

THE EFFECT OF LAND CONTROL AND OTHER FACTORS
UPON AGRICULTURAL DEVELOPMENT:
A SOLOMON ISLANDS CASE STUDY

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CHAPTER I

THE PROBLEM

Topic

The purpose of this research is to examine a method of land control, in this case customary land tenure, and its effect upon increasing agricultural development. Other factors influencing the level of agricultural development are also reviewed. Data from three village sites on the island of Guadalcanal in the British Solomon Islands Protectorate (Figure 1) are presented concerning the production and consumption of subsistence root crops. With data from three locations providing a local contextual basis, a case study of one of the sites, the Hatare area, is given and the influence of land control practices upon agricultural development is then discussed. The case study provides the body of the descriptive analysis as well as the basis for the hypothesis. The case study method of presentation was chosen partly due to the limited amount of time available for field research¹ and because of a desire to do as thorough a study of one locality as possible. As Brookfield points out in a paper comparing local study to a comparative study, "it would aid comprehension in depth to start by studying interrelated distributions in small areas, at the level meaningful to the local people."²

¹Research was conducted in Hatare between September 26, 1972, and January 3, 1973.

²H. C. Brookfield, "Local Study and Comparative Method: An Example From Central New Guinea," Annals of the Association of American Geographers, LII (September, 1962), 242.

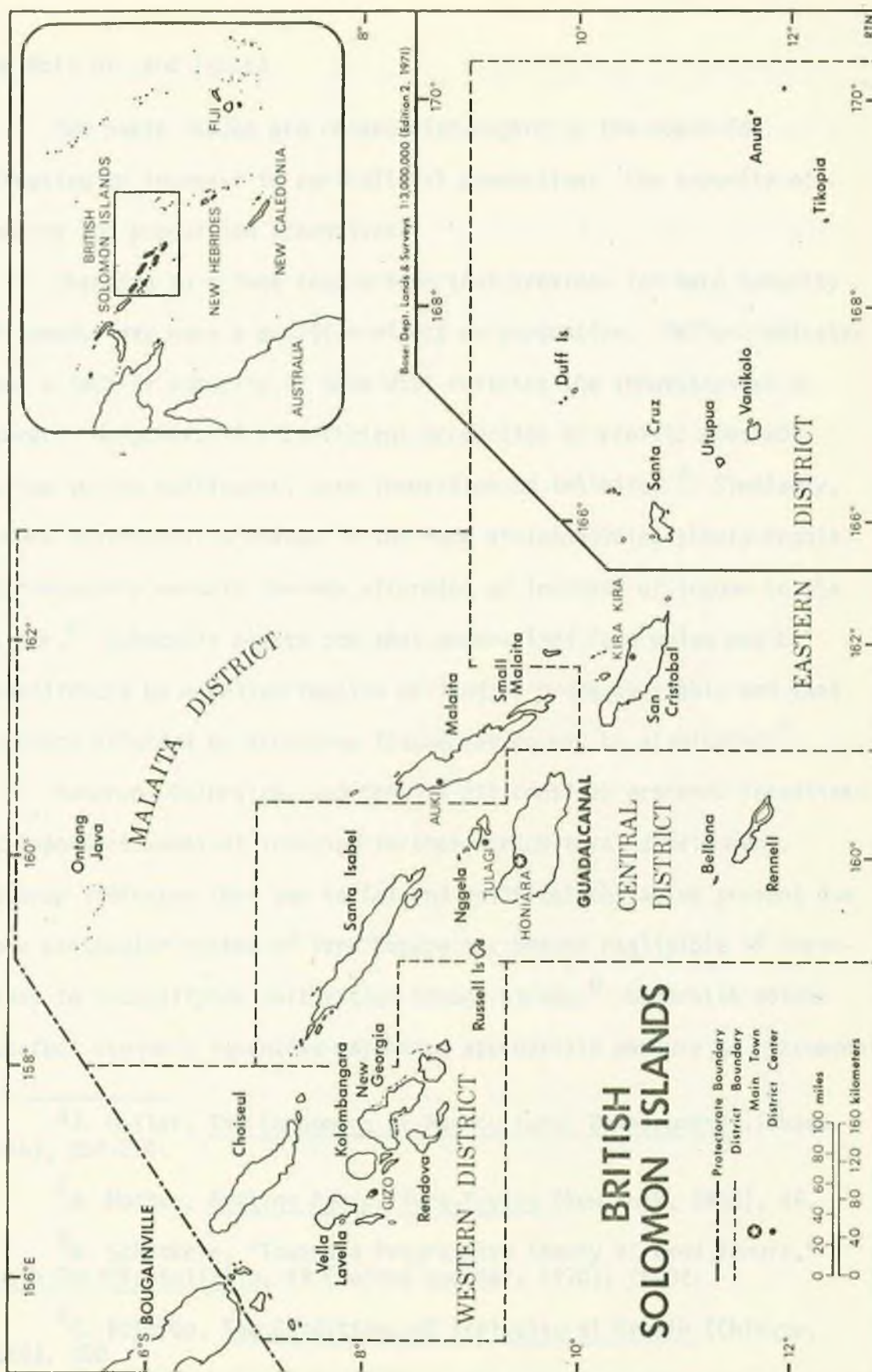


Figure 1

The Role of Land Tenure

Two basic issues are raised with regard to the means for effecting an increase to agricultural production: the security of tenancy and production incentives.

Changing to a land tenure form that provides for more security of tenancy may have a positive effect on production. Mellor indicates that a lack of security of land will restrict the innovation of a farmer. Moreover, if a sufficient proportion of profits does not accrue to the cultivator, then innovation is inhibited.³ Similarly, Mosher states that a change in the form of landholding should result in reasonable rentals thereby affording an increase of income to the farmer.⁴ Schickele points out that under-sized farm units may be consolidated by a redistribution of land or property rights and that problems afforded by excessive fragmentation may be eliminated.⁵

Boserup, Galbraith, and Schultz all consider economic incentives an important means of inducing further agricultural development. Boserup indicates that the social and political obstacles present due to a particular system of land tenure may become negligible if incentives to intensifying cultivation become strong.⁶ Galbraith points out that economic incentive may be an appropriate measure to circumvent

³J. Mellor, The Economics of Agricultural Development (Ithaca, 1966), 252-254.

⁴A. Mosher, Getting Agriculture Moving (New York, 1966), 49.

⁵R. Schickele, "Toward a Progressive Theory of Land Tenure," South Pacific Bulletin, XX (Second quarter, 1970), 28-32.

⁶E. Boserup, The Conditions of Agricultural Growth (Chicago, 1965), 100.

administrative inaction. He states, "that good prices to farmers . . . are superior for increasing output to orders enforced by police and magistrates."⁷ Such a program of incentives could be a good substitute for bureaucratic efforts in countries with an insufficiently trained government sector. Consistent with this approach to increasing production is Schultz's recommendation of a policy "that provides incentives and rewards to farmers."⁸ In order to be effective the major rewards should go to the farmer and his family, rather than to the landlord. Additionally, the farmer must be convinced that a change in his practices, toward an increase in production, will result in an increase in his wealth.

The security of land tenure as a prerequisite to increased agricultural production and the family farm as an optimal production unit are concepts developed by English economists in the 18th and 19th centuries. Adam Smith felt there was a tendency for large landowners to invest in consumption rather than in improving the land. The country gentleman was likely to build a great house and associated buildings and to improve the land in the immediate vicinity of the house. The remaining acreage was to remain unimproved and uncultivated since an inordinate proportion of the capital available was spent on the former improvements. Smith goes on to state that, "if little improvement was to be expected from such great proprietors, still less

⁷J. Galbraith, Economic Development (Cambridge, 1962), 70.

⁸T. Schultz, Transforming Traditional Agriculture (New Haven, 1964), 205-206.

was to be hoped for from those who occupied the land under them."⁹ A person with no land and working for another would have little incentive to labor. The only interest of the propertyless would be to "eat as much . . . as possible."¹⁰ Smith objected to the great estates and explained that their continued existence was due, in part, to the laws of primogeniture which kept the estates intact. Somewhere between the great landowner and the landless laborer was the optimum farm size in conjunction with security of tenure. Smith describes the owner of this optimal farm unit as follows:

A small proprietor, however, who knows every part of his little territory, who views it with all the affection which property, especially small property, naturally inspires, and who upon that account takes pleasure not only in cultivating, but in adorning it, is generally of all improvers the most industrious, the most intelligent, and the most successful.¹¹

John Stuart Mill also considered it important for the improvement of production to reduce the great estates to smaller units with secure tenancy. Of the greatest importance was, "the acquisition of a permanent interest in the soil by the cultivator of it."¹² Mill supported the concept of the family farm and felt that a family could supply all of the necessary labor. With regard to the optimal size of a family farm, Mill stated that, "for the greatest productive efficiency, it is generally desirable . . . that no family who have any land, should

⁹A. Smith, Wealth of Nations (Edinburgh, 1863), 171-172.

¹⁰Ibid., 172.

¹¹Ibid., 185.

¹²J. S. Mill, Principles of Political Economy (New York, 1969), 187.

have less than they could cultivate, or than will fully employ their cattle and tools."¹³ The view of both Smith and Mill that the optimal agricultural production unit is the family farm is still honored in western society. This concept still influences both American and European Economic Community farm legislation and permeates the thinking of the British administration in the Solomon Islands.

The common attitude of the importance of individually registered land to production is best summed up by Arthur Young. He said, "Give a man the secure possession of a bleak rock, and he will turn it into a garden; give him a nine years lease of a garden, and he will convert it into a desert."¹⁴

Much of the literature regarding land tenure is actually about the effectiveness of land reform programs and their repercussions. The family farm with a secure form of land tenure is rare outside the countries of western civilization. In the world's developing nations land ownership takes on very different patterns. Warriner identifies three major types: the Asian tenancy system, the latifundian system, and the plantation system.¹⁵ The Asian tenancy system is characterized by a landowner who leases a portion of his land in small units to farmers. The lessor cultivates the land with his livestock and pays

¹³ Ibid., 145.

¹⁴ A. Young, Travels in France During the Years 1787 - 1788 - 1789, ed. by J. Kaplow (New York, 1969), 45.

¹⁵ D. Warriner, Land Reform in Principle and Practice (Oxford, 1969), 45-51.

rent, money or produce, to the landowner.¹⁶ The latifundian system consists of estates covering enormous areas. The use of land is highly extensive with only small areas under cultivation. A salaried manager will run the estate for the absentee owner and the people working on the estate have a semi-serf status.¹⁷ The plantation system is a large property run as an economic enterprise. The plantation is generally intensively cultivated and monocultural. A foreign company may operate the plantation to produce a particular crop for export purposes.¹⁸ The characteristic of a relatively small land unit with security of tenancy is present in none of the three major landholding systems in developing areas. Consequently, one of the standard recommendations, particularly from European advisors, to these countries is that a land reform program towards small-holder ownership must be initiated. Historically, within the Pacific island area land has been alienated primarily for the development of plantation agriculture, mainly coconut. A landlord class has not developed in the Pacific and land is generally available, at least for the purpose of subsistence agriculture cultivation and some cash cropping.

The basic definition of land reform involves the redistribution of land rights. It is recognized that the simple redistribution of

¹⁶The Asian tenancy system of landholding may be found from the Middle East and throughout Asia to East Asia.

¹⁷Examples of the latifundian system may be found in Latin America, particularly Mexico, Bolivia, and Venezuela.

¹⁸Extensive plantation development occurred in Brazil, Cuba, and Egypt.

land will not necessarily result in increased agricultural production. Therefore, the definition of land reform has been expanded to include measures to provide agricultural credit, to institute cooperative organization, to further agricultural education, and to provide advisory services. Raup has indicated that, "a land reform conceived only as a redistribution of rights in property may fail to generate forces or measures that will achieve the sharp breaks with old customs, traditions, and techniques to promote development."¹⁹

Instituting a land reform program will create new political and social relationships. Basic purposes of many recent land reform programs are to effect income distribution among a population, to equalize levels of wealth, and to diffuse political power. Raup differentiates between types of agricultural production problems and the suitability of a land reform program as a solution. He comments that,

land reform is often appropriate in attacking agricultural production problems created by defective social and political structures. It is seldom an appropriate tool for the solution of the poverty problem among the poorest sectors of the rural population. It is of basic importance to distinguish between production problems that can be solved by improving the incentive structure, and welfare problems that cannot be solved through land tenure reform.²⁰

A land reform program necessitates obtaining land for redistribution and this generally involves the confiscation or expropriation of

¹⁹P. Raup, "Land Reform and Agricultural Development," in H. Southworth and B. Johnson, ed., Agricultural Development and Economic Growth (Ithaca, 1967), 269.

²⁰Ibid., 301.

large estates or plantations. Strong supportive measures are necessary to insure an orderly transition to more productive use under the new owners. There is no assurance that land reform will automatically result in increased agricultural output; often the reverse occurs. Raup found depressing effects upon production following land reform in Bolivia and Iraq. One of the main reasons for these failures was unplanned implementation of the land reform program. Nair has concluded that,

since 1947, India has enacted perhaps more land reform legislation than any other country in the world, it has not succeeded in changing in any essentials the power pattern, the deep economic disparities, nor the traditional hierarchial nature of inter-group relationships which govern the economic life of village society.²¹

Land reform is generally considered in conjunction with political or social pressures and the objective is to make land available to the landless laborer. Secondarily, land reform programs are instituted for economic reasons, that is to increase agricultural production. This is the case in regions or countries where a large proportion of farmers are tenants or sharecroppers; it is felt that if a farmer has access to his own land he is more likely to invest increasing amounts of labor and capital in that land thereby increasing its productivity. Naturally, most landless workers favor these measures.

Under the traditional systems of the Pacific Islands land has usually been freely available to the islander for both subsistence and commercial agriculture. There is no true class of large landholders

²¹K. Nair, Blossoms in the Dust (New York, 1962), 196.

in the Pacific except for the large expatriate owned plantations and landless groups occur only where the traditional system has been disrupted by foreign interference. Economic disparities exist in Pacific islands but the large disparities are between expatriate and islander, and it is not likely to be reduced by a change in land tenure.

Changes to Pacific land tenure practices are suggested from time to time as a means of effecting an increase to agricultural productivity. These suggestions emanate mainly from expatriate-dominated administrations and there is usually little or no pressure from indigenous peoples for such changes. Domestic government revenues are generated from export taxes and head taxes, and there is a natural desire on the part of government administrations to diversify and expand the tax base by encouraging increased agricultural productivity.

