REPORT ON A STUDY OF THE KURIVA SUBDIVISION, CENTRAL DISTRICT, 1970-72

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ABSTRACT

The results of two field surveys and air photo interpretation of the Kuriva Subdivision, Central District, show that clearing and planting of food crops is proceeding at a satisfactory rate.

The initial slowness in establishing settlers on the blocks could have been avoided by greater inter-departmental and inter-agency collaboration, and by more imaginative methods of team-clearing in the early stages.

THE limited aim of this paper is to make available data concerning the progress of settlement on the Kuriva River Subdivision obtained from surveys made in 1970 and 1971-72. The project originated as part of a larger study of the socio-economic effects of the Hiritano Highway. Two intensive surveys of the Kuriva Subdivision were carried out by students from the University of Papua New Guinea, the first in July 1970 by Joe Nalapan and Arnold Nindiga, and the second in December 1971-January 1972 by Joe Nalapan and Ralph Wari.

The Kuriva Subdivision occupies about 1,650 acres (670 ha.) of land between the Kuriva and Veimauri Rivers about 50 miles north-west of Port Moresby and about 10 miles east of Galley Reach in the Central District of Papua New Guinea. Inland it is adjacent to Administration owned land known as the Trans-Vanapa Timber Block, while on the south it is bordered by Boike Swamp, of which the part adjacent to the southern border of the subdivision is also Administration owned. The subdivision is crossed by the road now known as the Hiritano Highway which will link Port Moresby with Bereina and could continue eventually to Lae. The Kuriva River Bridge was completed in August 1970 and the section of road between the Kuriva and Veimauri Rivers in February 1972. This meant that the Kuriva subdivision had excellent access to Port Moresby by 1972.

The land of the subdivision is part of a purchase of some 3,200 acres made by the Administration from people of the Doura group from Douramoko, Vasagabila and Rabisi villages for £3,200 ($6,400) in 1959 (Lands Department Purchase DA2308). The area was covered by a timber lease, and was milled of its useful timber until September 1965 (Lands Department File 64/214g).

In accord with the Administration policy of making land available to smallholders with the aim of increasing the food supply to Port Moresby, approval for subdivision was granted by the Land Development Board in 1964 and survey was carried out during 1965 and 1966 (Lands Department File 64/214g). The first blocks were advertised for leasing in April 1967, others in May and October of 1968, others again in October 1970, while a few remained for advertisement in 1972.

There was keen competition for the blocks at every release, applicants outnumbering by several times the numbers of blocks available. Applicants included many indigenous people, but a number were also received from expatriate residents, some of whom were married to indigenous wives, and others who had existing business interests in the area. Most applicants intended garden production but some early enquiries included proposals for peanut growing, citrus production, poultry raising and a "butterfly factory".

Figure 1 shows the layout of the subdivision as at July 1971. There were at that date 55 blocks of which 1 was designated reserve

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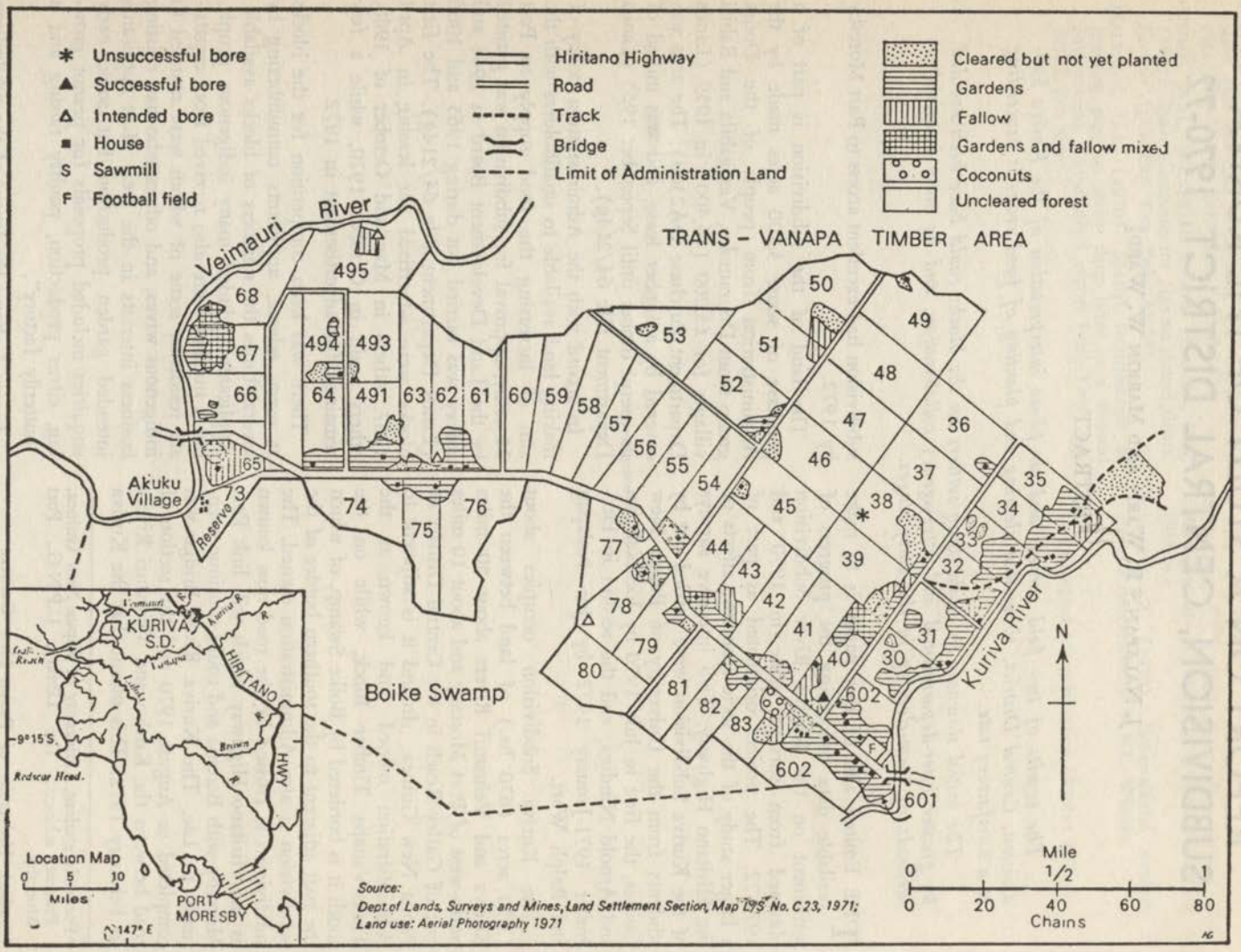

