepina, Nondugl and Avi) with 74 ha, and Wurup with 59 ha.

There are 100 growers with newly planted clonal tea. At Madan and Kindeng growers have started picking 10 ha.

Production by smallholders is 673 tonnes of green leaf per annum.

There are six companies with ten plantations, a total of 3 055 ha, producing 5 200 tonnes of black tea.

The attitude of the smallholders varies. The Chimbu farmers on the Nondugl land settlement scheme and the Wurup people on

their land rationalization scheme are very enthusiastic.

The Department of Primary Industry has arranged for sale of green leaf tea to factories in the area.

The current policy is to encourage replacement of seedling tea with clonal tea which it is expected will yield twice as much as the seedling tea.

The Department has clonal nurseries at Avi and Kindeng, which produced 300 000 cuttings per annum. The excess is sold to plantations.

In 1976-77 extension staff will encourage improved management on existing projects.

As seedling tea production declines farmers will replant with clonal material. About 200 blocks (20 ha) could be ready by late 1976.

In 1977-78 it is anticipated that soil fertility in presently high-yielding areas in Wurup (where production is 9 800 kg/ha, approximately twice African figures) could decline. Without fertilizers, yields would drop accordingly. If pruning and picking is well

managed this may not occur, but the possibility should be considered. The effect of tea-growing on the fertility of peat soils is also unknown.

Cattle

There are 1 178 head of cattle on 157 village cattle projects. Minj is the main area with 35 projects and 338 head. Mount Hagen has 67 projects and 453 head, and Kindeng land settlement scheme has 34 projects and 233 head.

There are approximately 1 000 head on plantations.

The Department of Primary Industry runs a major breeding station at Baiyer River running some 5 000 head of cattle.

Last year 200 ha on the forestry base at Kindeng were stocked with 150 head.

The annual turnoff through the Korn Farm abattoir is 323 from village cattle projects, and 1 163 from plantations. Abattoir turnoff figures are low as stock go to singings markets in the Western Highlands, Southern Highlands and Chimbu Provinces, where they get higher prices. Also plantation herds supply village projects with stock.

Village cattle project owners are keen but management is poor. The present natural increase is generally low, at 53 %. Some projects have no bulls.

In 1976-77 three short courses in management are to be held for all farmers at Baiyer River. It is hoped that natural increase will be improved to 60 %.

Improved pasture is to be established on all projects, at least 2 ha per project this year. (Last year 100 ha were improved mainly at Mul, where 50 ha were improved.)

Stocking of the Kindeng forestry base project will be completed with another 60 head.

Extension staff will ensure that there is adequate water supply on all projects, starting with Kindeng land settlement scheme.

New projects will be established at Kindeng (6), Mul (9) and Minj (15).

A slaughter slab may be established at Minj.

The Western Highlands Province Cattleman's Association was formed last year (1975). Extension staff will help the Association to develop a greater level of self-reliance, with greater involvement in stock transportation, supply of equipment, and

fencing material.

In 1977-78 six new projects will be established, with 200 head, mainly in the Mul area. Pastures will be improved and renovated by a further 2 ha per project.

In following years the programme will be mainly consolidation of existing projects. With natural increase of stock maintained at at least 60 %, and restocking the village projects, herds could be approximately 2 000 head on 250 projects by 1980-81.

With adequate slaughtering facilities and farmer education less stock will be slaughtered at singings and more will be marketed through abattoirs.

Estimated beef sales from village projects will be 66 tonnes per annum in 1979-80.

By 1980-81 it is anticipated that the Cattleman's Association will be managing most of the village cattle industry, with the government providing animal health services and research.

Subsistence and nutrition

Up till now there has been a general lack of awareness among government officers of nutritional problems.

The Provincial Nutrition Committee, with representatives from Primary Industry, Health, Central Planning Office and the Prime Minister's Department, was formed in 1975. The missions will also be asked to have a representative on the Committee.

A "malnutrition ward" demonstration garden has been established at Mount Hagen Hospital.

Legume seeds are being distributed by the nutritionist in the Jimi area.