Research Design

The research for this paper was one aspect of a research project conducted along the Weather Coast, the southern coast, of Guadalcanal (Figure 2). University students, under the aegis of two faculty members, were assigned to eight different village sites. The basic purpose of the research was to examine the relationship of population to the land resources. A census was conducted by the research team of the entire Weather Coast area. Additionally, each student conducted his or her own research program. These included a history of village re-location patterns, a fertility survey, an economic survey, and a description of traditional medical practices. The research for this

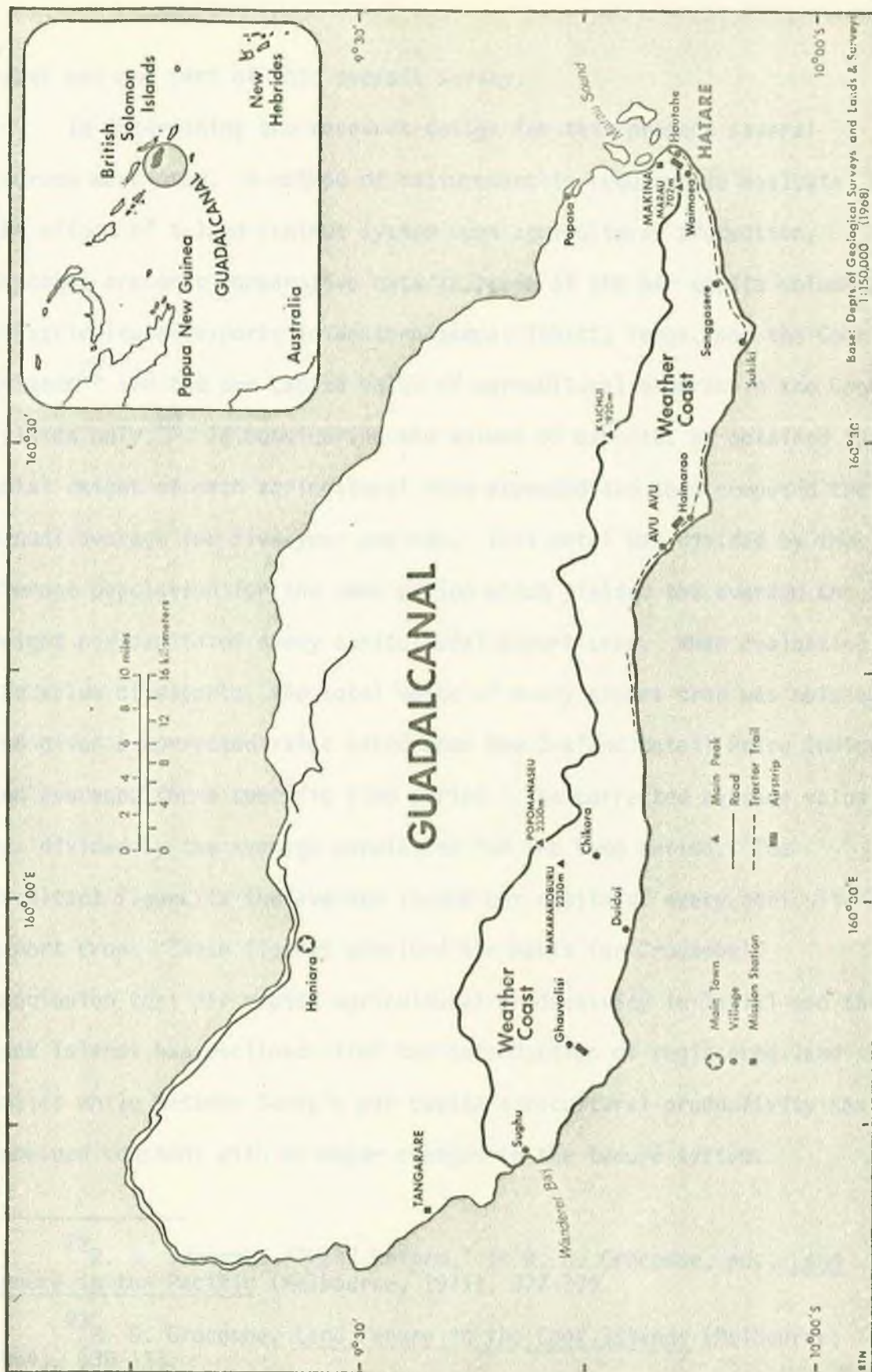


Figure 2

paper was one part of this overall survey.

In determining the research design for this project several sources were used. A method of measurement is required to evaluate the effect of a land control system upon agricultural production. Crocombe presents comparative data in terms of the per capita volume of agricultural exports in Western Samoa, Tahiti, Tonga, and the Cook Islands²² and the per capita value of agricultural exports in the Cook Islands only.²³ In considering the volume of exports, he obtained the total weight of each agricultural item exported and then computed the annual average for five-year periods. This total was divided by the average population for the same period which yielded the average annual weight per capita of every agricultural export crop. When evaluating the value of exports, the total value of every export crop was obtained and given a corrected value based upon New Zealand Retail Price Indices and averaged for a specific time period. The corrected average value was divided by the average population for the same period. The resultant figure is the average income per capita of every agricultural export crop. These figures provided the basis for Crocombe's conclusion that per capita agricultural productivity in Tahiti and the Cook Islands has declined after the introduction of registered land titles while Western Samoa's per capita agricultural productivity has remained constant with no major changes to the tenure system.

²²R. G. Crocombe, "Land Reform," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 377-379.

²³R. G. Crocombe, Land Tenure in the Cook Islands (Melbourne, 1964), 132-133.

To apply Crocombe's methodology to the Solomon Islands would require accurate data about population and agricultural exports. The first complete census of the Protectorate was taken in 1970. Prior to that year a census was taken in 1931 over a period of months by district officers. With regard to the accuracy of this census Groenewegen states that, "the census results of the territory as a whole could be seriously in error."²⁴ In 1959 another census was taken, although McArthur indicates that, "the largest proportion of the population which could be enumerated was roughly one-quarter."²⁵ Therefore there are three population totals which could be used. The corresponding figures for copra exports were obtained from the appropriate annual reports. A differentiation is usually made in Protectorate agricultural reports between copra produced on plantations, which are expatriate-owned but worked by Solomon Islanders, and that produced by Solomon Islanders.

Table 1 shows per capita copra production based on total copra production and total population. In contrast, Table 2 shows per capita copra production based on the copra produced by Solomon Islanders and the Melanesian component of the population only. The per capita copra production based on the total figures indicates a decline from .25 tons in 1931 to .15 tons in 1970. Since there has been little in the way of legislated land tenure changes in the Solomons one might conclude that

²⁴K. Groenewegen, Report on the Census of the Population 1970 (Southampton, c. 1972), 2.

²⁵N. McArthur, Report on the Population Census of 1959 (Honiara, 1961), 5.

customary land control practices are inhibiting agricultural production, specifically that of copra. However, the per capita copra production of Solomon Islander produced copra has been rising from .03 tons in 1931 to .09 tons in 1970 although a peak of .10 tons per capita was attained in 1959. Continuing with our line of reasoning this would indicate that customary land control practices have not necessarily inhibited agricultural production.

Table 1

Production: Solomon Islander and plantation volume
of copra exports, 1931, 1959, and 1970

	1931	1959	1970
Copra production, tons	23,681 ^a	23,074 ^b	24,224 ^c
Population	94,066 ^d	124,000 ^e	160,998 ^f
Copra production, per capita	.25	.19	.15

Sources:

^aBSIP, Annual Report 1931 (London, 1932), 8.

^bBSIP, British Solomon Islands 1959 and 1960 (London, 1962), 24.

^cBSIP, Report for the Year 1970 (Honiara, 1971), 30.

^dBSIP, Annual Report 1931, 3.

^eN. McArthur, Report on the Population Census of 1959 (Honiara, 1961), 9.

^fK. Groenewegen, Report on the Census of the Population, 1970 (Southampton, c. 1972), 12.

Table 2

Production: Solomon Islander only volume of
copra exports, 1931, 1959, and 1970

	1931	1959	1970
Copra production, tons	3,000 ^a	11,537 ^b	13,488 ^c
Population ^d	89,568	117,500	149,667
Copra production, per capita	.03	.10	.09

Sources:

^a"Amount of copra produced from native sources is estimated at 3,000 tons per annum." BSIP, Annual Report 1931 (London, 1932), 81.

^bEstimated by author to be 50 percent of total production. Estimate based on BSIP, Report for the Years 1963 and 1964 (Honiara, 1965), 26. The report states that this was the third consecutive year that, at 52 percent, copra production by Solomon Islanders was slightly greater than that produced on plantations.

^cBSIP, Report for the Year 1970 (Honiara, 1971), 30.

^dSources for population figures are the same as for Table 1.

Crocombe uses available figures relating to export-oriented agricultural crops. While this may well be an appropriate index or measurement there is an inherent danger in it also. As Wharton suggests in reference to agricultural diversification a determination must be made as to, "what relative importance should be given to crops which will be 'export earners,' crops which will be 'import savers,' and crops which will help raise domestic levels of consumption

and nutrition."²⁶ A downward-sloping per capita productivity curve of exported agricultural crops may indicate that people are worse off economically than at an earlier time. But it could be an indication that an attempt is being made to develop cattle raising techniques in order to reduce a country's dependence upon imported canned meat.

Crocombe's work and methodology, in application to the Solomons, indicates that agricultural productivity has been rising. There remains a need to determine the nature of the agricultural crops, that is, are farmers planting crops that will be exported, reduce imports, or improve the quality of the domestic diet? It would be important also to assess the intensity of the utilization of land resources.

It is known that the Weather Coast area is a rural economy and that farmers are oriented, to some extent, to subsistence agricultural practices. Fisk has written of primitive, or non-monetized, economies with particular reference to Papua-New Guinea.²⁷ In his initial work he was concerned with the pure subsistence unit in which contact with the market economy is virtually non-existent. A model was defined in order to analyze and quantify the amount of labor resources available for productive use beyond those needed for subsistence production. In determining the level of this subsistence production Fisk states that,

²⁶C. R. Wharton, Jr., "Rubber Supply Conditions: Some Policy Implications," in T. H. Silcock and E. K. Fisk, ed., The Political Economy of Independent Malaya (Berkeley, 1963), 161.

²⁷E. K. Fisk, "Planning in a Primitive Economy: Special Problems of Papua-New Guinea," The Economic Record, XXXVIII (December, 1962), 462-478.

We may therefore expect a very distinct ceiling to the demand for food in a pure subsistence unit with adequate land. The level of this ceiling will be a function of population, physical activity and a number of social and customary factors (including the pig cycle) and could be empirically established in any specific community. For the purpose of our model we shall assume that this ceiling is reached at a level of food consumption 25 per cent above that necessary to maintain the population in physical condition to provide their full potential supply of labour.²⁸

With this information a demand ceiling may be ascertained. The supply of labor will not limit this demand ceiling in the major part of the New Guinea subsistence economy. There is an ability to reach higher levels of production with the existing labor supply. Fisk, therefore, points out that, "this means that there is a potential surplus concealed within the subsistence economy, comprising that portion of the potential supply of labour not required for the production of food to the level of the demand ceiling."²⁹ These surplus labor resources can be used in delineating the development potential within the subsistence sector. The model is then employed to determine the effects of population and technological changes upon the availability of labor resources.

Subsequent to Fisk's initial work with an isolated primitive economy, he considered the primitive economy in which linkages had been established with the market, or monetized, economy.³⁰ In this

²⁸Ibid., 467.

²⁹Ibid., 468.

³⁰E. K. Fisk, "Planning in a Primitive Economy: From Pure Subsistence to the Production of a Market Surplus," The Economic Record, XXXX (June, 1964), 156-174.

work the objective was to determine how best to use unused resources for increasing agricultural or other production. The development and growth of agricultural production for the purpose of earning a cash income is dependent upon an incentive factor and a response factor. As defined by Fisk, the incentive factor "is the strength of the incentive transmitted to the subsistence group by the market forces."³¹ The response factor is defined as "the strength of the resistance or inertia of the subsistence group to changes of the type required for supplementary cash production."³²

Within the response factor, the resistance of the subsistence group is determined by their cultural, physical, political, and economic characteristics. This response factor received little attention by Fisk because the incentive factor is considered to be less understood and analysis of it is necessary. The incentive factor compares the disutility of additional labor (labor beyond the requirements for subsistence production) required to earn cash with the utility of goods that cash will enable the subsistence producer to buy.

Initially, as weak or incomplete linkages are established by the subsistence unit, the cash return per unit of labor may be relatively low. The response factor is partially responsible for this low cash return per unit of labor although this may be modified to some extent by raising educational levels. Additionally, a poorly developed market and distribution sector will cause lower cash returns per unit of labor.

³¹Ibid., 157.

³²Ibid., 157.

If it is difficult to sell a bag of copra, the labor costs will be appreciably higher. In this situation the utility of cash for the subsistence producer may be at a minimal level at low income levels. Again, the response factor is a partial cause for this situation as is the incentive factor. The range and availability of goods and services is important in determining the utility of money. An inability to purchase a specific item when desired will lessen the value of cash earned.

At an early stage of contact between the monetized and non-monetized sectors a subsistence producer may be satisfied with a small amount of cash and the few items that could be purchased. He may then choose to withdraw from the monetized sector because of an inadequate incentive factor, a point that Fisk defines as one of a series of stagnation points in his model of economic growth. On the other hand, economies of scale in production may occur, thereby increasing agricultural production and the utility of money. This is defined as a growth point within this model. There is an alternating series of growth and stagnation points in this process of moving from a non-monetized to monetized economy. These are manifested as "stop and go" responses to both agricultural extension and educational efforts. The group must be able to move over the stagnation points into a growth section in order to increase levels of participation in the monetized economy. If market forces provide no incentive to maintain and increase production levels, the group will remain at a point of stagnation or stable equilibrium.

Fisk suggests three methods that must be applied to sustain the

economic growth of the group. All of the methods are artificial external non-market influences. The first suggestion is to increase cash production levels by persuasion or compulsion. The second proposal is to increase the cash return per unit of labor. Government subsidized programs to develop marketing, transport, and processing facilities would decrease the opportunity costs of labor. The final suggestion is to increase the utility of money. Again, this would require government subsidies to provide and extend the range and availability of goods and services.

Fisk's work suggested two levels of inquiry: an examination, in detail, of subsistence agricultural practices and the operation of incentive factors. In order to evaluate subsistence agriculture, it was necessary to gather data relating to the size of gardens, numbers of plants, and plant yields. Moreover, garden production data would be necessary as well as a measurement of time spent working in the gardens. The understanding of the incentive factors would require knowledge of national agricultural policies, transportation networks, and local trade stores in addition to farmers' attitudes regarding agricultural production.

A general framework for the research was desired which would provide an economic context. Penny has described economic mindedness among farmers in Indonesia. He devised 13 indices to evaluate, "the nature and extent of differences in the willingness and ability of farmers to participate in the development process."³³ The indicators

³³D. H. Penny, "Growth of 'Economic-Mindedness' Among Small Farmers in North Sumatra, Indonesia," in C. R. Wharton, Jr., ed., Subsistence Agriculture and Economic Development (Chicago, 1969), 152.

he used were:

1. The extent to which commercial crops are grown.
2. The willingness of farmers to give up growing certain crops.
3. The planting intentions of farmers.
4. The extent to which farmers are willing to rely on off-farm sources of planting materials.
5. The pest and disease control methods used.
6. The number of rice varieties grown.
7. The use of laborsaving devices.
8. The use of purchased production requisites.
9. The uses to which borrowed money is put.
10. The dependence on bought food.
11. The reasons farmers themselves give for growing the crops they do.
12. The obstacles to increased production as seen by the farmers.
13. Farmer response to extension.³⁴

Villages were classified using these criteria as practicing one of three types of agriculture: commercial, expanded subsistence, and typical subsistence. Typical subsistence agriculture is defined as practices which yield an adequate diet and an available surplus for disposal through traditional means. Expanded subsistence agriculture is explained as providing an adequate diet and a surplus which is exchanged in a market economy. This level of agriculture will produce raw materials for industrial use which are sold by the farmer; he is not, however, dependent upon the market to purchase food or agricultural inputs. Commercial agriculture is the level reached when the farmer sells within a market economy and is dependent upon the market for the purchase of food and agricultural inputs. According to Penny, agricultural development, therefore, is associated with the farmer's level of participation in and dependence upon a market economy.

In evaluating the results of his study, Penny found that some of

³⁴Ibid., 155-156.

the villages still operated at a typical subsistence level of agriculture while other villages were operating at an agricultural level that was fully commercial. This range of agricultural development was of interest because

All these eight micro-economies have been exposed to the same external shocks. All are served by roads, fertilizers and other production requisites are available, all village people have felt the winds of change generated by the nationalistic revolution, and there are more schools throughout the province. Many opportunities for change exist.³⁵

Although Penny concluded that there was no single factor responsible for this unevenness of development he identifies two factors as differentiating the commercial-oriented from the typical subsistence-oriented villages. Two factors do affect the degree of participation in a market economy: the cultural heritage of the people and the nature of the main commercial crop.