Figure 1. The subdivision as at July 1971

(intended for later development for community purposes of a school, recreation area and commercial leases) and 7 had yet to be advertised. By 1971, 47 blocks had been allocated, 9 in 1967, 6 in 1968, 23 in 1969 and 9 in 1970. However 7 of the allocated blocks had by 1971 either been suspended, forfeited, or were under recommendation of forfeiture, and would be readvertised for a second allocation, leaving 40 actually allocated. One blockholder held 4 blocks (2 agricultural and 2 associated with the sawmill), and four other blockholders had 2 (usually adjacent) blocks each, so that there were only thirty-three blockholders.

The size of 49 blocks for which this data is available ranges from 20-67 acres (8.09-27.13 ha.); the exceptional 67-acre block, which was held on a special 20-year lease, was already occupied by a sawmill and associated structures; without it the range is 20-50 acres (8.09-20.4 ha.); the mean size of block is 33.8 acres (13.68 ha.); the modal size 40 acres (16.19 ha.) and the median size 32 acres (12.96 ha.). The choice of size of the blocks was governed by the intended use of the blocks which in most cases would be extensive vegetable cultivation on a rotational basis, and within the capability of a family unit to manage. Hence a minimum of 20 acres of arable land was the basis on which sizes were determined. Only about 10 blocks fronting the Kuriva and Veimauri contain alluvial flats suitable for intensive cultivation; most are of not particularly good agricultural potential because of poor soil, stoniness or steep topography, and this probably accounts for the relatively large size finally used.

All agricultural leases are for 99 years, and the salient conditions of the Improvement Covenants for the leases of most blocks are:—

> Of the land suitable for cultivation the following proportions shall be planted in a good and husbandlike manner with a crop or crops of economic value, which shall be harvested regularly in accordance with sound commercial practice:—
>
> One-fifth in the first period of five years of the term, two-fifths in the first period of ten years of the term, three-fifths in the first period of 15 years of the term, four-fifths in the first period of 20 years of the term, and during the remainder of the term four-fifths of the land so suitable shall be kept so planted. Provided always that if at the end of the first 2 years of the term the lessee has not cleared and prepared for planting or planted a minimum area of one-tenth of the land so suited the Land Board may recommend the Administrator to forfeit the lease. . .

For blocks suitable for subsistence cultivation only the Improvement Covenant reads in part:—

> One-tenth (of the land suitable for cultivation shall be cleared and planted) in the first 2 years of the term; one-fifth in the first 5 years of the term; and during the remainder of the term one-fifth of the land so suitable shall be kept so planted . . .

These periods appear to imply anticipated rotation cycles of five to ten years, which does not seem unrealistic for the type of country and in this location.

The Physical Environment

The Kuriva Subdivision lies at the southern edge of the foothills of the Mount Cameron Ranges. The land is mainly gently to steeply undulating except for two narrow river flats along the Kuriva and Veimauri Rivers and the Boike swamp which enters the southern part of the area. Several small streams are tributary to the Kuriva River or drain to the Boike swamp. The Kuriva River is stagnant at the bridge, but is flowing less than one mile above it. The area falls within the Rubberlands land system which is described as lower forested ranges on red-weathering volcanic rocks; the long narrow ridges have bouldery slopes up to 20°, rarely to 35°, and up to 300 yards long, locally passing westward into low branching ridges less than 50 ft high (CSIRO 1965:49).