Community schools are becoming more aware of and involved in the nutrition programme.

One of the problems is that farmers produce nutritious foods for sale rather than for home consumption. The 1976-77 programme includes a plan to educate government staff so that they can in turn advise the farmer, and to include this problem in the National Broadcasting Commission nutrition programme "Nek bilong Tarangau".

Nutrition staff from the Health Department will be asked to attend Department of Primary Industry conferences and seminars.

Farmers will be encouraged to produce indigenous green vegetables for sale rather

than the less nutritious European type green vegetables.

Extension staff will maintain a close watch on subsistence agriculture to anticipate and rectify food shortages.

Primary Industry and Health will develop nutrition gardens of 0.5 ha, for demonstration and distribution of planting material, at Minj, Wurup, Mugwump and Nogoba. Field staff will also collect samples of traditional food plants for analysis by the Department of Primary Industry headquarters, if possible.

In 1977-78 government officers will be encouraged to grow their own "backyard gardens" for both food and demonstration.

The number of demonstration gardens will be increased where required, possibly in the more remote areas.

The possibility of using small cultivating machines in commercial food gardens will be investigated.

In 1978-79 field staff will concentrate on promoting those traditional foods which have been found to have the best food value, with possible inclusion in menus at hotels and institutions.

The impact of the education programme on village families from education of school children will begin to be felt by 1980-81.

Pigs

Semi-commercial piggeries are established through all areas of the province, but concentrated in the Mount Hagen and Wahgi areas. In the Kindeng and Madan area there are an estimated 300 free-range pigs in the Wahgi swamp. At Minj 90 semi-intensive pig projects have been established with 460 head.

Generally speaking, Departmental policy is that intensive piggeries should not be established. This is because poor management and the high cost of feed generally make them unprofitable. Village pigs which are free-range, and thus have no feed or managerial problems, sell for a high price for singings.

In 1976-77 the Department will concentrate on developing low cost piggeries. Ten will be established in the Minj area and ten at Kindeng. These piggeries will not be financed by Development Bank loans. Where possible, free-range piggeries will be encouraged.

The Department will continue to investigate the possibilities for growing feeds locally—corn, soya bean, lupin, etc.

An investigation will be carried out into the possibility of development of intensive or semi-intensive piggeries close to town, to supply the urban demand for pork meat.

However, unless management and feeding problems are overcome there is little hope for expansion for pigs in the immediate future.

Poultry

There are at present four poultry projects on the Kindeng land settlement scheme, with 150 birds each, and three projects at Minj with 52 birds each. They are all free-range.

The Yangpela Didiman movement is having a lot of success in encouraging intensive poultry projects. Under the supervision of Yangpela Didiman extension staff, these projects are well managed with adequate feed.

In 1976-77 Department of Primary Industry staff will increase liaison with the Yangpela Didiman movement, to adopt a common approach to intensive poultry projects.

Sheep

The majority of sheep in the Western Highlands were held at the Highlands Agricultural College. These sheep have now been moved to an experimental project at Lac. Expatriate plantations in the province still hold a few sheep.

Further development depends on the results of the current experiment programmes being carried out in other provinces. If these programmes are successful it is proposed to establish one 40-ewe project at Minj and one 12-ewe project at Avi land settlement scheme, within 18 months. There will be two rams at Minj and one ram at Avi.

Pyrethrum

There are approximately 30 ha of pyrethrum producing 16 tonnes of dried flowers per annum. The area of pyrethrum has shown a continuous decrease over recent years. The Department is attempting to maintain the current area, and there will be more extension work to promote further plantings at higher altitudes.

In 1976-77 we hope to maintain village plantings at the existing level and introduce a further 10 ha.

Four areas of 5 ha each will be established at Tsinsibai with a new high-yielding variety.



Melpa Area Authority members discuss vegetable seedling production with Thomas Magei.

This high-yielding variety will be supplied to farmers for replanting, and in 1977-78 there may be a doubling in the Tambul production due to harvesting of the improved variety plantings.