With regard to the cultural heritage Penny explains that those areas with a lesser developed agricultural technology 50 years previously were more likely to accept and make changes. On the other hand, those villages with a higher-developed technology at an earlier time were now more resistant to change and substituting the 'new' for the 'old.' The other factor, the nature of the main commercial crop, was of lesser importance. Farmers growing cool-weather vegetables for their main crop have a technically demanding crop. The use "of fertilizers, new tools and more careful management is required"³⁶ for

³⁵ Ibid., 159.

³⁶ Ibid., 160.

the successful growing of these crops. Those farmers growing coffee or rubber were not subject to the same demands.

The last three indices that Penny used are attitudinal and the first 10 are descriptive. These 10 indices relate to incentive factors of Fisk's discussion. It was felt that the indicators would help to direct the understanding of the level of agricultural activity and the factors affecting that activity.

In order to accomplish the field design, three basic research schedules were developed to incorporate the above information. These were the Agriculture Household Survey, the Household Survey: Daily Schedule, and the Garden Schedule. Copies of these forms appear as Appendices A, B, and C.

The first page of the Agriculture Household Survey is of a basic census design and was included as a pre-test for the larger census planned by the research team. The questions on the following eight pages were derived from the 13 indices of Penny's study, Fisk's production incentives and the need for information about landholding methods. The questionnaire was administered by the student researcher with the assistance of an interpreter. Every household at the research locale was asked the questions and full cooperation was given by all persons. The survey was conducted during October and November (see Appendix D for survey times), a few weeks after arrival in the field so there was the opportunity of responding to local conditions.

The first part of the Household Survey: Daily Schedule was an activity survey. This was designed to obtain general information on the amount of time spent on various work and leisure time activities

throughout the day. The last section of the survey involved the weighing of all foodstuffs harvested from the gardens, plantations, forest, or sea during the day. The information was to be part of the analysis of subsistence agriculture production as described by Fisk. The balance of the questionnaire included questions designed to reflect exchange relationships of a non-monetized and monetized economy. The questionnaire was asked of all persons on a daily basis in the survey households who were either not attending school or too young for school, generally this proved to be persons 12 years of age or older.

The final survey form was the Garden Schedule and was used in the analysis of the productive capacity of subsistence agricultural practices. All gardens of the survey households were visited and the garden plots were measured with a 50 foot tape or paced to determine area measurements. Additionally, the number of plants in the garden were ascertained as well as average yields.

The agricultural and economic surveys were conducted at three Weather Coast sites: Hatare, Ghauvalisi, and Sughu.³⁷ The balance of this chapter is devoted to a discussion of selected Pacific island land tenure systems with particular emphasis on the Solomon Islands. The results and analysis of subsistence agricultural production at the three sites are presented in Chapter II. The case study is a more detailed description of landholding and agricultural production in Hatare and is presented in Chapter III.

³⁷ Robert Freeman performed the research at Ghauvalisi and David McLure performed the research at Sughu. The interpretation and analysis of their research is mine.

Land History in the Pacific

The main factors affecting the level of agricultural production have been identified as production incentives and security of tenancy. Various methods of land control in force on a global scale have been enumerated. The following section describes the history of land tenure systems in selected island areas in the South Pacific. Land systems in the Pacific differ to some extent from the major world landholding systems as described by Warriner.

European exploration of the Pacific region took place between the sixteenth and nineteenth centuries. All of the island areas were or are under some type of control by western nations. Western Samoa in 1962 was the first nation to re-gain its independence. The administrators of the colonizing nations attempted to introduce, with varying degrees of success, those ideas and those policies with which they were familiar. Fee simple titles for landholdings were among those ideas. Although there were basic similarities throughout the Pacific in land usage in pre-contact times, present practices within the Pacific vary considerably, mainly as a result of differential European influence. Land has been surveyed, subdivided, and registered in the best European traditions in Hawaii and Tonga. The Hawaiians have lost, as a consequence of this process, most of their access to land. The Tongans retain control of theirs, but in a system which serves to sharpen class distinctions and is creating a landless group, particularly among the young.

Prior to Cook's arrival in Hawaii in 1778 the Hawaiians had a well-established social hierarchy and the islands, administered by a

paramount chief, were divided into units known as ahupuaa, which were controlled by lesser chiefs.³⁸ The ahupuaa was essentially wedge-shaped and ran from the mountains to the sea encompassing all that was needed for life. The commoners cultivated certain parcels of land, known as a koele, of which all production went to the chief. A kihapai was the unit of land available to the commoner for cultivation for his family. Both the koele and kihapai were small portions of the larger ahupuaa. Although the commoner was required to labor for the chief on the koele and turn over all production to the chief the commoners were not bound to the soil in a serf-like manner. Commoners did have the opportunity of moving from the ahupuaa under one controlling chief to an ahupuaa of another. All land rights were granted on a revocable basis by the paramount chief to the lesser chiefs and down to the commoners. What was given could be taken away.

When foreigners came and settled in the Hawaiian islands, they too were able to use land at the discretion of the chiefs. This proved to be less than satisfactory; thus began a conflict between the chiefs and the foreigners. Fee simple titles were envisioned by the traders, merchants, and missionaries as the way to give security of tenure to the westerners and also to provide the impetus for the development of the independent Hawaiian family farm; the family farm being the foundation of New England society. The pressure groups eventually won and in 1848 "The Great Mahele" took place. *This land division granted fee simple titles to the Crown, the chiefs and the commoners.*

³⁸J. J. Chinen, The Great Mahele (Honolulu, 1958), 1-8.

Daws sums up "The Great Mahele" as follows:

It was a genuine revolution, and the white men who saw it through had no doubt that it was all for the best. For the foreigners, certainly, it was the beginning of the new era; but for the Hawaiian commoners it was the beginning of the end. In their first exercise of free choice they chose to uproot themselves. They were liberated at last from the burdensome tax payments to the chiefs that had kept them tied to the land, and most of them found more interesting things to do than grow taro, which required a long time and a lot of hard work. The idea of the kuleana, the small freehold lot cultivated as an independent family farm, never took hold. In the old days the taro patch and the family had flourished together; a single word, ohana, served to describe both a cluster of taro roots and a family group. The Great Mahele, the great division, cut the connection, because once the commoner was free to buy land he was also free to sell it, and that was a freedom he understood. So the great division became the great dispossession. By the end of the nineteenth century white men owned four acres of land for every one owned by a native, and this included chiefs' lands. The commoners had had their moment, and it had passed by. They were left with not much more than a terrible sense of deprivation.³⁹

Hawaii did experience a great per capita rural productivity increase allowed by a change to fee simple title. Vast tracts of land were and are intensively farmed by large corporation using principles of efficient business management. The Hawaiian is largely extraneous to these enterprises.

Traditional land tenure practices in Tonga during pre-contact times are not fully known. The household was the basic unit of society and a number of households having a common ancestor formed a lineage or fa'ahinga. The head of the fa'ahinga was a minor chief and several fa'ahinga would be subject to the control and authority of a higher chief. This hierarchical arrangement was based upon patrilineal

³⁹G. Daws, Shoal of Time (Toronto, 1968), 128.

relations. The chief had actual control over the land and the Tu'i Tonga, a paramount chief, had ultimate control of land use and allocation. Generally, the fa'ahinga had a portion of land for its use with the component extended families being scattered over the land.

In 1850 George Tupou established himself as the ruler of Tonga and claimed all lands by the right of conquest. Tonga had established contacts with the western world and traders and missionaries were present. Land sales were forbidden to foreigners. A correspondence developed between Tupou and the Hawaiian Consul-General for Australia and the Western Pacific. Tupou was advised "to reorganize his Kingdom along Western lines with a constitution and written code of laws. In this way Tonga could win international approval and be recognized as a civilized power."⁴⁰ Tupou sought out a missionary, Baker, who had ingratiated himself with the king, for advice.

In 1862 Tupou promulgated a new set of laws for the Kingdom. The government was to pay for all services although the people would have to maintain public roads at no cost. Since the government was going to pay for services it was necessary to levy a three dollar head tax on all males over sixteen years. The requirement to pay taxes necessitated that the men be able to pay the tax. This gave rise to the innovation that every tax-paying male be allotted a portion of land measuring 100 fathoms by 100 fathoms (8.25 acres) with a guarantee of security of tenure. Later, a smaller town allotment was made available

⁴⁰N. Rutherford, Shirley Baker and the King of Tonga (Melbourne, 1971), 15.

in addition to the agricultural allotment. The defining of the size of the land allotment took place over a 20 year period, 1862-1882. Since that time there has been little change to this basic land law.

The major export crop of the Kingdom has been copra although in recent years bananas have also become an important export to New Zealand. The per capita export of copra averaged .27 tons in the years, 1887-1890.⁴¹ By 1928 the per capita export of copra had risen to .58 tons⁴² but by 1966 it had decreased to .16 tons.⁴³ This decrease of copra production has been offset by an increase of banana production. In 1959 copra accounted for 83.7 percent of the total value of exports but fell to 61.9 percent by 1969.⁴⁴ Copra production was increasing between the late 1800s and 1930 and has been decreasing over the past 40 years on a per capita basis. Maude found no evidence to connect the initial increase of copra production with the land laws promulgated in the late 1800s.⁴⁵ Rutherford, however, did conclude that the Tongan land reform caused a revolution of agricultural practices resulting in a great degree of cash cropping. He gave three reasons for the increase to commercial agriculture: (1) reducing the

⁴¹A. Maude, "Tonga: Equality Overtaking Privilege" in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 122.

⁴²Great Britain Colonial Office, Tongan Islands Protectorate Report for 1928 (London, 1929), 4-9.

⁴³Kingdom of Tonga: Development Plan 1970-1975 (Nuku'alofa, 1970), App. A-5.

⁴⁴Ibid., App. A-5.

⁴⁵A. Maude, "Tonga: Equality Overtaking Privilege" in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 122.

control of the chiefs over commoners, (2) a need for money to pay the new taxes and land rents and (3) the security of land tenure.⁴⁶

There is one other more likely explanation for the increase of cash cropping in Tonga, Samoa, and other Pacific island areas. Initially, coconut oil was processed directly from the coconut at the site of the coconut grove. This was a process which resulted in one-half of the oil being wasted with the coconut flesh, in an often rancid and impure oil, in the necessity for expensive shipping barrels, and in a need for further clarification and purification of the oil in the importing nation. Weber, the German director of the Godeffroys firm in Western Samoa, developed the technical change in about 1867 of processing the coconut into copra rather than coconut oil. Lewthwaite indicates that the "transit from oil to copra production is said to have multiplied the value of coconuts fivefold. . . . the 'copra revolution' was virtually complete by the middle of the 1870s."⁴⁷ This was the innovation which allowed subsistence farming to be supplemented by cash cropping on a profitable basis in Tonga.

At the present time 90 percent of the Tongan population is located on three island districts: Tongatapu, Ha'apai and Vava'u. These islands are almost all of a raised limestone formation rising to a maximum height of 150 feet on Ha'apai, of 270 feet on Tongatapu, and of 670 feet on Vava'u. This flatness has facilitated the surveying

⁴⁶N. Rutherford, Shirley Baker and the King of Tonga (Melbourne, 1971), 20-21.

⁴⁷G. R. Lewthwaite, "Land, Life and Agriculture to Mid-Century," in J. Fox and K. Cumberland, ed., Western Samoa: Land Life and Agriculture in Tropical Polynesia (Christchurch, 1962), 141.

of agricultural lands into allotments and is almost complete, although surveying has been continuing since the land legislation was first introduced. As reported in the 1966 census, approximately 42 percent of the eligible Tongan males have a land allotment.⁴⁸ Although not all of the allotments have been distributed there are 10,349 tax allotments available in the Kingdom and there are 19,974 adult Tongan males.⁴⁹ The halving of the allotment will not enable all eligible males to receive land as the population is increasing at a rate of slightly over three percent.⁵⁰ There are alternatives available to Tongan farmers such as the intensification of agricultural procedures. In practice Tongan land may be leased, borrowed, or lent, particularly for subsistence crops or short term cash crops. Hardaker states that it is "worth emphasizing the diversity and surprising flexibility of the land tenure arrangements."⁵¹ In many instances the traditional Polynesian social patterns are operating among the Tongans and their use of the land within the superimposed structures of the land allotment system.

The Western Samoans, by contrast, have strenuously resisted efforts to formally modify their land tenure system. Theirs is based

⁴⁸S. Fiefia, Kingdom of Tonga: Report on the Results of the 1966 Census (Nuku'alofa, 1967), 88.

⁴⁹J. Hardaker, Kingdom of Tonga - Report on the Economics of Agriculture (Armidale, N.S.W., 1970), 28.

⁵⁰S. Fiefia, Kingdom of Tonga: Report on the Results of the 1966 Census (Nuku'alofa, 1967), 6.

⁵¹J. Hardaker, Kingdom of Tonga - Report on the Economics of Agriculture (Armidale, N.S.W., 1970), 35.

on ambilineal descent, residence, and participation in the affairs of the family. The overall land system was based upon the Samoan extended family organization, the 'aiga, headed by a matai. The matai has control of all family lands and these lands belonged to the family in perpetuity. A division of these lands does occur when a matai title is split between two or more persons.⁵²

During the post-contact period the governments of Great Britain, Germany, and the United States obtained rights for their citizens to acquire land for trading and plantation development. After 1864 the Germans acquired extensive land holdings. By 1889 it was agreed by the three governments that no more land would be purchased by Europeans. In addition, a Land Commission was established to settle land disputes arising from the situation that lands claimed by Europeans at that time accounted for twice the total acreage of the islands. Only eight percent of the initial claims were found to be valid.⁵³

Western Samoa has been under the control of Germany (1900-1914) and New Zealand (1914-1961). In 1962 it gained independence with the matai system still intact and 86 percent of the land under matai control. Holmes describes the operation of the present day land control system as follows, " . . . every Samoan is still a landowner

⁵²C. C. Marsack, Notes on the Practice of the Court and the Principles Adopted in the Hearing of Cases Affecting 1. Samoan Matai Titles 2. Land Held According to Customs and Usages of Western Samoa (Apia, 1958), 7. Marsack gives examples of title splitting to include up to 21 persons. The purpose of this is to increase the number of voters as only a titled person may vote. A secondary effect has been to diffuse the control of the original matai landholdings.

⁵³R. P. Gilson, Samoa 1830 to 1900 (Melbourne, 1970), 411.

in so far as the land holdings of each family are the common property of all members of the family and no decisions concerning this land can be made without the unanimous consent of all who claim active membership."⁵⁴ Samoan society is generally characterized as being conservative in nature and the 'aiga, or family, is an important social unit. Pitt describes the relationship of the 'aiga and land rights as follows:

It is thought to be a fundamental right of every man, especially men with families, to work the land to provide for their families. The chief himself is usually reluctant about removal because it involves a loss of aiga man-power and prestige. Inevitably, also rumors circulate of the chief's harshness, greed or favoritism. The village fono is also usually very cautious about expelling a man from his land for an expelled man will either seek alternative lands in the village, causing a rift in the village, or seek lands outside the village, blackening the reputation of the village in the outside world.⁵⁵

No major legislated land reforms have been implemented in Western Samoa but changes have evolved in the use of land in the past 150 years.⁵⁶ Prior to contact an 'aiga had subsistence food gardens of taro, yam, and ta'amu in addition to a few breadfruit trees and coconut palms. In 1842 the processing and shipment of coconut oil was

⁵⁴L. Holmes, "Samoa: Custom versus Productivity," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 100.

⁵⁵D. Pitt, Tradition and Economic Progress in Samoa (Oxford, 1970), 104.