The area is generally forested with *Sterculia, Spondias, Pterogota* and *Pterocymbium* spp. on the lower ridges. In the northwest there are about 200 acres of secondary growth, while sago (*Metroxylon* spp.) occurs in the Boike swamp and *Planchonia* and *Nauclea* spp. with an understory of *Kleinhovia* around its edges (Soil Survey Report—West Kuriva Block, 31.3.1960:1).

2. Soils information in this and succeeding paragraphs is drawn from Soil Survey Report, West Kuriva Block, 31.3.1960.

Soils[2] are immature and have developed mainly from tuffaceous parent material. A large proportion of the area has a basalt boulder phase. The location of the three main types and their subdivisions is shown in *Figure* 2. Alluvial and light textured alluvial soils occupy 414 soils, made up of alluvial loams, clay loams acres along the Kuriva and Veimauri Rivers banks, and are well drained soils supporting light rain forest vegetation. They should be suitable for tree crops and gardens.

The soils of the undulating areas are shallow and immature. Boulder-strewn brown, light yellow brown and red brown sandy loams occupy 1,580 acres and support a moderately dense forest. Most of this area is unsuitable for tree crops, but could support subsistence gardening. The soils are shallow and stony and likely to experience water shortages in the dry season. There are about 402 acres of similar soils having a surface or subsurface gravel layer which are too gravelly for good crop production and which will dry out very readily. A further 188 acres have alluvial soils, predominantly brown loams. They are well drained and support light rain forest. They should be suited to subsistence cropping and tree crops, but their fertility is questionable.

The remaining soils are swamp soils or medium to poorly drained clay loams. The swamp soils proper occupy about 505 acres of Boike swamp, support swamp forest, sago (*Metroxylon* spp.) and geregere (*Pandanus odoratissimus*) and have little or no agricultural potential. Medium drained clay loams support a light vegetation on some 54 acres near the swamp. They could possibly be used for subsistence cropping but their potential is poor. The poorly drained clay loams occupy about 47 acres on the fringe of the swamp and have little or no potential.

The soils situation generally, then, is a discouraging one, with only some 400 acres out of the 3,200 acres of the original block having reasonably good agricultural potential.

Climatically the area falls into a border zone between the low rainfall of the coastal plains and the high rainfall of the main ranges of the interior. The nearest stations are Veimauri Estate some 4 miles west (which is reported to have an annual rainfall of 90 inches, with variation between 50 and 100 inches) and Brown River Forest Station some 15 miles to the southeast (which had an annual average rainfall over the last four years of 66 inches). The area falls within the zone experiencing 50-60 inches on Fitzpatrick's map (CSIRO, 1965:88) and it seems likely that it may receive 60-80 inches, owing to its closeness to the mountains.

The most significant feature of the climate of the area is a strongly marked dry season between April and November. There is likely to be a high variability of rainfall both monthly and annually, and rainless spells of 5-10 days in the wet season and of whole months during the dry season can be expected (CSIRO, 1965:90). These facts, coupled with the likely tendency of the gravelly and bouldery soils to dry out rapidly, indicate a likely water shortage especially during the dry season, hence irrigation may well be required. One block holder adjacent to the Kuriva River does intend to use water from this river for crop irrigation. Several bores were sunk on other blocks during 1971 some of which were successful and some not (see *Figure* 1), (District Agric. Office, File No. 3.2.4.2).

In common with nearby lowland areas mean temperature variation is relatively low, for Port Moresby ranging from approximately 77.5° F (25.3° C) in August to 83° F (28.3° C) in December (CSIRO, 1965:92). At all times temperatures are suitable for plant growth and there is no frost risk. Mean relative humidity is likely to be high throughout the year, and cloudiness, which is higher in the afternoons and between the months of May and September, is likely to be higher in this inland situation near the main ranges than in Port Moresby.

The Settlers

By 1971 there were 33 blockholders, one of which was the Catholic mission (and by 1973 housed a boys' town) and is excluded from further analysis, leaving 32 blockholders, some of whom held their blocks jointly with wives or other relatives. Of these 19 were identifiable as indigenous people, 2 were West Irianese, 6 were known to come from mixed race families, and 5 were expatriates (3 Australians, 2 from Europe), at least 4 of whom had indigenous wives.