Land Rationalization and Land Settlement Schemes

Land rationalization is the organized subdivision of traditionally owned land where the people allocate blocks to clan members. This began in the Wahgi Valley in 1963 at Wurup. Sometimes legal title is obtained.

There are a total of 210 blocks at 11 centres, mainly in the Wahgi Valley. Block sizes average 4 ha and total involved is approximately 1 000 ha.

Land settlement, or the subdivision of government-owned land, began in about 1964 at Nondugl. Blocks are made available to local people as well as people from other provinces such as Chimbu.

There are now 550 blocks on eight separate areas totalling 2 300 ha. This includes two schemes, at Pugmi and Ambra, totalling 350 ha which were subdivided for development as cattle schemes. These blocks range from 12 ha to 50 ha. All other land settlement blocks average about 4 ha, and are planted with mainly tea, coffee or vegetables.

In 1976-77 47 new blocks at Mobori and Ambra will be investigated.

The possibility of drainage of Tsinsibai swamp will be investigated, and a land utilization plan will be investigated.

On South Swamp, drainage of 121 ha of forestry land will be commenced. Extension contact will be made with squatters on South Swamp. Pig ground will be surrendered to the government to enable the construction of levees.

Cabinet has now approved investigations into the development of the Wahgi swampland. Foreign aid will be sought for the initial study, and foreign funds will be needed to provide machinery and skills for the development. Swamp reclamation will provide land for forestry development and possibly smallholder blocks for tea planting.

Avocado and citrus

There are 6 ha of citrus trees and 3 ha of avocado trees established. These are high quality grafted varieties.

In 1976-77 in-service training courses will be run to educate staff in avocado and citrus-growing, and in bud-grafting techniques.

Seedling nurseries will be established at Baiyer River, Nebilyer, Jimi River and Wahgi.

In 1977-78 the area planted to grafted trees will be increased to 16 ha of citrus and 6 ha of avocado. Plantings will be increased annually to a planned 50 ha of citrus and 25 ha of avocado in 1980-81.

Peanuts and beans

The area of peanuts is estimated at 220 ha, in food gardens. Soya bean seed and other legume seeds have been distributed in the Jimi area.

People in the Dei Council and Muglamp areas have shown great interest.

In 1976-77 seed propagation plots will be established at all base camps for soya bean, peanuts, peas, winged bean, broad beans and lupins (as stock feed).

The Department will investigate the use of small hand tools.

Plantings of peanuts will be increased to 260 ha. Three 5 ha plots will be established at Minj. Village people will be encouraged to make better use of peanuts as a protein supplement in their diet. A programme to encourage farmers to cook and eat peanuts rather than just sell them in the market will be commenced.

Cardamoms

There are 1.2 ha of cardamoms planted in Jimi villages.

In 1976-77 cardamom nurseries with a planting potential of 17.6 ha are planned in the Wahgi land settlement scheme and the Jimi area.

In-service training for staff will be carried out over the next two years.

In 1977-78 the area planted to cardamoms will be increased to 20 ha and by 1980 to 100 ha.

Chillies

Chillies are still a "backyard crop".

Promotion of chillies in the Jimi area will continue in 1976-77. Production is expected to increase to 5 tonnes.

With continued expansion, production in 1977-78 is expected to be 10 tonnes.

Tobacco

Fire-cured tobacco is sold at local markets. Private tobacco companies provide supervision of the flue-cured tobacco production. Possible development of the tobacco industry, depending on attitude of

the people, the companies and world prices is expected in 1978-79.

Fresh foods

Since the start of the fresh food project in early 1974, production of fresh foods for sale has steadily increased. About one-third of production is sold locally, in local markets and to institutions in Mount Hagen. The remainder of the produce is shipped to Port Moresby, Lae and Wewak.

Last year it was estimated that approximately 600 tonnes of staple food were sold at the Mount Hagen town market, and 1 200 tonnes at local markets at Minj, Banz, Baiyer, Mul, Dei and roadside markets.

Six hundred and fifty tonnes (excluding potatoes) were air freighted to Port Moresby and Wewak. Thirty tonnes of potatoes were sent to Lae.