⁵⁶The New Zealand administrator, Richardson, did attempt to initiate a land reform in 1924-1926 whereby every Samoan male taxpayer would receive five acres of land. This was based on the Tongan example and a group of observers did travel to Tonga. The Samoan chiefs would have none of it. J. W. Davidson, Samoa mo Samoa (Melbourne, 1967), 107.

introduced and by 1850 most every village was producing coconut oil.⁵⁷ The production of coconut oil required that more coconut palms be planted which resulted in the beginning of the changes to traditional land usage. The technical change from coconut oil to copra production initiated by Weber further advanced this process of change. During the period of the German administration every Samoan landholder was required to plant 50 coconuts annually. The result of this increased planting was the per capita export of .34 tons of copra in 1915 and .36 tons per capita in 1926, although by 1966 the per capita export of copra had decreased to .11 tons.⁵⁸ By 1966 the coconuts planted during the German era were past their prime bearing years and replanting evidently did not keep pace with the population growth. There are two other major agricultural export crops, cocoa and bananas. Cocoa was first introduced in 1883 and was commercially cultivated by 1900. In the period, 1915 to 1966, per capita export of cocoa has remained constant at .02 tons. The export of bananas has fluctuated widely primarily because of the susceptibility of the banana to bunchytop disease and high wind damage.

The coconut palm, the cocoa tree, and the banana plant have all had a part in the increasing monetization of the Samoan economy.

⁵⁷G. R. Lewthwaite, "Land, Life and Agriculture in Mid-Century" in J. W. Fox and K. B. Cumberland, ed., Western Samoa: Land, Life and Agriculture in Tropical Polynesia (Christchurch, 1962), 135.

⁵⁸Agricultural export figures are from J. Tudor, ed., Pacific Islands Year Book (11 ed.), (Sydney, 1972), 92. Population figures are from Census Commissioner's Office, Western Samoa: Population Census 1966 (Apia, 1968), 1.

This has resulted in an "increasingly individualistic approach to land use."⁵⁹ Holmes reports a

trend which increases individual land rights and reduces the effectiveness of the family as a landholding unit is the tendency for many untitled men to leave the coastal village and build nucleated homes in the garden areas further inland.⁶⁰

There have been changes to traditional agriculture and land use patterns. That these changes have been somewhat limited is the result of the Samoan Land and Titles Protection Ordinance 1934. This set of laws confirmed the traditional system of landholding and usage with the result that "this legislation has acted as a safeguard and a shackle."⁶¹

Melanesian societies are not directly analagous to Polynesian groups but there are similarities in their systems of land tenure. There was a lack of homogeneous political and religious structures and the result was that "cultural norms tended to be local and adaptable and this was reflected in the multiplicity of links through which an individual could acquire land rights."⁶² Basic land control principles, however, are similar and landholding groups were based, as in Polynesia, upon descent, residence, and participation in the

⁵⁹L. Holmes, "Samoa: Custom Versus Productivity" in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 101.

⁶⁰Ibid., 102-103.

⁶¹B. H. Farrell and R. G. Ward, "The Village and Its Agriculture" in J. W. Fox and K. B. Cumberland, ed., Western Samoa: Land, Life and Agriculture in Tropical Polynesia (Christchurch, 1962), 195.

⁶²R. G. Crocombe and R. Hide, "New Guinea: Unity in Diversity," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 305.

group's activities.

There was a relative abundance of land available on a per capita basis. Consequently, there was a degree of flexibility in the land system which allowed influential individuals to increase their land rights in respect to other rightholders. This was accomplished by improving the land's productive capacity through clearing, fencing, and gardening efforts. The investment of labor was a means of strengthening one's rights to the land. Brookfield and Brown indicate that among the Chimbu in the New Guinea Highlands "the precision and permanence of individual claims vary directly with the frequency of land use."⁶³ They further state that, "the improvements a man makes to his land, especially planting trees, are the most permanent indications of ownership available."⁶⁴

Even though there was an abundance of land, inter-group warfare was a feature of most Melanesian societies. Fighting did serve as an indirect method of reallocating population in relation to land resources. "Warfare had considerable significance for land tenure in defining or shifting boundaries, unifying or fragmenting groups, restructuring social relationships or redistributing people in relationship to land."⁶⁵ Rowley explains this process of warfare and land

⁶³H. C. Brookfield and P. Brown, Struggle for Land (Melbourne, 1963), 39.

⁶⁴Ibid., 40.

⁶⁵R. G. Crocombe and R. Hide, "New Guinea: Unity in Diversity," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 296-297.

rights in New Guinea along with some of the problems encountered at the present time as a result of these historical confrontations.

But where, as in the Highlands, populations pressed on resources, and the adjustment could not be made simply by spreading out, weaker groups would be driven away from their lands. This was the only situation which in pre-European times led to anxiety about land. There would always be some lands to which rival and overlapping claims were made. Each of the rival clans or tribes would regard such land as its own, though subject to incursions from, perhaps even occupied by, enemies. The arrival of the government at any point in time tends to freeze the situation at this point; and inevitably the government's recognition of the status quo as of this time leaves groups which have been recently dispossessed with a strong sense of injustice. Which, of course, adds to the tensions on land matters and to the distrust of government authority.⁶⁶

Towards the end of the 19th century New Guinea was taken over as a colonial possession, by the Germans in northwest New Guinea in 1885, and the British in Papua in 1888. The Australians took over from the British in 1906. By 1914 the policies and legislation in both parts of New Guinea were designed to encourage European settlement and development. At this time there were 85,000 acres under cultivation by expatriates in German New Guinea, with 43,000 acres similarly cultivated in Australian Papua.⁶⁷ The Australians took control of all of New Guinea during World War I and self-government was granted in December 1973.

Currently, three percent of the total land area has been alienated while the remaining lands remain under customary control.

⁶⁶C. D. Rowley, The New Guinea Villager (Melbourne, 1965), 123.

⁶⁷R. G. Crocombe and R. Hide, "New Guinea: Unity in Diversity," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 312.

Major productive units take two forms: large estates under expatriate control and small plots worked by New Guineans. Excessive fragmentation of land is likely to remain a problem for efficient cash-cropping in the future. Salisbury, in referring to the Vunamami in New Britain, states that,

the way in which people perceive that the limit has been reached is not in dispute over claims, but in complaints of the inordinate waste of time needed to travel between the scattered and distant plots that are typical of fragmented holdings.⁶⁸

Rowley, again, indicates that the consolidation of fragmented land holdings is a result of tenure reform. However, he cautions that,

While it is theoretically possible to provide against legal fragmentation of ownership by appropriate legislation, there is simply no way of preventing de facto fragmentation, since no law can prevent the farmer from meeting his moral obligations to his relatives. The attempts to date to separate the farmer from the social group, or, to put it another way, to separate his land out from the land of the village, seem to have added to suspicions long held.⁶⁹

In Bougainville, Chimbu, and the Gazelle Peninsula extensive cash cropping has occurred with no legislated land tenure changes either prior to or following this development. Crocombe concludes that, "although most New Guinea societies were undifferentiated in terms of wealth or prestige based upon differences in landholdings, the introduction of long-term productive assets in the form of cash crops will create or increase such differences."⁷⁰

⁶⁸R. F. Salisbury, Vunamami Economic Transformation in a Traditional Society (Berkeley, 1970), 95.

⁶⁹C. D. Rowley, The New Guinea Villager (Melbourne, 1965), 125.

⁷⁰R. G. Crocombe and R. Hide, "New Guinea: Unity in Diversity," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 322.

In an attempt to evaluate and determine the best form of a land tenure system a New Guinea Commission of Inquiry into Land Matters was appointed. It has recently submitted its recommendations to the House of Assembly. It was reported that,

Should most of its provisions be enacted, it would set an entirely new pattern of land control in the South Pacific, and alter the concept of land ownership which has been followed in the past by the PNG Administration.

Its very first recommendation, for example, says that "private landlordism must be checked", thus reversing the view of the Australian Administration that individual ownership of land is to be aimed for and that titles must be made safe. The commission is sympathetic to clans who want to assert their traditional rights against the holders of alienated land (who are usually Europeans), but it has no intention of simply allowing European landlords to be replaced by New Guinean landlords, with "colonial exploitation of one class of New Guinean by another".⁷¹

It remains to be seen how the New Guinea government will respond to these suggestions.

These histories of land control systems in various Pacific island nations indicate that descent, residence, and participation in the group's activities were generally the most important basis to establishing land holding rights. Contact with alternative cultures and ideas brought about changes, many of them imposed changes, to the relationship of Pacific islanders and land. Some lands were alienated for large-scale plantation development and attempts were made to legislate changes to tenure patterns. The creation of titles registered to individuals, it was thought, would lead to more secure farmers and greater agricultural productivity. Hawaii experienced the greatest

⁷¹"New Guinea Plan to Wipe Out Freehold," Pacific Islands Monthly, XXXV (January, 1974), 9-10.

changes and the greatest increases in agricultural productivity but the Hawaiian was displaced from the land. In the Tongan case, the initial increase in per capita productivity has since been reversed. More than half of the eligible males do not have a land allotment although there is still access to land for subsistence gardens or short term cash cropping based on traditional kinship patterns. In Western Samoa more than 86 percent of the land is under the control of the matai and customary practices have been legislated into present law. There has been an evolution in land usage patterns and social relationships as a result of the increasing monetization of the Samoan economy. Per capita productivity has varied among the three major export crops. New Guinea has had a relatively small proportion of its land alienated and customary land practices still predominate. Current recommendations submitted to the New Guinea House of Assembly propose that private landholdings be minimized. These examples indicate the range of land tenure practices currently in effect in the Pacific; from the fully surveyed and registered land of Hawaii following "the Great Mahele" of 1848 to the recommendation that New Guinea avoid freehold titles in 1973. This background will provide the basis for a discussion of land usage and agricultural production specific to the Solomon Islands. This discussion is preceded by a brief history of the Solomon Islands presented in the next section.

Historical Setting

There are as many theories to explain Pacific migration as there

are islands in the South Pacific and the origins of the Melanesians are still a matter of speculation.⁷² But the direction of Melanesian migration or the manner in which the first people arrived in the Solomon Islands is of no concern to this work. The islands of the Pacific area were and are populated. Brookfield and Hart indicate that archaeological excavations in the Solomon Islands have revealed shell implements dating to at least 930 B.C.⁷³ Man has been present in the Solomons for several millenia.

Western recorded history of the Solomons begins with an expedition led by Alvaro de Mendana.⁷⁴ Mendana set sail from the Spanish colony of Peru in 1567 with the objective of discovering a group of islands, the Isles of Solomon, which were rumored to be very rich. In 1568 Mendana arrived at Santa Isabel, an island to the northwest of Guadalcanal. Subsequently, on his return to Peru, he reported that the islands were populated and fertile but lacking metals. A colonizing expedition of four ships set sail in 1595 for the Solomons but only two ships ever returned; Mendana died in the Solomons. No further exploration was carried out by the Spanish in this area.

The Solomons were 'lost' to European voyagers for more than a century and a half. It was not until the latter half of the 18th

⁷²D. R. Swindler, "Problems of Melanesian Racial History," in A. P. Vayda, ed., Peoples and Cultures of the Pacific (New York, 1968), 27.

⁷³H. C. Brookfield and D. Hart, Melanesia A Geographical Interpretation of an Island World (London, 1971), 78.

⁷⁴The historical background is based primarily on British Solomon Islands Report for the Year 1970 (Honiara, 1971), Part III, Chapter 2.

century that the explorers, Carteret, de Bougainville, and de Surville, rediscovered various islands within the group. It was finally deduced that these islands were the 'lost' islands of Mendana's exploration of two centuries earlier. Confirming voyages were undertaken by LaPerouse, Shortland, and d'Entrecasteaux and in 1838 it was finally determined that these islands were those known as the Isles of Solomon.

Sandalwood traders and whalers called in the Solomons during the early 1800s in order to obtain supplies. There are reports of attacks on visiting seamen and of massacres of local populations. The Solomons developed a reputation of being a dangerous place. The first missionaries were Catholics who came in 1845; four of them were killed and the mission was abandoned within two years. However, the iron and steel tools of the traders were to eventually overcome local prejudice against the foreigners.

In the period after 1870 there were two main exports: copra and laborers. Coconut plantations were developed in the Solomons as the drying of copra for export became known. Laborers were needed for plantations in Queensland and Fiji and several thousand men were working in these two colonies, while a smaller contingent of laborers worked in Samoa and New Caledonia. In an attempt to control the labor recruitment by Australian planters the British declared a Protectorate over the Solomon Islands in 1893. By 1900 the British had all of the Solomon Islands under their administration with the transference of Santa Isabel, Choiseul, Shortlands, and Ontong Java from German control. In return, the British gave up their claims in Samoa to the Americans and Germans.

At this time commercial companies expanded the coconut plantations of the earlier traders and planters. Within the first decade of the 20th century Lever's, Burns Philp, and the Queensland Malayta Company all had established themselves in the Solomons. This expansion of copra production was important as the Protectorate administration was required to be self-supporting. Copra exports reached 4,000 tons by 1910, an amount which generated enough revenue to pay for administrative and police services. There was little remaining revenue to pay for social services.

With the advent of the British administration, missionaries were welcome to establish and expand their activities. The Anglicans had been continually present in the Solomons since 1865 and the Catholics returned in 1898. Additionally, the Methodists, South Sea Evangelicals, and Seventh Day Adventists came between 1902 and 1914. The missions provided services that the administration could not afford, notably that of providing some formal education to Solomon Islanders.

During the ensuing years the Protectorate government and missions did provide a pacifying influence and inter-tribal warfare was minimized. During the pre-World War II period the government and missions slowly developed their presence in the Solomons. The Japanese advanced into the Solomons in 1942 and subsequently the Allies invaded Guadalcanal which helped to terminate one front of that war but also unsettled life for the Solomon Islanders. The Protectorate capital at Tulagi had been destroyed and the administration was subsequently moved to a camp, complete with roads and airfields, the Americans had established at Honiara. Thousands of Solomon Islanders

took the opportunity to work in a Labor Corps for the Americans. Post-war recovery was slow as many coconut plantations were destroyed and wartime reparations did not extend to the private sector. As a result many private businesses, such as Burns Philp, that had been established in the early part of the century did not return to the Solomons. The major characteristics of the post-war period have been the improvement of health and education services, the localization of *political structures and a program of financial grants by the British government for development projects*. Current government policy is to "raise the rate of domestically generated growth through the exploitation of agricultural, forest and mineral resources."⁷⁵ It is expected that agriculture will be of primary importance on a long term basis and it will be necessary to increase the productivity of agriculture. The next section presents a discussion of land and agricultural production in the Solomon Islands.

Land and Production in the Solomon Islands

Land relationships in the Solomon Islands generally depended upon descent and residence. Land was not held by an individual but by a descent group. A man could work the land and it was described as his although the land reverted to the control of the descent group if the family died out. Usufruct rights to land cultivated by the individual would pass from one generation to the next.⁷⁶

⁷⁵Sixth Development Plan 1971-1973 (Hong Kong, 1971), 5.

⁷⁶H. W. Scheffler, "The Solomon Islands: Seeking a New Land Custom," in R. G. Crocombe, ed., Land Tenure in the Pacific (Melbourne, 1971), 273-281.

Shifting agriculture characterized the pre-contact practices of the Solomon Islanders. Generally, on Guadalcanal taro was grown by highland groups and yams by coastal groups. The advent of traders and the ensuing British rule caused changes. Inter-group conflicts ceased and new agricultural practices were introduced. Coconuts had been grown for subsistence food purposes with the person planting the coconut having the right to its produce irrespective of who held the primary land interests. The use of the coconut as a permanent commercial crop began to alter the Solomon Islanders' perception of the land on which coconuts were grown. The migration of some highland groups to coastal areas to be in proximity to educational and government services caused additional pressures upon land use.