Excluding the 5 expatriates information is available on the place of origin of 24 of the remaining settlers.[3] Thirteen of them came from Central District, and the majority of these

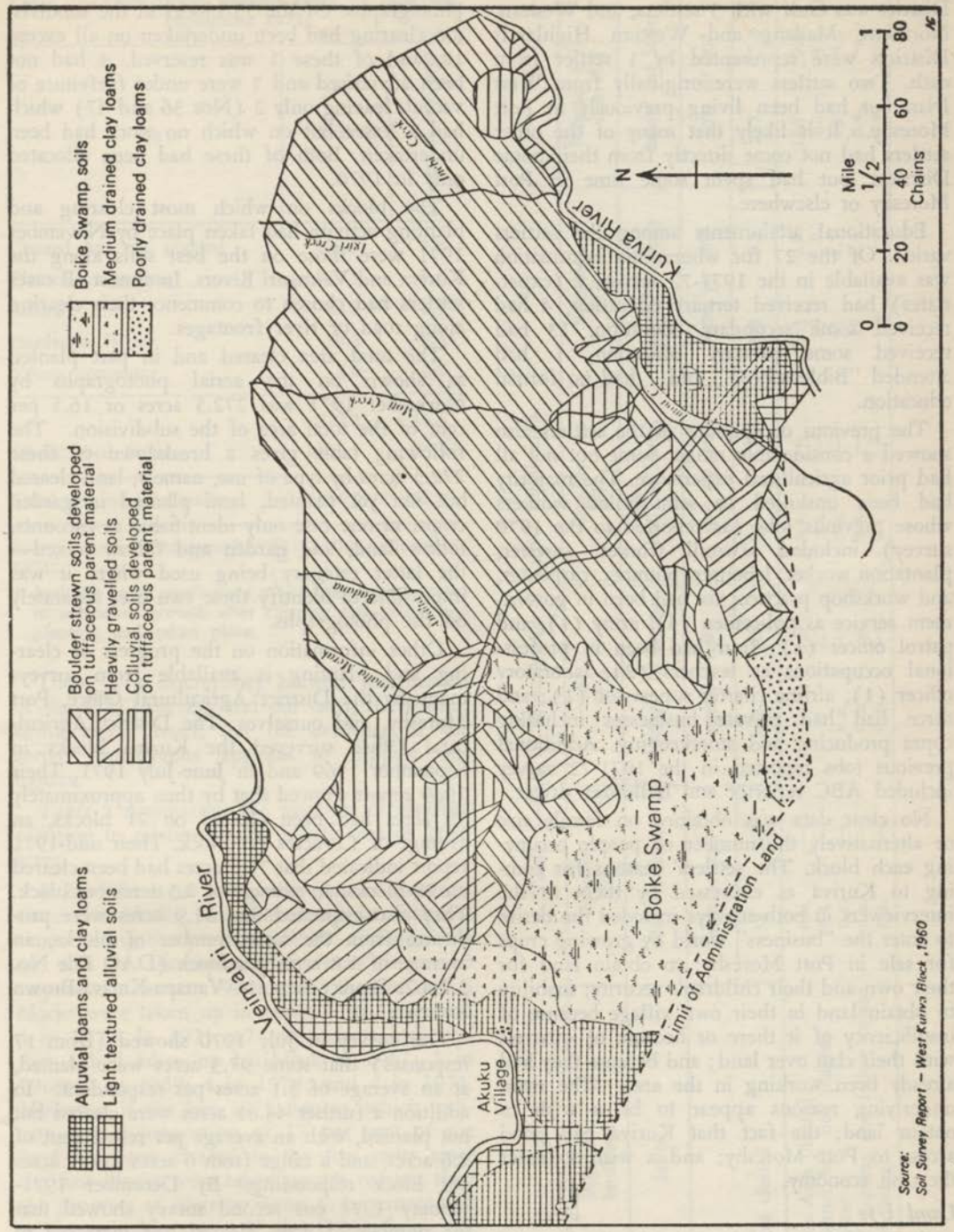

***Figure* 2. The location of the main soil types**

from relatively nearby areas such as villages or plantations in eastern parts of Bereina subdistrict, 2 from Tapini subdistrict and 2 from Rigo subdistrict. The next best-represented

District was Gulf with 5 settlers, and Western, Northern, Madang and Western Highlands Districts were represented by 1 settler from each. Two settlers were originally from West Irian but had been living previously in Port Moresby. It is likely that many of the other settlers had not come directly from their home Districts, but had spent some time in Port Moresby or elsewhere.

Educational attainments among the settlers varied. Of the 27 for whom this information was available in the 1971-72 survey, 2 (expatriates) had received tertiary education, 4 had received some secondary education, 13 had received some primary education, 1 had attended "Bible school", and 7 had no formal education.

The previous occupations of the settlers also showed a considerable range. Some but not all had prior agricultural experience. The majority had been unskilled or semi-skilled workers whose previous jobs (as reported to the 1970 survey) included sawmill worker, forester, plantation worker, labourer, plumber, carpenter, and workshop practice; six had been in government service as policemen (4), army (1), and patrol officer (1); four had been in professional occupations as teachers (2), laboratory officer (1), airline charter supervisor (1); and three had had private businesses including copra producing and storekeeping. Additional previous jobs reported in the 1971-72 survey included ABC reporter and bulldozer driver.