Production of the higher-priced vegetables such as cauliflower, broccoli and brussels sprouts is encouraged, while at the same time planting of vegetables such as beans and cabbages, which are easy to grow, and usually oversupplied, is being discouraged. People are discouraged from growing greens for the fresh food market as they grow easily on the coast.

Quotas have now been set for production of some vegetables, and small lots are being discouraged, as sales of for example 100 kg brussels sprouts are difficult to organize.

A general problem is maintaining a regular supply from growers.

In 1976-77 the Department will ensure that the demand from local institutions is satisfied before export requirements for other provinces. Extension officers will maintain a watch over all local markets to ensure that adequate fresh foods are available at all centres. An adequate supply of fresh foods locally will replace imported fruits and vegetables. We will investigate the possibility of a need to regulate the price paid by the consumer to the grower.

The supply to the Wewak market will be developed, and when this market is satisfied, the supply to the Port Moresby market will be improved. Cooler trucks may be introduced for transport of vegetables to Lae.

The Department will maintain seed distribution to all centres.

In 1977-78 the demand from other provinces for vegetables will decrease as coastal people produce more of their own

food. Cabbages and other leafy European vegetables could be cut down. Exceptions could be potatoes and carrots, which do not grow well in the lowlands.

In 1978-79 maize meal could possibly be encouraged as a replacement for wheat flour in making bread.

Bee-keeping

There are now about 50 hives in many locations, and commercial honey production shows good possibilities.

Bee-keeping is a new industry for Papua New Guinea. At the moment the programme is still in the trial stage. The number of apiary sites has caused transport to be a problem.

An overseas expert is needed to advise the industry, and train Papua New Guineans.

If funds, transport and expert advice are available, expansion to 300 hives could take place in the Wahgi area in 1976-77. This would provide a training centre for intending beekeepers, and a source of bees for them. Bee-keeping could be taught at Highlands Agricultural College and some schools.

Research will continue, including research into pollen production.

In 1978-79 a co-operative for local beekeepers is planned, including facilities for a central extracting system. Markets will be investigated. Income from the central apiary would be used to expand it with a view to its becoming economically independent.

The co-operative will develop in 1979-80 to handle bulk equipment purchases, honey extraction and sales. The co-operative should be self-supporting by 1980-81, employing a manager and staff and providing members with services as outlined above.

Fish

The objective of this programme over the last 10 to 15 years has been to introduce fish to rivers and ponds to supplement the subsistence diet.

Carp have been of little success in ponds but there are many in the Wahgi backwaters.

Trout have been released in ten rivers since

1967. They have shown good growth rates of 1 to 2 kg in four years, and they are breeding.

In many rivers the fish population has been wiped out by poisoning with derris juice, by catching of immature fish, and by catching during the breeding season. There are very few trout now in the Kumdi and Gumants Rivers due to poisoning. The Minj River was poisoned in 1974, so restocking has been done.

Some Hagen and Tambul leaders now enforce a closed breeding season of one year.

Ample supplies of trout fingerlings are available from the Mendi government hatchery.

In 1976-77 local government councils are to introduce by-laws to protect the immature and breeding fish, e.g. fishing prohibition for one year after release of fingerlings, and prohibition of fishing for three months in upper reaches of rivers where trout are spawning. Councils will police these laws.

The Department will restock rivers with trout where fish protection laws are operating.

An intensive education programme will be commenced, aimed at making people aware of the advantages of letting the fish grow and breed.

Mixed success is expected from the council legislation, resulting in the fish population of some rivers being completely depleted.

If control of fishing is not possible, then local government councils will set up a central trout hatchery in 1978-79 to supply all rivers with adequate numbers of fingerlings each year.

By 1980-81 there is the possibility of development of a tourist trout-fishing industry. Trout will also by then be regarded as an important cash crop.

Wildlife

The only wildlife activities in the province are the bird of paradise sanctuaries at Baiyer River and Nondugl. They both play a very significant part in the highlands tourist industry.