Prior to the establishment of the British Protectorate in 1893, some land, mainly high quality coastal, had been purchased by expatriates to establish coconut plantations. By 1896 legislation had been enacted limiting land purchases to trading and agricultural activities only. Additionally, a clause was included to insure that land was developed within a reasonable amount of time. By 1914 freehold sales were no longer allowed and leases had to be made through the Resident Commissioner. Legislation has been passed enabling the government to obtain land for public or developmental purposes.

Allan has estimated that six percent of the total land area has been alienated to Europeans or to the government. This alienated land comprises 20 percent of the available coastal land and of this 20 percent approximately 90 percent is considered to be first class

coastal land.⁷⁷ On an aggregate basis there are 48 acres of land per capita, although 90 percent of the land is in foot-hills and mountains.

There is a policy to settle interests in customary land with a conversion to registered land. It is a slow moving process.

Partly this has been deliberate since land settlement can only be successful if it stems from a desire for it or at least the people to be affected are made fully aware of what it is all about before they are subjected to it.⁷⁸

The point that success in land matters depends upon the people's desire for a change is appropriate. 'Subjecting' the people to a land policy change is likely to hinder its success. Additionally, survey and administrative capacities have been limiting factors. This policy of conversion to registered land is being pursued only in specific areas where there is a perceived need to change customary land tenure forms. Hughes has stated that,

land settlement, leading to tenure conversion, has an important part to play in the development of the Solomons if three conditions are fulfilled:

1. It must be carefully restricted to areas where it will answer a real social and economic need.
2. The costs of field work in investigation, recording, and survey must be drastically reduced.
3. The necessary follow-up services (agriculture, finance, continued contact, assistance with wills) must be provided.⁷⁹

⁷⁷C. H. Allan, Customary Land Tenure in the British Solomon Islands Protectorate (Yagoona, N.S.W., 1957), 60.

⁷⁸A. G. Cross, "History of Land Legislation in the British Solomon Islands Protectorate," (Honiara, 1969), 10.

⁷⁹A. V. Hughes, "Tenure Conversion in the Solomons (1965-1969)," South Pacific Bulletin, XX. (First Quarter, 1970), 45.

The cost that Hughes refers to and that must be reduced is \$A5.78 per acre.

Hughes' first point indicates a sensitivity to the reality of the Solomons and there is an implication of a relatively small-scale program of tenure conversion. However, if tenure conversion projects are to be limited in scale and scattered throughout the Solomons the realization of the provisions specified in points two and three are rendered even more improbable and they intrinsically are. It will be extremely difficult to reduce field-work survey costs as the work is skilled-labor intensive. Survey costs may be reduced by replacing some ground surveys with air-photo surveys but even this rather informal method of establishing boundaries of land blocks for the holders of primary land interests would require much field work. Also, as the Tongan example showed, even on easy country the surveying process is time consuming; the project there extended over a 100 year period. The provision of follow-up services to small areas would increase the overhead costs of these basically expensive services on a per capita basis.

Native courts have been given almost exclusive jurisdiction in disputes involving customary land interests. There have been charges that the native courts have been unable to handle adequately some of the disputes. Additional training of court personnel and the reorganization of some courts is expected to solve some of these charges. However, a basic problem of defining what is customary remains. MacEwen points out that, "much of customary law regarding land tenure is not only not accepted, it is not known."⁸⁰ Customary

⁸⁰D. M. MacEwen, "Customary Land Tenure: A Dilemma," South Pacific Bulletin, XX (Third Quarter, 1970), 44.

land use in the Solomons, as well as other Pacific islands, was defined in terms of a system of shifting agriculture rather than for larger scale commercial agricultural production. The legal problems raised by the conversion are formidable, but not impossible due to the inherent flexibility of the customary land tenure system--a real if neglected virtue of this form of holding.

The major export crop of the Solomon Islands is presently copra. It accounted for a total export value of \$A3.6 million in 1970 which was 52 percent of total exports. The next most important export, lumber, was valued at \$A2.8 million and accounted for 41 percent of total exports. The third ranking export, scrap metal, was valued at \$A.1 million which was one percent of total exports.⁸¹ It is anticipated that copra will remain as the leading export of the Solomons for many years, although palm-oil is expected to rise in importance rapidly in the next decade.

After recovering from the disruption caused by World War II, copra production has stabilized at 20,000 to 25,000 tons annually and has maintained these levels since the mid-1950s. Historically, copra production began on expatriate controlled plantations, followed, thereafter, by Solomon Islanders planting on small holdings. In 1962 the copra produced from these small holdings of Solomon Islanders exceeded that of the plantations for the first time. The proportions produced by Solomon Islanders and expatriate controlled plantations

⁸¹British Solomon Islands, Report for the Year 1970 (Honiara, 1971), 142.

is shown in Table 3. The projected figures for 1980 and 1985 indicate greater total production as well as a greater proportion share of the production for Solomon Islanders. To accomplish this the Department of Agriculture has established a series of subsidies to encourage coconut planting.

Table 3

Production: Percentage division between Solomon Islander and plantation produced copra, 1966-1971 and projected for 1980 and 1985

Year	Solomon Islanders	Plantation	Total tons
1966-67	57.6	42.4	24,307
1967-68	55.1	44.9	19,938 ^a
1968-69	56.0	44.0	23,416
1969-70	57.6	42.4	24,306
1970-71	56.6	43.4	25,072 ^b
1980	78.3	21.7	46,000
1985	76.9	23.1	65,000 ^c

Source:

^aCopra Board, Annual Report for the year ended 30th September, 1968 (Honiara, 1969), 5.

^bCopra Board, Annual Report for the year ended 30th September, 1971 (Honiara, 1972), 6.

^cBritish Solomon Islands, Sixth Development Plan 1971-1973 (Hong Kong, 1971), 47.

One of the major agricultural activities is the development of a large scale plantation of 8,000 acres of oil palms on the north coast of Guadalcanal. This large size is necessary to justify economically

a processing plant. Once the 8,000 acres are well-established it is planned that farmers of the surrounding area will develop their own smaller scale plantings of oil palms and have access to the central processing plant. Currently, it is projected that 2,000 to 3,000 acres will be in small scale plantings in an area surrounding the nuclear plantation.

Development of the Hypothesis

In the Solomon Islands 41 percent of the government's expenditure is financed by external aid.⁸² It is the objective of the Protectorate administration to reduce this dependence on outside aid and encourage economic self sufficiency. In an attempt to partially reduce levels of economic dependency, enclave developments such as the oil palm plantation are encouraged. Additionally, there are current projects to increase rice production and to catch and preserve fish. These two latter projects will reduce the country's dependence upon some imported items. The increasing copra production projections for Solomon Islanders in 1980 and 1985 reflect an attempt to involve Solomon Islanders in the development process to a greater extent.

Between the period, 1970-1971 to 1985, the total copra production is projected to increase from 25,000 tons to 65,000 tons, or an increase of about 160 percent. During the same period the population is projected to increase from 156,066 to 266,952, an increase of

⁸²British Solomon Islands Protectorate, Sixth Development Plan 1971-1973 (Hong Kong, 1971), 5.

71 percent.⁸³ There is an expectation that per capita agricultural production will increase during the next 15 years. Since it has been shown that per capita agricultural production has remained constant or even declined in the Pacific islands, policies that are designed to increase agricultural productivity must be of particular interest. Production incentives and security of tenure have been identified as methods of effecting an increase to agricultural production. Production incentives encompass market development including price, a transportation network, and increasing the utility of money. A farmer who feels he has control over his land and its produce is likely to be more willing to invest his labor and capital in that land.

As suggested by Raup the security of tenure is likely to be an important element, particularly in an area of deficient social and political organizations. Although there has been no indication of deficient socio-political organizations, the Pacific islands, through their history, have been influenced by various introduced land tenure policies. Crocombe's research indicates that changes to land tenure have not resulted in increased production yet the process and recommendations continue. This is a function of western administrators or advisors imposing, on a conscious or sub-conscious basis, their own values concerning land tenure on to different systems.

⁸³K. Groenewegen, Projections of the Population of the British Solomon Islands Protectorate 1970-1985 (Noumea, 1971), Tables VI-X. These census figures and projections are based upon the Melanesian and Polynesian components of the population only. Groenewegen presents five different projections for 1985 based upon different sets of assumptions. The highest figure was selected for inclusion.

For instance, in writing about Western Samoa in 1956, and prior to independence, Stace suggested that,

there is a growing body of opinion that there can be no rapid and enduring progress in the development of Samoan lands until the untitled men are granted recognized status and reasonably secure tenure in the land they have cleared and planted.⁸⁴

The first development plan of Western Samoa in 1966, four years after independence, comments upon the low agricultural production per acre in the country.⁸⁵ Among the stated reasons for this situation was that the, "lack of security of tenure in village agriculture retards the motivation for efficient and increased production."⁸⁶ The report continues with comments upon customary land control practices and states that, "Purely from an economic point of view, without considering the importance of social custom, such control of land inhibits the efficient use of that land."⁸⁷ The second development plan in 1970 again commented upon customary land control practices and quoted the previous quotation from the first development plan.⁸⁸

In the New Hebrides, an island group in Melanesia, the land was divided on the last day of 1968 and a system of land registration was

⁸⁴V. D. Stace, Western Samoa - An Economic Survey (Noumea, 1956), 8.

⁸⁵They omit to mention that the difference between production per acre on customary land and on alienated plantation land is small. Cf. V. D. Stace, Western Samoa - An Economic Survey.

⁸⁶Western Samoa's Economic Development Programme 1966-1970 (Apia, 1966), 26.

⁸⁷Ibid., 27.

⁸⁸Second Five Year Development Plan 1971-1975 (Apia, 1970), 5.

established. The Registrar of Land Titles in the New Hebrides wrote,

The system of land registration is accepted by the European population.

However, the indigenous population distrusts it and has rarely applied for registration of a custom-held piece of land. This is despite the fact that the obligatory and free assistance of the Native Advocate and the Resident Commissioner's power to exempt any person wholly or partly from any costs to which he is liable, free New Hebrideans from any anxiety on that score.

This behavior may be explained:

(a) by the mentality of the people whose conception of the relationship between man and the land is totally different from that of expatriates;

(b) by their ignorance of the advantages of this system (certain title, easily transmitted, and available as security to obtain credit); and

(c) because the islanders consider this system as being a European creation of benefit to Europeans.⁸⁹

The fact that New Hebrideans do have a different conception of man's relation to land may provide them with an appreciation of their present system of landholding with respect to the introduced system. The land registration system is of benefit to Europeans as evidenced by the recent sale of house-lots to overseas purchasers.

On display in the Lands and Survey Office of the British Solomon Islands is a diorama entitled, "Land Settlement Helps the Farmer."

There are five three-dimensional illustrative scenes with the following captions:

1. The old days - A man gets permission to use the land.
2. Ways of living and thinking change - Jealousy and hatred arise against the farmer.
3. Land settlement comes - The truth is discovered - The hardworking farmer is protected.
4. Boundaries are marked and surveyed - The land is registered.

⁸⁹P. L. Pre, "Land Registration in the New Hebrides," South Pacific Bulletin, XX (Third Quarter, 1970), 21-22.

5. The farmer and his family live happily on their registered land.⁹⁰

The results of introduced land tenure systems upon agricultural production in the Pacific islands have been mixed. Systems of registered land and the commercialization of agriculture have disrupted island societies.

The hypothesis basic to this research is that increased agricultural development in a rural Guadalcanal society in its early stages of agricultural commercialization is dependent not on the existence of individually registered land but on the incentives available to farmers to produce commercial crops. The incentives must be meaningful to the farmer as he perceives them. Increasing the level of agricultural development through production incentives will be determined by the degree of development of market linkages, farm product prices, agricultural credit, agricultural extension services, and educational levels of farmers. The registration of land and issuance of fee-simple titles are not required for growth of agricultural development. As the transition is made from subsistence agricultural practices to commercial agriculture a more structured system of land use will evolve to fit the needs of the farmer.⁹¹

⁹⁰Field notes.

⁹¹An evolutionary land use pattern leading to surveyed plots, fee simple titles and an ever-appreciating land market is not envisaged as a necessary end or goal; nor, for that matter, are communally operated state farms. Since land tenure practices are part of the social and political fabric of the people any future changes to the land system should reflect the values of that society and not of an outside observer.

CHAPTER II

SUBSISTENCE AGRICULTURE

The Physical Setting

The research locale was the Weather Coast of Guadalcanal. The island of Guadalcanal, with an area of 2,500 square miles, is the largest in the Protectorate, which has a total area of 11,500 square miles. The total population of the Protectorate was 160,998 in 1970 with 35,187 persons on Guadalcanal. The Weather Coast had a de facto population in 1972 of 7,929, or approximately 22 percent of the total population of the island.

The island itself is about 99 miles long and 28 miles wide across its center. A mountain range consisting of volcanic basement is located along the island on a northwest-southeast axis. The range culminates in the peaks of Mount Makarakomburu, about 7,644 feet (2,330 m), and Mount Popomanaseu, 7,644 feet (2,330 m), both of which are located within eight miles of the south coast.¹ The nearness of this range to the coast results in long, steep slopes and a narrow, discontinuous strip of habitable coastal land.

In general, the climate may be characterized as being hot, humid, and wet. Moisture-laden trade winds blow in from the southeast between March and November and the mountain range induces frequent and heavy orographic rains. During the balance of the year there are short

¹J. R. F. Hansell and J. R. D. Wall, Guadalcanal and the Florida Islands: Volume 2, Land Resources of the British Solomon Islands (Surrey, England, 1974), 2. The exact height of Mount Makarakomburu is unknown.

periods when the northwesterlies are even stronger than the southeasterlies. The result is heavy winds, high seas, and frequent rain along the southern coast for much of the year, a situation reflected in the locally used regional name, 'the Weather Coast.'

"To the people the seas of the north coast appear 'dead' (tasi mate); at home on the south coast they become 'live' and devilish (tasi mauri)."²

The rainfall in the mountain areas is of a very high frequency throughout the year. It has only been recently that any type of rainfall records have been maintained in the mountains. In 1972 the rainfall at Chikora was recorded to be 529.6 inches (13,452 mm).³ Wall suggests that this amount of rainfall does have a very dramatic effect. A prolonged rainfall will rapidly saturate the shallow mountain soils resulting in a rapid surface run-off. This creates mud flows, land slips, and debris slides. The eroded material is fed into the deeply cut gullies and streams so that large boulders and trees are carried down the river channels. Inter-village movement along the narrow coastal strip of the Weather Coast is frequently interrupted by impassable torrents, and the risk of being marooned on an interfluvium greatly inhibits communication. In some areas even the travel to garden plots is hampered. Moreover, damage to root crops will also be a result of continual and heavy rainfall.

²M. T. Chapman, Population Movement in Tribal Society: The Case of Duidui and Pichahila, British Solomon Islands (Ph.D. Dissertation, University of Washington, 1970), 20.

³By comparison the average annual rainfall at Mount Waialeale, Kauai, Hawaii is 460 inches and is reportedly the world's wettest spot.

The study of subsistence agricultural practices was accomplished at three Weather Coast sites. Hatare, in the Marau Sound area, and Sughu, situated along Wanderer Bay, are both coastal areas while Ghauvalisi is an inland village. Each site has different physical and man-made features which have affected the activities of the people. Table 4 presents the average household size at each of the three sites.

Table 4
Household size: Hatare, Ghauvalisi, and Sughu

	Number of households	Adults	Children (less than 15 yrs)	Total
Hatare				
Total ^a	34	115	130	245
Average		3.4	3.8	7.2
Total ^b	5	16	13	29
Average		3.2	2.6	5.8
Ghauvalisi				
Total	7	21	19	40
Average		3	2.7	5.7
Sughu				
Total	15	38	25	63
Average		2.5	1.7	4.2

Note: See Appendix E for age/sex groupings.