No clear data was obtained on family size or alternatively the number of people occupying each block. The settlers' reasons for coming to Kuriva as expressed by them to the interviewers in both surveys included the desire to enter the "business" world by growing crops for sale in Port Moresby; to obtain land for their own and their children's security; inability to obtain land in their own village because of insufficiency of it there or because of quarrels with their clan over land; and because they had already been working in the area. The main underlying reasons appear to be a wish to obtain land; the fact that Kuriva had good access to Port Moresby; and a wish to enter the cash economy.

Land Use

Figure 1 shows land use in the Kuriva subdivision at November 1971 based on aerial photographs. Of the 55 blocks in the subdivision clearing had been undertaken on all except 12, and of these 1 was reserved, 4 had not been advertised and 5 were under forfeiture or vacant, leaving only 2 (Nos 36 and 47) which had a lessee but on which no work had been undertaken. Both of these had been allocated only in 1970.

The blocks on which most clearing and planting activity had taken place by November 1971 were those on the best soils along the Kuriva and Veimauri Rivers. In almost all cases settlers had chosen to commence their clearing along road or river frontages.

The total area cleared and in part planted as shown on the aerial photographs by November 1971 was 272.5 acres or 16.5 per cent of the total area of the subdivision. The following table gives a breakdown of these 272.5 acres by type of use, namely, land cleared but not yet planted, land planted in garden crops, in one case only identifiable as cocounts, fallow land, and garden and fallow mixed—the latter category being used where it was impossible to identify these two uses separately on the photographs.

Other information on the progress of clearing and planting is available from surveys made by the District Agricultural Office, Port Moresby, and ourselves. The District Agricultural Office surveyed the Kuriva blocks in September 1969 and in June-July 1971. Their 1969 report showed that by then approximately 38 acres had been cleared on 21 blocks, an average of 1.8 acres per block. Their mid-1971 report indicated that 71.3 acres had been cleared on 28 blocks, an average of 2.5 acres per block. They also estimated that 51.9 acres were producing from the same number of blocks, an average of 1.8 acres per block (DAO File No. 3.2.4.2. Project Report—Vanapa-Kuriva-Brown River).

Our survey in July 1970 showed (from 17 responses) that some 97.3 acres were planted, at an average of 5.1 acres per respondent. In addition a further 44.85 acres were cleared but not planted, with an average per respondent of 2.6 acres, and a range from 6 acres to 0.1 acres per block responding. By December 1971-January 1972 our second survey showed that the number of acres cleared had increased to 287, of which 156 acres were planted; 62 acres were cleared but not planted; and 69 acres were cleared and fallow.

3. Obtained by interview in 1971-72.

Table 1—Areas under various types of land use, November 1971

Use	Acres	Per cent of total area
Cleared but not planted	29.3	1.8
Planted in gardens	159.3	9.6
Fallow*	40.7	2.5
Garden & fallow	39.2	2.4
Young coconuts	4.0	0.3
	272.5	16.6
Undisturbed forest	1383.5	83.4
Total area of subdivision	1656.0	100.0

Source: Aerial Photography, (1:12,000), November 1971.

* Includes some small areas which may have reverted to secondary growth after clearing and before any planting had taken place.

There is a discrepancy between the results of the DAO surveys and our own, the former being much lower, but the evidence of the aerial photographs appears to support our figures.

Table 2 summarises the progress of clearing planting in relation to the whole area of 1656 acres.

It is difficult to assess this rate of progress since the blocks were taken up at different times during the period 1967-71, and our data on this is incomplete. Answers from 13 respondents in our 1970 survey showed that 3 blocks were taken up in 1967; 6 in 1969; and 4 in 1970. In 1971, 17 respondents indicated that 1 had taken up his block in 1967; 1 in 1968; 7 in 1969; 4 in 1970; and 4 in 1971. However, if the late 1971 figures, which indicate that a proportion of 17 per cent of the land has been cleared in the five years since the first blocks were taken up are correct, then the progress of clearing seems to be proceeding at a reasonable rate. If the DAO figure for mid-1971 of 4 per cent cleared to that date is taken, then progress would appear to be very slow indeed.

Table 2—Rate of development of Kuriva subdivision

Stage of Development	September 1969		July 1970		June-July 1971		November 1971		December 1971—June 1972	
Source	(DAO 1st Survey)		(Authors' 1st Survey		(DAO 2nd Survey)		Aerial Photography		Authors' 2nd Survey	
	acres	per cent	acres	per cent	acres	per cent	acres	per cent	acres	per cent
Total area cleared	38	2.3	142	8.6	71	4.3	273	16.5	287	17.3
Of which Area planted	n.a.	—	97	5.9	n.a.	—	163	9.9	156	9.4
Area cleared but not planted	n.a.	—	45	2.7	n.a.	—	29	1.8	62	3.7
Area fallow	n.a.	—	n.a.	—	n.a.	—	41	2.5	69	4.2
Area of gardens and fallow mixed	n.a.	—	n.a.	—	n.a.	—	39	2.4	n.a.	—
Area producing	n.a.	—	n.a.	—	52	3.1	n.a.	—	n.a.	—

Crops

A wide range of tropical fruit and vegetable has been planted by the settlers on the Kuriva blocks, prominent among them being the relatively quick maturing staple starches of bananas, sweet potatoes, corn, yams, taro and tapioca. *Table* 3 lists the number of plants of each species, as counted in our two surveys.

As would be expected the main crop combination on the Kuriva sudbivision (namely bananas, sweet potato, yams, corn, taro and tapioca) reflects that of the surrounding areas. The area lies at the northwest border of the area of banana-yam-sweet potato combination as shown by Lea and Ward (1970:57). These staples are supplemented by a wide range of fruits and vegetables among which papaw, pineapple, sugar cane, peanuts and cucurbits are significant. The long-term tree crops which have been planted are mainly coconuts, citrus and betel nut. A ready market exists in Port Moresby for the produce of all these crops sold fresh.

Livestock

Table 4 shows the numbers of livestock at the time of our surveys.

Fowls are the most numerous, and are a potential source of income for settlers though no sales of eggs or birds are yet reported. Several settlers expressed interest in building up their numbers of pigs and fowls for future income.

Housing

At the time of our second survey there was a total of 48 houses on the blocks, of which

Table 3—Crops planted, 1970 and 1971-72

Crop	Number 1970		Number 1971-1972	
	Mature	Immature	Mature	Immature
Banana (*Musa* spp.)	1971	1539	2898	6366
Sweet Potato (*Ipomea batatas*)	9307	2178	5559	11733
Corn (*Zea mays*)	440	463	5214	10677
Yams (*Dioscorea alata and D. esculenta*)	92	73	269	3219
Taro (*Colocasia esculenta and Xanthosoma*)	477	908	1028	3276
Tapioca (*Manihot utilissima*)	884	236	450	1114
Papaw (*Carica papaya*)	1411	27	578	858
Pineapples (*Ananas comosus*)	10	480	132	1353
Sugar cane (*Saccharum officinarum*)	388	135	547	1068
Peanuts (*Arachis hypogaea*)	60	79	—	1887
Water melon (*Colocynthis citrullus*)	—	26	756	325
Pumpkin (*Cucurbita* sp.)	71	6	51	126
Cucumber (*Cucumis sativis*)	—	2	23	123
Apica (*Hibiscus manihot*)	58	47	139	297
Beans	17	—	152	138
Cabbage (*Brassica oleracea*)	15	5	—	57
Onion (*Allium cepa*)	170	—	—	198
Tomato (*Lycopersicum lycopersicum*)	41	—	—	20
Egg plant (*Solanum melongana*)	—	—	185	40
Chili (*Capsicum* sp.)	—	—	57	50
Pit-pit (*Saccharum edule*)	15	15	—	—
Ginger (*Zingiber officinale*)	—	—	60	—
Malayan apples (*Eugenia malaccensis*)	—	3	—	9
Custard apples (*Annona squarosa*)	—	—	4	—
Copsicum (*Capsicum* sp.)	—	—	18	—
Passion fruit (*Passiflora* sp.)	—	1	2	10
Grenadilla (*Passiflora* sp.)	—	—	2	—
Rice (*oryza sativa*)	—	5	—	—
Coconut (*Cocos nucifera*)	—	555	1	1143
Citrus (*Citrus* sp.)	—	77	75	817
Betel nut (*Areca catechu*)	—	42	—	1505
Mango (*Mangifera indica*)	—	1	—	42
Bread fruit (*Artocarpus altilus*)	—	—	—	13
Castle nut (?)	—	1	—	—
Tobacco (*Nicotiana tabacum*)	10	9	25	—
Sorghum (*Sorghum vulgare*)	6	—	—	—

Source: Surveys.

Table 4—Livestock, 1970 and 1971-72

Animal	Number 1970		Number 1971-72	
	Mature	Immature	Mature	Immature
Pigs	—	5	13	13
Fowls	10	—	150	900
Ducks	—	—	30	36
Cassowaries	—	—	—	2

Source: Surveys.

21 were entirely of bush materials; 14 of sawn timber with an iron roof; 7 of bush materials with an iron roof; and 6 were incomplete. Many settlers first built a house of bush materials and were later replacing this with a more permanent structure, utilising the sawn timber available from the nearby sawmill. This accounts for the two houses on a single block shown in some cases on *Figure* 1. Some blockholders (often Europeans) have built substantial permanent houses; other structures are temporary shacks built to house workers in the initial stages of clearing. In keeping with local custom all are built on piles above the ground.