^aAgriculture Household Survey complete for this population and will be referred to as Hatare.

^bAll three research schedules complete for this population, which is a sub-group of the 34 Hatare households and will be referred to as Hatare/Poinaho.

Source: Field notes.

The research sites were specified by the two project leaders after consultation with district administrators and Weather Coast residents. Two sites were selected because of the availability of all-weather anchorages and, in addition, one of these sites was located next to a road. Another site was selected because of its inland location and isolation from the sea. No one site could be considered as an 'average' village but the three sites together reflect the diversity and range of activity along the Weather Coast.

The research site in the Marau area was located at the eastern end of the Coastal Belt which extends from Avuavu to Marau.⁴ Specifically, research was conducted in Hatare, an area consisting of the fifteen villages from Su'u in the east to Komunikau, three miles west of Su'u (Figure 3). Extensive reefs have developed along this portion of Guadalcanal's coast and the islands in Marau Sound. As a result, a well-protected anchorage is available for year-round shipping service.

The off-shore reefs have created a coastline of narrow white sandy beaches of coral debris and which is more or less covered at high tide. Behind the coral beach and generally parallel to it is a line of low older coral beaches. In Hatare, coconuts are planted on these older beaches. Backing the beach soils are colluvial fans and low terraces formed by boulders and muddy debris that have washed down from the surrounding hills and mountains. This land is planted with coconuts and root crop gardens and in no place is it more than

⁴J. R. D. Wall, "The Physical Geography of the Weather Coast" (Honolulu, 1973), 6-7. This paper is to be included in the Report on the Guadalcanal Weather Coast to be published in 1974.

1.2 miles wide. Protruding into this relatively level area are dissected foothills with level summits. Gardens are planted along the slopes and summits of these foothills with coconuts now being planted on the lower slopes. Between the old beaches and colluvial fans, and limited by the dissected hills, are small areas of swamp lands with mainly tall Mixed Swamp Forest. The land behind the foothills of Hatare rises to a height of 2,303 feet (702 m) at Marau Peak, about two miles inland from the coast and is covered predominantly by Hill Forest.

Large rivers are a characteristic of the Weather Coast although not in Hatare. This lack of rivers is partly a result of the small catchment areas and partly because surface drainage tends to be absorbed in the fans and swamps behind the beaches. At the coast there is limited water for cooking and bathing purposes. Potable water is collected from one of two shallow springs and bathing is done in one stream 10 yards downstream of the springs or from shallow wells. Well water is never used for cooking or drinking.

Rainfall is intensive in Marau with a mean annual rainfall of 182.96 inches (see Appendix F) but the rain does not cause as much disruption as in other areas of the Weather Coast when rivers are flooded. There is a high frequency of rainfall throughout the year with no period of prolonged dry spells. The average number of rain-days per month ranges from a high of 22 in July to a low of 17 in November (Appendix G). The Hatare area appears to be at the periphery of an area sheltered from cyclones. The most recent cyclone in Hatare was in July 1972 which passed over Marau Sound, and destroyed houses,

felled coconut palms, and denuded trees of their leaves.

An inland research site was at Ghauvalisi, consisting of seven households, located four miles up the Tina River valley in the Tina Basin.⁵ The ridges along the valley mouth drop steeply into the sea and the narrow beach consists of gravel and boulders. Landings are made at Marasa in dinghies subject to wind and sea conditions. The most favorable landing conditions occur during the short period of northwesterlies.

The combined lower course of the Marasa-Tina rivers is characterized by an extensive fluvial plain which is subject to serious flooding only infrequently. The Tina flood plain, which is contained within the fluvial plain, is about 300-1600 feet wide and is bordered by almost level low terraces and plains. The terraces and plains reach 1.8 miles in width and are about 10 square miles in area. These have a slope of from 0-2° and the soils are among the best along the Weather Coast. The plain is covered with Lowland Forest with some clearing for coconuts and gardens. Ghauvalisi is located on the northern periphery of the plain. Rising above the lower Tina basin and directly behind Ghauvalisi are deeply dissected angular ridges. The ridges range in height up to 1600 feet and are forested. The slopes are steep and subject to landslides.

Drinking and bathing water is always available from the Tina river. Ghauvalisi is located midway between Chikora, a mountain site with a mean annual rainfall of 326.92 inches, and Tangarare, a coastal

⁵Ibid., 4-5.

site with a mean annual rainfall of 125.58 inches (Appendix F). It is likely that annual rainfall in Ghauvalisi approaches 200 inches. At Chikora the average number of raindays per month ranges from a high of 27 in May to a low of 20 in April while in Tangarare the range is from a high of 21 in March to a low of 16 in June (Appendix G). It may be inferred that Ghauvalisi receives rain on a consistent basis throughout the year with few dry spells thus assuring adequate water for personal use as well as for gardens.

The second coastal site was located at Sughu on Wanderer Bay on the western side of Guadalcanal. The bay provides a protected anchorage for year-round shipping service. There is a little reef development along the northern side of the bay.

There is a narrow sandy strip along the shore of the bay on which coconuts are planted. Low, riverine terraces and small plains occur from the coast inland to a depth ranging from 1600 feet to 1.8 miles and flooding is not severe. These terraces and plains contain Lowland Forest but are largely planted to coconuts and gardens. Surrounding the flat coastal area along Wanderer Bay are moderately high and high ridges with heights ranging up to 2000 feet. The slopes of the hills range from moderate to steep ($10-35^{\circ}$) and coconuts are planted at the lower levels of the slopes with gardens planted at both lower and higher levels.

As in Ghauvalisi, river water is available at Sughu for both drinking and bathing purposes. The nearest rainfall collection site is at Tangarare (mean annual rainfall 125.58 inches) which is located about six miles north of Sughu. Although rainfall is consistent

throughout the year the Tangarare site has the lowest mean annual rainfall of the three rainfall collection areas. There are periods of prolonged dry spells of 10 days or more but their infrequency minimizes the danger to water supplies.

Gardens - Supply

The basic agricultural activity on the Weather Coast is the cultivation of subsistence garden crops. Crops grown are similar throughout the three sites as are the methods of planting and harvesting. A variety of soil types and topography result in a difference of crop yields and per capita areas under cultivation.

Every household at the research sites cultivates and maintains gardens for their own subsistence needs. Several garden plots are maintained in different locations throughout the village area. Hatare/Poinaho, Ghauvalisi, and Sughu households all maintain approximately three separate plots (Table 5). The average distance of the gardens from the household sites is an 18 to 25 minute walk at all sites although some Sughu gardens are up to 50 minutes from the village.

Table 6 shows a per capita area of garden under cultivation rather than the average size of a garden plot. Within a bush-fallow system of subsistence agriculture Barrau indicates that an average of 1,000-1,500 square yards of garden area under cultivation on a per capita basis is necessary to provide an adequate food supply.⁶

⁶J. Barrau, Subsistence Agriculture in Melanesia (Honolulu, 1958), 75.

This compares with an average of 353 to 1,099 square yards per capita at the three research sites. The lesser garden areas at the three sites may be the result of better soil conditions thereby causing higher yields or different dietary requirements of the people. Garden yields and dietary requirements are discussed below.

Table 5

Gardens: Number, acreage, and average distance

	Total no. of gardens	Average number gardens per household	Total garden acreage	Average garden acreage per household	Average acreage per garden	Average distance from household to garden (minutes)
Hatare/Poinaho 5 households	13	2.6	3.619	.724	.278	20
Ghauvalisi 7 households	19	2.7	2.923	.418	.154	25
Sughu 15 households	49	3.3	14.290	.953	.292	18

Source: Field notes.

Table 6
Gardens: Acreage and per capita area

	Population	Total garden acreage	Per capita garden area	
			Acres	Square yards
Hatare/Poinaho	29	3.619	.125	605
Ghauvalisi	40	2.923	.073	353
Sughu	63	14.290	.227	1099

NOTE: 1 acre = 4840 square yards

Source: Field notes.

Kumara, or sweet potato (Ipomoea batatas), is the basic food crop grown throughout the Weather Coast area and was the dominant garden crop at all three research sites at the time of the survey (Table 7). About two-thirds of all garden acreage was devoted to kumara with a range at the three sites of 64 to 77 percent. Kumara is harvested and eaten during the entire year and kumara gardens were at various levels of maturation at all research sites. The kumara is planted, harvested, and eaten throughout the year and it is supplemented by yams (Dioscorea alata) from May to September.

Table 7

Gardens: Acreage per crop

	Kumara				Yam	Pana	Taro	Other	Total
	1st	2nd	3rd	Total					
Hatare/Poinaho Percent	1.187 33	1.123 31	.160 4	2.470 68	.466 13	.642 18	.041 1	—	3.619
Ghauvalisi Percent	.989 34	.860 30	—	1.849 64	.621 21	.064 2	.297 10	.092 ^a 3	2.923
Sughu Percent	3.522 24	6.264 44	1.305 9	11.091 77	2.401 17	.527 4	.271 2	—	14.290

^aIncludes corn and cassava acreage.

Source: Field notes.

In addition to determining average and per capita garden acreage, the gardens were also classified according to topography: flat, moderate sloping, or steep land.⁷ Ghauvalisi gardens are virtually all planted on the Tina fluvial flood plain and 97 percent of the garden acreage is classified as flat (Table 8). More than half, 57 percent, of the garden acreage in Hatare/Poinaho is also on flat land. About one-third of the garden acreage in Sughu is on steep lands with 90 percent of Sughu's gardens planted on steep or moderately sloping land.

Of the three sites, the selection of land for garden use in Ghauvalisi is more typical of shifting agriculture, that is, a cultivation period followed by a long fallow period. Gardens are not competing for land with cash crops as there are few coconuts or other crops grown for commercial purposes by Ghauvalisi households. Only two crops of kumara are planted in a garden before the plot is left to fallow. Secondary growth surrounding these gardens is 20 to 25 feet high and delineates the overall extent of the entire garden area. Occasionally, logs which have been cleared from the garden area are used to define sub-sections within the garden such as that devoted to a specific crop. As often as not, gardens will be planted with no type of boundary marker.

In Sughu coconuts have been planted throughout the relatively

⁷ It must be noted that these topographical classifications will not hold up to rigorous categorization as measured by degrees of slope. The goal was to describe general tendencies rather than do a detailed analysis of a physical site. This goal was determined by the economic training of the researchers.

Table 8

Gardens: Acreage by topography and crop

	<u>Flat</u>		<u>Moderate slope</u>		<u>Steep slope</u>				
	Kumara	Other ^a	Total	Kumara	Other	Total			
Hatare/Poinaho Acre Percent	1.618 45	.442 12	2.060 57	.558 15	.459 13	1.017 28	.294 8	.248 7	.542 15
Ghaualisi Acre Percent	1.849 63	.987 34	2.836 97	—	.087 3	.087 3	—	—	—
Sughu Acre Percent	1.468 10	—	1.468 10	5.357 38	2.614 18	7.971 56	4.266 30	.585 4	4.851 34

^aThe "other" column aggregates the other root crops grown, such as taro, pana, and yam.

Source: Field notes.

level areas. As indicated by Table 8, 90 percent of the garden lands are on moderately or steeply sloping land. While this may signify a lack of suitable agricultural land close to the village due to their coconut plantings, the average distance from household site to garden plot is only 18 minutes, the lowest of the three sites. Moreover, the Sughu farmers stated that the sloping lands were better for garden sites. Little need is seen for the necessity of boundaries as the garden plot of a household is not adjacent to the garden of another household. When, and if, a specific boundary marker is needed logs and sticks are used as well as rows of pineapple or corn.

A long held practice of delineating boundaries in subsistence gardens is observed by all households in Hatara. After land is cleared and prior to planting, the garden areas are bounded with logs varying in diameter from several inches to three feet. Rows are marked off at six to seven foot intervals, again using logs. Banana, pineapple, taro, papaya, and tapioca are commonly planted to distinguish between adjacent holdings. Once a garden area is cleared, digging sticks or hoes are used to break up the soil and create a mound. Four kumara vines are generally planted to each mound. If planting is done on an especially hot day with little cloud cover a fifth or sixth vine is also planted to prevent or lower the risk of the total drying out of the vines. The spacing of the mounds at all sites is generally 3 to 3.5 feet square. Elsewhere in the Solomons average spacing has been observed up to four to five feet (West Kwara'ae, Malaita).⁸

⁸Report of the Interdepartmental Committee on Shifting Cultivation and Soil Exhaustion in West Kwara'ae, Malaita (Honiara, 1969), 7.

Once the kumara vines are planted it takes approximately three to six months before the kumara can be harvested. In Ghauvalisi the growth cycle of the kumara was three months, in Sughu it was five months while in Hatare/Poinaho it was six months. Harvesting the Kumara in one garden continues over a three-month period. As the kumara are removed from the mounds, a new mound is made and planted with vine cuttings for a second crop. At both Hatare/Poinaho and Sughu, this process is repeated a third time so that three crops are harvested from one garden.

The other major root crops are yam, pana (Dioscorea esculenta), and taro (Colocasia esculenta). Taro is grown to a very limited extent at the two coastal sites but accounts for 10 percent of the garden acreage at the inland site. The Hatare/Poinaho and Sughu people did comment that they once grew taro but were now unable to in any quantity because of the taro fungus, Phytophthora colocasiae. Yams and pana require about a six to nine month growth period before they are mature. In addition to these major root crops, a variety of other plants are grown in the gardens including cassava, cabbage, pineapple, papaya, banana, corn, and tobacco.

As previously noted, the research at the three sites occurred when kumara was the major root crop harvested. The yield data collected consequently reflects more information about kumara. When the measurement of each household's garden was accomplished, a determination of the spacing between kumara mounds was made. Mounds at all sites were generally spaced at 3 to 3.5 feet in a square grid pattern. With this information, the total number of kumara mounds in the gardens and the

average number of mounds per household was determined (Table 9). The average figures reflect the range of average garden acreage per household, and soil fertility at the different sites. Sughu, with more garden acreage per household, has a greater number of kumara mounds while Ghauvalisi, with the smallest garden acreage per household, has the fewest kumara mounds.

Table 9
Gardens: Number of kumara mounds by successive crop

	Kumara			Total	Average per Household
	1	2	3		
Hatare/Poinaho	5,376	4,458	772	10,606	2,121
Ghauvalisi	4,606	3,298	0	7,904	1,129
Sughu	16,155	29,303	6,391	51,849	3,457

Source: Field notes.

The average yield of kumaras from a single mound is given in Table 10 for first, second, and third successive crops. The first crop average yields at Ghauvalisi are strikingly higher than those of Sughu and Hatare/Poinaho. This is due to the rich soils of the Tina fluvial plain where all Ghauvalisi gardens are planted. At the Ghauvalisi site, a sample of fifteen mounds was taken of both first and second crop gardens. All of the gardens were located on the flat lands of the fluvial plain. These soils are classified as fluvial Eutropepts and

exhibit deep stone-free profiles. Wall describes these fluvial Eutropepts as having, "a moderate or good overall fertility . . . and are only rarely influenced by flooding. This, added to their level or gently sloping topography, gives them the highest agricultural potential of any soils west of Avuavu."⁹

Table 10

Gardens: Average kumara yields per mound
by successive crop (pounds)

	Kumara		
	1	2	3
Hatare/Poinaho	3.5	2.2	1.8
Ghauvalisi	9.4	4.2	0
Sughu	4.7	2.7	2.5

Source: Field notes.

Similarly, at Sughu, 15 mound samples were taken of yields in first, second, and third crop gardens. Within each 15 mound sample there is a mix of garden topography: flat, moderate slope, and steep slope. It is not possible to disaggregate the average yields in kumara to allow for comparison between the effect upon yield of soil

⁹J. R. D. Wall, "The Physical Geography of the Weather Coast" (Honolulu, 1973), 36.

types on differing landforms.