Production and Distribution

Unfortunately no quantitative data on production of various crops from the Kuriva blocks is available. However, the subdivision has already made some contribution to the food supplies of Port Moresby in that 2 blockholders have been meeting army contracts for the supply of sweet potato and papaw, and some produce has been supplied to the Port Moresby Teachers' Training College, Public Health Department, and the Catholic Mission in Port Moresby. Our 1970 survey reported that 3 blockholders had contracts to supply produce to the army or Public Health Department. Of these 1 was meeting a contract to supply weekly 1,700 lb of sweet potato and 1,200 lb of papaw.

Some settlers have begun to sell produce at Koki market. Of 30 responses to our question in the 1971-72 survey 1 indicated that the settler had visited Koki market to sell produce more than once a week; 5 once a week; 2 once in two weeks; 1 once a month; 6 more than once a month; 2 once in three months; 1 more than once in five months; 4 once a year; and 8 not at all, of which 5 were on new blocks.

There is no information on the amounts of produce sold, but among the crops taken to Koki sweet potato was the most prominent, followed by water melon and corn; cucumber, papaw, banana and pumpkin; then tapioca, sugar cane and pineapple. Small amounts of produce have also been observed for sale on roadside stands in the subdivision, and the weekend market for roadside selling to visitors from Port Moresby is probably not insignificant.

Production Inputs

The most important input has naturally been labour which has been provided by the blockholders and their relatives, and by employed labour. *Table* 5 presents the available information.

Table 5—Labour used in development of blocks

Labour source	1970	1971-72
Blockholders alone	10	11
Blockholders and relatives	10	—
Employed labour only	9	14
Blockholders and labourers	—	6
No. of respondents	29	31

Source: Interviews.

In addition in 1970 our survey reported that there were 23 labourers employed on 19 blocks (with an additional unspecified number of sawmill workers working part-time on one block); and that 21 family members (excluding blockholders) were working on blocks. The total number of workers on 19 blocks was 54, an average of 2.8 per block.

The hours worked on blocks ranged from 4 (an owner only case) to 48 per week in 1970, and from less than 20 to 45-50 in 1971-72. *Table* 6 presents our available data on this:—

Table 6—Hours worked per week on blocks

No. of hours	No. of blocks	
	1970	1971-72
4	1	—
less than 20	—	4
20-30	3	2
30-40	8	17
40-50	6	7

Source: Survey.

The average number of hours worked per week on the blocks in 1970 was 33.3 and 36 in 1971-72. If these figures are multiplied by the average of 2.8 workers per block in 1970 the total labour input would have been 93 hours per week per block in 1970, and 101 hours per week per block in 1971-72.

No information is available on other production inputs such as use of fertiliser, supply of planting material or seeds, irrigation, degree of mechanisation, etc., though it appears that there were at least 3 tractors privately owned in the area. Five of the blockholders own vehicles, 3 of which are utilities and 2 2-ton trucks. All are used personally by their owners, two of whom are expatriates.

Advisory and Financial Assistance

The two government sources from which advisory or financial help could be sought by settlers on the blocks are Department of Agriculture, Stock and Fisheries and the Development Bank. DASF help in the area had not been notably large by the end of 1971. The department intended to establish a field station on Portion 495 and this had been done by 1973. Some assistance in arranging the sinking of test bores had been given to those settlers seeking it. Our enquiries in 1970 and 1971-72 reported that in 1970 (4 out of 18 respondents) had been visited by a DASF officer, and in 1971-72, 6 respondents replied that they had had advice from DASF. It would seem that little change in this situation can be expected until DASF has a field officer resident on the blocks.

The Development Bank has granted loans to a few applicants for the development of Kuriva blocks. In 1972, 2 blockholders (out of 20 responding) reported to us that they had received loans from this source (both were expatriates), and 2 that they had made unsuccessful applications. In 1971-72, 3 (out of 29 responding) settlers reported that they had received loans from the bank. Presumably a number of the settlers (especially expatriates) were able to draw on their own financial resources for the development of their blocks, but the majority of the indigenous settlers would have little capital on which to draw.

Other Activities of Settlers

There is no systematic data available on this point, however a number of settlers do have other business activities. The most important of these is the sawmill which had been operating in this area for some years prior to the subdivision. Its owner has diversified into agriculture, already having planted a small coconut holding, and intending to diversify further into citrus production. Several blockholders were previously sawmill employees, and may still continue to work there on a part time or intermittent basis. A number of blockholders had previous employment in Port Moresby which they have continued at least until producing gardens are established on their blocks, and despite the intention of the leases that the recipients should work full time on their blocks.

One indigenous settler stated that he was working with others to save enough money to buy a community truck for the area, but this had not eventuated by 1971-72. Settlers are not, however, devoid of transport as passenger motor vehicle trucks (i.e. public passenger transport) serve the area from Port Moresby. The one-way fare to Port Moresby is $1.20, which at approximately 3c per mile is not exorbitant, but a settler would need to be confident of selling $5-$10 worth of produce before undertaking a trip to Koki to make a trip worthwhile.

There was in 1971-72 only one trade store at Kuriva, that attached to the sawmill, but there are others on the main road east of the subdivision.