At Hatare/Poinaho, a sample of 25 mounds was taken from first crop gardens and 10 mound samples for both second and third crops. In addition to the average yield per mound for first, second, and third successive crops, the Hatare/Poinaho data may be disaggregated by garden site in order to account for soil type (Table 11). Hatare/Poinaho garden soils at sites number 1, 2, 3, and 5 are classified as Eutropepts and occur, in part, in colluvial fan landforms. Even though Ghauvalisi and Hatare both have soils classified as Eutropepts there are differences in the average yields of kumara at the two sites. Wall describes some differences of the Eutropepts soils occurring in the Hatare area, "their inherent fertility is moderate to good (except that potassium is notably deficient) and the chief disadvantages are an excessive stoniness and insufficient depth in places."¹⁰ Hatare/Poinaho garden soil at site number 4 is classified as Haplorthox and occurs in areas characterized by dissected hills with level summits.

In Table 11, yield data for a range of Guadalcanal and Malaita sites is presented. The yields (tons per acre) of kumara for the Weather Coast sites are higher than for most other sites in the Solomons for which comparable data was available.¹¹ Of particular note is the average yield of 16.6 tons per acre recorded for a first crop of kumara in Ghauvalisi. A comparative yield of this magnitude is

¹⁰Ibid., 36.

¹¹The method of computation of kumara yield is presented in Appendix H.

Table 11

Gardens: Kumara yield per acre at selected sites* (tons)

Site	Number of successive crops	Total yield (tons/acre)
<u>Weather Coast</u> ^a		
Ghauvalisi--Average	1	16.6
--Average	2	6.1
Sughu--Average	1	7.2
--Average	2	4.2
--Average	3	4.1
Hatare/Poinaho--Site #1	1	8.6
#2	1	7.1
#3	2	3.0
#4	2	5.6
#5	3	2.2
--Average	1	7.1
--Average	2	3.9
--Average	3	3.9
<u>Malaita</u> ^b		
Kwara'ae (#19--highest yield)	1	5.0
(#17--lowest yield)	1	.2
(#11--median)	1	2.0
(#16--highest yield)	2	2.5
(#4--lowest yield)	2	.5

Table 11 (Continued) Gardens: Kumara yield per acre
at selected sites* (tons)

Site	Number of successive crops	Total yield (tons/acre)
(#3--only sample of third crop)	3	.2
Average yield	-	2.0
<u>North Guadalcanal^C</u>		
Tasimboko	-	5.3
Roroni	-	14.3
Tetere Leprosarium	-	3.2
Kaotave	-	1.9
Visale	-	4.7
Tambea	-	5.2
Vura	-	2.6
Chovuna	-	3.5
Mataruka	-	4.9
Poha	-	3.9

*See Appendix H for explanation of derivation of total yield figures of Weather Coast sites.

Sources:

^aField notes.

^bReport of the Interdepartmental Committee on Shifting Cultivation and Soil Exhaustion in West Kwara'ae, Malaita (Honiara, 1969), Appendix 9.

^cBased on field notes of B. J. Leach, Land Use Survey Officer, Honiara.

supported by the earlier data for Ghauvalisi, that is the small garden acreage per capita and resultant fewer number of kumara plants.

Comment must be made upon one important difference between the Kwara'ae and Weather Coast subsistence data. In the Kwara'ae research, the average spacing between kumara mounds was between four to five feet square.¹² At the Weather Coast sites, as previously mentioned, the spacing between mounds was 3 to 3.5 feet square. This variance in spacing obviously can affect the yield of kumara: for example, if the spacing is three feet square, there would be 4,840 mounds per acre; if four feet square, 2,723 mounds per acre; and if five feet square, 1,742 mounds per acre. Consequently, the Weather Coast yield data was recomputed for three, four, and five feet square spacing (multiplying the mounds per acre for the appropriate spacing times the yield per mound) and the results of this exercise is shown in Table 12. It is recognized that yields will differ according to the spacing of the mounds and general fertility of the soil. This mathematical exercise does indicate that the Ghauvalisi yields are the highest of the selected sites irrespective of spacing. However, depending upon the comparative spacing, Ghauvalisi yields range from about ten times the Kwara'ae average to less than three times the Kwara'ae average and are thus contextually more plausible than might appear at first glance.

In the previous section yield data from subsistence gardens was presented in tons per acre. Essentially, this indicates the productive

¹²Report of the Interdepartmental Committee on Shifting Cultivation and Soil Exhaustion in West Kwara'ae, Malaita (Honiara, 1969), 7.

Table 12

Gardens: Kumara yield per acre at various spacings (tons)

Site	Number of successive crops	Actual yield	Projected yields		
			3 foot space	4 foot space	5 foot space
Weather Coast					
Ghauvalisi					
Average	1	16.6	20.3	11.4	7.3
Average	2	6.1	9.1	5.1	3.3
Sughu					
Average	1	7.2	10.2	5.7	3.7
Average	2	4.2	5.8	3.3	2.1
Average	3	4.1	5.4	3.0	1.9
Hatare/Poinaho					
Average	1	7.1	7.6	4.3	2.7
Average	2	3.9	4.8	2.7	1.7
Average	3	3.9	3.9	2.2	1.4
Kwara'ae					
Average	-	2.0	-	-	-
Northwest Guadalcanal					
Average	-	3.9	-	-	-

Source: Same as Table 11.

capacity available at the selected research sites. The section that follows will present information about the types and amounts of food harvested and their relationship to nutritional needs.

Gardens - Demand

The Household Survey: Daily Schedule questionnaire was used (Appendix C), in part, to gather information on the amount of food harvested from the gardens and obtained from other sources. The survey was performed daily at a time planned to coincide with the return of the people from their garden work, generally in mid to late afternoon. The same households participated in this survey as for the preceding section. During the course of the questioning, garden produce that had been harvested that day was weighed. Foods were weighed prior to their cleaning and cooking. A hand-held spring scale capable of weighing up to 50 pounds was used. In addition to weighing garden root crops, bananas, greens, coconut, and pineapple that were obtained from gardens, any fish that were caught were weighed. The results of these daily weighings of foodstuffs are shown in Table 13. Total production refers to the amount of food weighed, as harvested, during the entire survey period. The average per household per day was computed by dividing the total production by the total survey days.¹³

¹³The 126 survey days in Hatare/Poinaho, for example were based upon the total of three household surveys of thirty days duration and two household surveys of eighteen days duration ($3 \times 30 + 2 \times 18 = 126$).

Table 13

Gardens: Total and average daily production (pounds)

	Kumara	Yam	Taro	Cassava	Total root crops	Banana	Greens	Fish	Coconut	Pineapple
Hatare/Poinaho (5HH & 126 days)	1285	0	0	84	1369	0	111.5	128	249	n.a.
Total production										
Average per household per day	10.2			.7	10.9		.9	1.0	2.0	
Ghauvalisi (7HH & 154 days)	3870	213	75	91	4249	91	n.a.	0	n.a.	12
Total production										
Average per household per day	25.1	1.4	.5	.6	27.6	.6				.1
Sughu (15HH & 210 days)	4853	45	33	86	5017	21	122	83.2	n.a.	448
Total production										
Average per household per day	23.1	.2	.2	.4	23.9	.1	.6	.4		2.1

n.a. = not available

Source: Field notes.

Kumara was the basic source of food at all three sites. The Ghauvalisi and Sughu households harvested more than twice the amount of kumara than the Hatare/Poinaho households. Part of this difference results from the people's manner of pig feeding. In Sughu and Ghauvalisi kumara was fed to the household's pigs while in Hatare/Poinaho coconut was the primary feed for pigs. In addition the lower amount of kumara harvested in Hatare/Poinaho is partially offset by their greater production of greens (Hibiscus manihot) and fish. Hatare/Poinaho and Sughu both reflect their coastal characteristics in their production of fish. It should be noted that Table 13 presents production or harvest data and should not be considered to indicate the total food consumption of the people during the survey period.

These figures provide a basis for general information about the relationship of root crops harvested, specifically kumara, to the nutritional needs of the population. Susan Holmes' recommendation of daily optimal root crop consumption (four pounds for adult men, three pounds for adult women and children 10-15 years old, two pounds for children 5-9 years old, and 1.5 pounds for children 2-4 years old) was used as a basis for calculation (Table 14).¹⁴ The average daily production per capita of kumara was computed by dividing the average daily harvest of kumara by the average household size. Ghauvalisi and

¹⁴Kumara will be used as the basic crop in the discussion of supply and demand of subsistence agriculture. The kumara accounts for the major portion of root crop production, by weight, at all sites: Sughu 97 percent, Ghauvalisi 91 percent, and Hatare/Poinaho 94 percent. Additionally, garden yield figures are complete for kumara. The Holmes' data regarding optimal consumption dietary patterns refer to all root crops and it is not possible to disaggregate kumara from root crops.

Table 14

Gardens: Comparison of harvested kumara and nutritional needs

	Hatare/ Poinaho	Ghauvalisi	Sughu
Average number of persons per household	5.8	5.7	4.2
Average daily harvest per household of kumara (pounds)	10.2	25.1	23.1
Average per capita daily production (pounds)	1.8	4.4	5.5
Average per capita ^a optimal consumption (pounds)	2.9	2.8	2.9

Sources:

^aBased on Susan Holmes' recommendation of optimal root crop consumption.

Adult men	4 pounds per day
Adult women	3 pounds per day
Children	
10-15 years	3 pounds per day
5-9 years	2 pounds per day
2-4 years	1.5 pounds per day

S. Holmes, A Nutrition Survey--British Solomon Islands Protectorate (c. 1951), 49.

Field notes.

Sughu have a higher per capita production figure of kumara than Hatare/Poinaho. This per capita production figure is compared with the per capita optimal consumption of root crops as determined by Holmes. The Ghauvalisi and Sughu per capita production figures are about twice that of the per capita optimal consumption figure possibly indicating an adequate root crop supply for both human and livestock needs. Conversely the Hatare/Poinaho per capita production figure of 1.8 pounds is two-thirds that of the per capita optimal consumption figure of 2.9 pounds. This could indicate that the Hatare/Poinaho diet is suboptimal, that the optimal figures are in error, or that the survey was in error. The optimal root crop consumption figures of Holmes' study are based upon a rural Solomon Islands diet consisting only of root crops, greens, and coconut cream. No allowance is made for imported food items or fish, of which the Hatare people have available an average of .17 pounds per day per capita. Moreover, there may be cultural differences in consumption habits. Table 15 compares the dietary habits of three Weather Coast sites for all root crops with five other areas surveyed by Holmes. The Hatare/Poinaho 1.9 pound figure is very similar to Holmes' figure of 1.96 pounds for several saltwater villages on Malaita. The comparability of these figures, together with the fact that the Hatare people originally came from Malaita, may be indicative of cultural differences within the Solomons in food consumption practices, and specifically of the location of the villages in relation to the sea and the consequent availability of fish.

Table 15

Gardens: Daily per capita production or consumption of root crops at selected sites (pounds)

Village	Daily per capita production of root crops	Daily per capita consumption of root crops
Hatare/Poinaho	1.9	
Ghauvalisi	4.8	
Sughu	5.7	
Saltwater villages, Malaita ^a		1.96
Hauhui, Malaita		2.5
Savo		3.4
Kia, Ysabel		2.4
Coastal Guadalcanal		3.46

^aThe last five groups of villages were all part of Susan Holmes' nutritional survey in 1951.

Source: Table 13.

S. Holmes, A Nutrition Survey--British Solomon Islands Protectorate (c. 1951), 53-56.

Gardens - Relation of Supply and Demand

Thus far, the supply side of subsistence production has been presented for three Weather Coast sites followed by the demand side--both actual production and optimal consumption. It is of interest to determine if the supply or production of the basic food crop, kumara, is adequate to sustain both actual production and optimal consumption practices. Table 16 presents the projected supply and demand for the kumara crop for a three-month period.¹⁵

Table 16

Gardens: Supply and demand of kumara projected for three months (pounds)

	<u>Hatare/Poinaho</u>		<u>Ghauvalisi</u>		<u>Sughu</u>	
	Total	Per capita	Total	Per capita	Total	Per capita
Supply	10,002	3.83	24,287	6.75	48,101	8.48
Demand						
Actual production	4,698	1.80	15,800	4.39	31,185	5.50
Optimal consumption	7,569	2.90	10,055	2.79	16,443	2.90

Note: The method of computation of this data is presented in Appendix I.

Source: Field notes.
S. Holmes, A Nutrition Survey--British Solomon Islands Protectorate (c. 1951), 49.

¹⁵The method of computation of the supply and demand of kumara is presented in Appendix I.

The projected supplies exceed that of projected actual production or optimal consumption for all three sites. In Hatere the projected supply is close to the projected optimal consumption yet the actual production is less than the optimal consumption. At Ghauvalisi and Sughu, projected supplies are far in excess of actual production or optimal consumption.

In all three cases the projected supply does exceed the projected demand. It may be that the Weather Coast farmers do not know their food requirements or, more likely, that other factors cause this apparent excess in production. The evaluation of the difference between levels of supply and demand of kumara requires care. Sahlins, in his detailed account of primitive economies, cautions,

hunters seem deliberately inclined to overtax our comprehension by customs so odd as to invite the extreme interpretation that either these people are fools or they really have nothing to worry about. The former would be a true logical deduction from the hunter's nonchalance, on the premise that his economic condition is truly exigent. On the other hand, if a livelihood is usually easily procured, if one can usually expect to succeed, then the people's seeming imprudence can no longer appear as such.¹⁶

For example, Melanesian cultural factors may be influencing the production of root crops. Malinowski described the Trobriand Islanders in his anthropological study, the Argonauts of the Western Pacific. In his discussion of subsistence agriculture he states that, "in gardening . . . the natives produce much more than they actually require, and in any average year they harvest twice as much as they can eat . . . in

¹⁶M. D. Sahlins, Stone Age Economics (Chicago, 1972), 28.

olden days it was simply allowed to rot."¹⁷ He continues with a further discussion of the yams and the status acquired from large yam crops,

. . . half of the yams will rot away in the storehouses, and be thrown on the wawa, the rubbish heap at the back of the houses, to make room for the new harvest. Here again we meet the typical idea that the main aim of accumulating food is to keep it exhibited in the yam houses till it rots, and then can be replaced by a new etalage.¹⁸

In describing a Central Highlands group in New Guinea Waddell states,

A man not only boasts of the size or number of his gardens and finds satisfaction in his ability to invite others to plant with him, but is the subject of some ridicule if he fails to establish any.¹⁹

Status is derived from having large yam gardens but it is not sufficient in Melanesian society just to possess an item. There is a further aspect to the acquisition and maintenance of status. Malinowski describes it as, "A man who owns a thing is naturally expected to share it, to distribute it, to be its trustee and dispenser. And the higher the rank the greater the obligation."²⁰ In a similar manner, Hogbin states that,

Reputation is enhanced not by accumulating possessions in order to use them one's self, but by giving them away . . . the more feasts a man gives, and the more lavish he is in the provision of food, the greater is his prestige.²¹

¹⁷B. Malinowski, Argonauts of the Western Pacific (London, 1922), 58.

¹⁸Ibid., 169.

¹⁹E. Waddell, The Mound Builders (Seattle, 1972), 100.

²⁰Ibid., 97.

²¹H. I. Hogbin, Experiments in Civilization (London, 1939), 61.