Conclusions

The decision to implement the small land subdivision scheme at Kuriva was a minor part of the Administration policy aimed at increasing food supplies for Port Moresby. Other aspects of this have been the construction of the Rigo road to the south-east, which after 1966 linked the relatively fertile Kemp Welch (Wanigela) river lowlands and the large villages of the south-east coast to the town, and did increase food supplies to the town from that quarter (see Ward 1970-40-45). To the north-west and west the Hiritano Highway (earlier commonly known as the Brown River road) has been under active construction for some years and will within a short time cross the Aroa river and extend to Bereina, thereby providing good access to the capital from the potentially rich food supply areas of the western plains of the Central District. In addition the fertile lands of the Laloki flats well

east of Kuriva have in part become available for settlement, though there exists no organised scheme in the area at present. These areas produced large amounts of vegetables for military use during the Second World War, and could again become major food suppliers (cf. Bowman 1946:431-33).

The Kuriva subdivision was initiated because the land was available to the Administration. Considering the eagerness of potential settlers to obtain land, and the small area involved, the allocation and actual occupation of the blocks appears in retrospect to have been a long drawn out process, continuing over at least seven years from 1964-71. There were of course problems, some of which stemmed from lack of interdepartmental collaboration. The initial subdivision was delayed by the renewal of the sawmilling licence over the area until 1965, without consultation between Forests and Lands departments. Some settlers began to clear the wrong blocks (solved by displaying the block numbers clearly on the blocks). Clearing along the Kuriva river bank caused heavy debris to float downstream threatening the Kuriva river bridge (solved by requiring the lessees not to clear forest along the river foreshore reserve). Indecision about the desirable location of the forest nursery was resolved by the Forests department agreeing to locate it on more suitable land on the Trans-Vanapa timber block further upstream on the Veimauri River. Squatters, at Akuku village on the Veimauri River, near the Kuriva River, and on the south side of the road in the middle of the subdivision presented problems, the latter case being resolved in one instance by returning the land to customary ownership or granting the lease of the appropriate block to the industrious squatter who had been developing it.

The progress of clearing and establishing production has been uneven, the most rapid progress being made by expatriates and others with greater financial resources who could afford to employ labour. The main problem is that felling heavy forest cover and preparing the ground for planting is an arduous task requiring considerable devotion to the project from the settler concerned. Experience in other resettlement schemes in Papua New Guinea has shown that indigenous settlers particularly resent what they see as a discriminatory lack of financial and advisory assistance to them in this first stage of resettlement (cf. Ploeg 1971: 115-6, and 1973:36). Possible solutions to this problem can be readily proposed: one would be to ensure that every settler (whether indigenous or not) has a Development Bank loan earmarked for this task. A second would be to arrange mobile clearing gangs with chain saws and perhaps small bulldozers to work systematically through such a land division as the Kuriva felling and preparing a suitable number of acres on each block each year. This would require adequate collaboration between, say, the Department of Lands, DASF, and perhaps Forests and Labour, and the Development Bank. It need not be very costly, and it would undoubtedly improve the morale of indigenous settlers.

Agricultural advice and extension work has been minimal in the Kuriva subdivision up to 1971-72. This may well be a function of the lack of trained staff available, but if the production of food for domestic consumption is to be an important part of future policy, then priorities in the allocation of resources will have to be adjusted to meet this need. The presence of an agricultural field officer actually living on the blocks in the early stages who could advise not only on planting and production but also on marketing and transport, and who could further diversification into small animal husbandry with its important corollary of increasing high quality protein availability, would have been and must now be a significant improvement for the majority of the settlers.

Other complaints of settlers included the condition of the access roads of the subdivision. This is a problem which could be simply overcome by interdepartmental collaboration, requiring probably only short but recurrent visits by a road maintenance group. However, Lands Department policy regards the Kuriva subdivision as a low cost scheme on which further expenditure is not justified at this stage.

The provision of community amenities was planned, but had hardly come to fruition by 1971-72. The most urgent need was for a primary school for settlers' children, and the Catholic mission had established one on Portion 601 by 1973. By 1971-72 no form of political organisation such as the establishment of a settlers' association had occurred, but it is to be hoped leaders will emerge (perhaps encouraged by an agricultural or community development officer?) to do this.

By 1971-72 the Kuriva subdivision was effectively established, but the individuals who had made most progress were by and large the expatriates with access to greater financial resources, greater technical resources, and greater organisational experience. This applies, however, only to the early stages. The efforts of some expatriate settlers had diminished by 1973 to the point where forfeiture was being considered in two cases. The scheme will probably progress and achieve its intended purpose of supplementing to a minor degree the food supplies of Port Moresby. The main lesson to be learned from its progress to date is that to be successful any development project must have co-ordinated support from many quarters. In the present and probably future situation in Papua New Guinea these quarters are likely to be government authorities whose priorities must accord with national goals.

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