It is likely that large gardens and the resultant acquisition of status is one of the factors accounting for the large projected kumara supplies along the Weather Coast. Hogbin describes the people of two different Guadalcanal locales and their efforts in attaining social prestige. He states that "such strong emphasis is placed on generosity that everyone tries to entertain his neighbors with a distribution of food as often as possible"²² and that garden produce is used, in part "to make appropriate presentations in fulfillment of their various social responsibilities."²³ The sharing of food with visitors and strangers is customary practice as is the need to have kumara available for large feasts. For instance, prior to the research study in Hatatare, the wife of one man died. As part of the mourning activities a large feast was given and all of the kumara from one garden plot was harvested.

Sahlins does not view the rotting of yams as a necessarily wasteful process. He comments that the

desire to see yams rotting evidently is related to the danger of famine . . . A big yam crop in the previous year could mean the difference between life and death. Rotting yams would be a sign that disaster is not in the offing. Accumulating yams to the point of waste is to be understood as a prevention against possible starvation, not as a means of creating status through conspicuous waste.²⁴

²²H. I. Hogbin, "The Hill People of North-Eastern Guadalcanal," *Oceania*, VIII (1937), 73.

²³H. I. Hogbin, *A Guadalcanal Society: The Kaoka Speakers* (New York, 1964), 9.

²⁴M. D. Sahlins, "Political Power and the Economy in Primitive Society," in G. E. Dole and R. L. Carneiro, ed., *Essays in the Science of Culture* (New York, 1960), 407.

Sughu, in particular, has had a history of natural disasters. There was a cyclone and flooding along the southeastern coast in 1967. Another major cyclone struck in 1952 in the area from Sughu and to the south. The damage resulting from this cyclone was so severe that people from Koruga relocated in Sughu and in areas to the north. The Koruga people previously lived in an area of steep hills and had had problems with landslides eliminating their gardens. After they settled in Sughu it is probable that their habits of building large and several gardens due to landslides did continue. There is also the report of a major cyclone along the southwestern coast in 1936.

Rappaport studied the Tsembaga in the Central Highlands of New Guinea. He comments that, "sweet potato harvesting drops off quite rapidly in any garden when a younger garden begins to produce in quantity."²⁵ The farmers along the Weather Coast, as the Tsembaga farmers, do maintain more than one garden site and it is likely that not all of the kumara in a garden will be completely harvested.

There is also the possibility of a pig entering a garden area and uprooting a portion of it. When writing of the people of Malaita, Hogbin stated that, "owners of gardens are expected to protect their property, but in a tropical climate timber very soon rots, and fences are always falling to pieces, so that considerable damage may be caused by a stray pig."²⁶ Weather Coast farmers do not build fences around their gardens and it has been decreed by various local administrative

²⁵R. A. Rappaport, Pigs for the Ancestors (New Haven, 1968), 253.

²⁶H. I. Hogbin, Experiments in Civilization (London, 1939), 78.

units that pigs be kept within the confines of a fence. The stray or wild pig is present, however, in the bush areas behind the villages.

Additionally, some kumara are sold by Sughu farmers in the Honiara market. Although no kumara were harvested during the survey period the selling of kumara is a major cash earning activity of the Sughu people. In a reconstruction of a six month period, June to November 1972, it was determined that approximately 1,000 pounds of kumara a month were shipped to and sold in Honiara and the projected excess of kumara supplies over demand validates the ability of the Sughu farmers to do so.

In brief the projected supply of kumara in both Sughu and Ghauvalisi is likely to exceed the projected demand for a combination of reasons. Status may be a partial rationale for large gardens in addition to the status derived from sharing the garden produce at a feast or with a visitor. The erratic local climatic characteristics cause occasional famine and near-famine conditions, and this could explain a tendency to plant more than absolutely necessary. Additionally, harvest habits that result in the abandonment of a garden, most especially a second or third crop garden, before the crop is entirely harvested will result in projected supply totals that overstate actual practice. What may appear to be excess production may not be wasteful but indicate a degree of contingency planning.

Conversely Hatare/Poinaho is the only site to register an optimal consumption that exceeds actual production. This could indicate that the Hatare/Poinaho people are suffering from a sub-optimal diet; however, dietary deficiencies are not generally apparent.

The per capita production of kumara for Hatare/Poinaho (1.8 pounds) is in the same range as the consumption level of 1.96 pounds of root crops that Holmes observed in several saltwater villages in Malaita. Since there are cultural similarities with these people of the home island, this may also be reflected in the level of root crop consumption. Additionally, the Hatare/Poinaho people have available .17 pounds of fish per day per capita while in the saltwater villages the consumption of fish was .08 pounds.²⁷ Holmes' optimal diet for the Solomons as a whole was comprised only of root crops, greens, and coconut cream and did not include any fish or other meat products. Compared with the other two Weather Coast sites the people of Hatare/Poinaho spend more money for food. In Hatare/Poinaho the average expense per household per day for food is \$A.08, in Ghauvalisi \$A.02, and in Sughu \$A.01.²⁸ The major food items purchased by Hatare/Poinaho households are cabin biscuits, fish (canned and fresh), sugar, and bread. The consumption of fish and purchased foodstuffs in Hatare/Poinaho may be sufficient to offset the lower actual production in relation to optimal consumption of kumara.

The final point raised by Table 16 is the difference between

²⁷S. Holmes, A Nutrition Survey--British Solomon Islands Protectorate (c. 1951), 17. The .08 pound per capita consumption rate of fish is my interpretation of Holmes' data. She states that, "the mean consumption of fish (whole) in 19 families was 0.62 lbs." and that, "the mean number of people fed from each kitchen was 7.8."

²⁸For the same period the average income per household per day in Hatare/Poinaho was \$A.69, in Ghauvalisi \$A.13, and in Sughu \$A.07.

optimal consumption and actual production in Ghauvalisi and Sughu. Previously it was suggested that excess production appears to be a characteristic of Melanesian subsistence agriculture. Kumara, however, was not seen rotting in piles in any of the village areas but their farmers do raise and maintain pigs. In Ghauvalisi and Sughu the pigs are fed kumara daily while in Hatare the pigs are fed coconuts. Although it was not part of the survey design to weigh food taken to pigs a census of pigs revealed 53 in Sughu, for an average of 3.5 pigs per household, and 26 in Ghauvalisi for an average of 3.7 pigs per household.²⁹ Rappaport found that adult and adolescent pigs were fed 2.6 pounds of root crops per day.³⁰ This figure has been used to reconstruct the relationship of projected optimal consumption of kumara for both humans and pigs, and the projected actual production of kumara (Table 17).

Table 17

Gardens: Kumara consumption patterns (pounds)

	Ghauvalisi	Sughu
Optimal consumption		
Humans	10,055	16,443
Pigs	6,084	12,402
Total	16,139	28,845
Actual production	15,800	31,185

²⁹In Hatare/Poinaho there were 23 pigs for an average of 4.6 pigs per household.

³⁰R. A. Rappaport, Pigs for the Ancestors (New Haven, 1968), 61.

It may be inferred from the close fit between projected actual production and total projected optimal consumption for humans and pigs that food supplies are adequate for the needs of both. In addition, the existence of the projected surplus of kumara and the fact that pigs are fed kumara in both Sughu and Ghauvalisi indicates the importance of the pig in subsistence agriculture and Melanesian society. In the New Guinea Highlands especially, the importance of the pig is denoted by the pig cycle which Brookfield and Brown have defined as the upward growth of a pig population "from very few immediately after a large pig ceremony to a maximum number immediately before the climax of the next ceremony."³¹ Waddell, in a much more recent study, suggests that the cyclical patterns of the pig population is the reason for the projected surpluses of kumara production and does not feel such surplus to be "serving as an insurance against unexpected losses--it is too substantial."³²

Table 18 summarizes the pig to human ratios at the Weather Coast sites and at Modopa, the site of Waddell's study. Also shown by Table 18 are the surplus per capita kumara production (projected yields less projected actual production), the number of additional pigs this

³¹H. C. Brookfield and P. Brown, Struggle for Land (Melbourne, 1963), 58.

³²E. Waddell, The Mound Builders (Seattle, 1972), 118. Later, on this same page, Waddell determines how many additional pigs could be supported on the projected surplus of kumara and then suggests that this number of pigs is the optimum figure. Further in his text (215) he states that an environmental constraint on gardens is the danger of frost and flash floods. It appears to this writer that part of the projected surplus may well be an insurance against these climatic factors.

excess production could support, and the adjusted maximum pig to human ratio that could be maintained with existing garden sizes.

Table 18
Pig to human ratios*

	Hatare	Hatare/ Poinaho	Ghauvalisi	Sughu	Modopa
Pig to human ratio (surveyed)	.47:1	.79:1	.65:1	.84:1	1.7:1
Surplus daily kumara production per capita	n.a.	2.03	2.36	2.98	4.85
Number of pigs supported by excess production	n.a.	22.7	36.3	72.2	n.a.
Adjusted pig to human ratio	n.a.	1.6:1	1.6:1	2.0:1	3.3:1

*Human means the total population of the area.

Sources: Field notes.

E. Waddell, The Mound Builders (Seattle, 1972), 117-118.

It should also be noted that Waddell uses a daily consumption rate of kumara by pigs of 3.09 pounds (1.4 kg) compared with Rappaport's figure of 2.6 pounds.

For both surveyed and adjusted pig to human ratios, the New Guinea figures are about twice those for the Weather Coast sites. Since the operation of a large-scale pig cycle is a reported feature of Modopa, this suggests that fluctuations in the pig populations of the Weather Coast are nowhere near so regular nor so intense. It is

probable that the environmental fragmentation of the Weather Coast, reinforced by a highly parochial social organization, has led to more locally specific feasts so that the "climax" of the cycle rarely reaches the numbers of the New Guinea Highlands. Yet, conspicuously large feasts are not unknown. There was a feast during the research period at a Weather Coast village in which 363 pigs were distributed to approximately 2,000 guests.³³ In April 1972 many villages at the western end accumulated more than 100 pigs for a feast of gratitude to a particularly popular volunteer worker. A smaller feast was held in the Hatare area after the pig census was completed at which 30 pigs and 15 cases of canned meat were presented and redistributed. About 20 of these pigs came from Hatare households, so that the pig to human ratio was reduced below .47:1. Comparing the Hatare ratio, rather than the Hatare/Poinaho ratio, with the ratios of both Ghauvalisi and Sughu shows Hatare to have a much smaller ratio. It is highly probable that this reflects the greater excess production of kumara in Ghauvalisi and Sughu, which in turn enables the people to maintain more pigs. Whereas Hatare has less excess kumara production it also has greater access to wage incomes, and these lead in combination to the minimization of the importance of the pig in feasts and other related activities. This difference between Hatare and the other Weather Coast sites is consequently due to the much more regular infusion of cash into the local area and was manifested at the Hatare feast by the number of cases of canned meat purchased and presented.

³³"Moro: A Festival Emphasizing Tradition and Love," BSI News Sheet no. 20 (17-31 October 1972), 9-11.

Activity Survey

The previous section indicated the adequacy of the subsistence sector in providing sufficient food, particularly kumara, to the population; in fact, projected kumara supplies were found to be above optimal and actual needs at all three survey sites. In a general discussion of so-called primitive economies Fisk points out, "that there is a potential labor surplus concealed within the subsistence economy, comprising that portion of the potential supply of labor not required for production of food to the level of the demand ceiling."³⁴ If an area is not supplying adequate food supplies for its population, then the first concern would be to maintain or increase production to insure adequate nutritional levels. However, if an area has a potential labor surplus, then this could be used for developmental activities such as cash cropping or possibly wage employment. Additional information is consequently required about labor and leisure time activities to determine whether in fact the Weather Coast has a marked surplus of labor.

Table 19 presents a summation of the information obtained from the Household Survey: Daily Schedule (Appendix C) on the daily activities of the people. In the afternoon of every survey day and at the time garden produce was weighed, the members of the selected households were also asked on what activities they spent the previous evening, that morning, and that afternoon. No attempt was made to

³⁴E. K. Fisk, "Planning in a Primitive Economy Special Problems of Papua-New Guinea," The Economic Record, XXXVIII (December, 1962), 468.

Table 19

Activities: Total hours and percent of time
per category (12-hour day)

	<u>Hatare/ Poinaho</u>		<u>Ghauvalisi</u>		<u>Sughu</u>	
	Hrs	%	Hrs	%	Hrs	%
Males						
Subsistence gardening	256	7.9	377	23.8	465	18.5
Food preparation and other subsistence	162	5.0	281	17.7	449	17.8
Cash cropping	115	3.5	-	-	-	-
Wage employment	552	17.0	12	.8	28	1.1
Social	292	9.0	63	4.0	99	3.9
Travel	312	9.6	-	-	189	7.5
Free time	1551	47.9	851	53.7	1290	51.2
Total hours	3240	99.9	1584	100.0	2520	100.0
Females						
Subsistence gardening	572	16.6	665	21.0	589	25.0
Food preparation and other subsistence	596	17.2	451	14.2	610	25.9
Cash cropping	31	.9	-	-	-	-
Wage employment	-	-	-	-	-	-
Social	254	7.3	216	6.8	135	5.7
Travel	712	20.6	-	-	-	-
Free time	1291	37.4	1836	58.0	1018	43.3
Total hours	3456	100.0	3168	100.0	2352	99.9
Labor/Leisure Percentage Breakdown						
Males						
Labor	33.4		42.3		37.4	
Leisure	66.5		57.7		62.6	
Females						
Labor	34.7		35.2		50.9	
Leisure	65.2		64.8		49.0	

Note: Totals will not add up to an even number due to rounding.

Source: Field notes.

follow an individual and clock his activities throughout the day and no one in the village had a watch. The total hours spent on each activity are listed and the percent of total time involved for each of these activities shown for inter-village comparison. Calculations for the percent of time are based upon a 12 hour day. Appendices J, K, and L show all categories reported in the survey for each site and the total hours for each activity.

The subsistence gardening category refers to the time spent in one's own garden and assisting a friend or relative in their's. Travel time to and from the garden is included as garden work. No attempt was made to determine if a person "worked" during the entire time spent in the garden. If a woman left for her garden at 8:00 a.m. and returned at 12:00 p.m., it was considered that she had been occupied in garden work for four hours.

Food preparation and other subsistence includes all activities that were not garden oriented and for which no money was received. This is a broad classification and includes such activities as caring for children, collecting firewood, feeding pigs, preparing food, and building a house.

Cash cropping includes any work performed in conjunction with the processing of copra and trochus shell diving. The category is limited to these two activities as they were the only ones observed.

The category, wage employment, consists of any work performed locally for a money wage. Any family member employed in Honiara would not have been included in the survey.

These four categories were collectively considered to be "labor"

activities. The remaining time was spent in activities classified as "leisure" and follow below.

The social category consists of any structured non-work activity such as church attendance, a village meeting, sports events, or a bazaar.

Travel includes all that made outside of the village area, which generally meant a trip to Honiara but also could have been to another village.

Free time is a residual category including those activities identified during the survey as walkabout,³⁵ "just talking", or not doing anything. Any unaccounted time during the twelve-hour period was also included here.

In the gardens the men normally perform the more strenuous tasks of clearing the land, laying out boundary markers, and digging the initial mounds. The women, by contrast, generally plant the vines or tubers, weed the garden, harvest the produce, and carry it back to the house site. This division of labor between the sexes is not as rigid as has been reported in the past and anyone will generally perform whatever tasks that need to be done irrespective of sex.

The Hatare/Poinaho males devote a smaller percent of their time to subsistence gardening than do males at Ghauvalisi and Sughu. The former, however, devote a much larger percentage of their time (17.0%)

³⁵The term walkabout simply means to go out and walk about, generally with no specific purpose. This could mean a walk in the village and immediate vicinity or a journey to Honiara. I have used it to mean a short walk in the local area and not as travel.

to wage employment than any others surveyed and it appears that the availability of wage employment in the Hatare area has reduced the amount of time that men spend in their household gardens. On the other hand, the people in Hatare/Poinaho, both males and females, devoted a larger percentage of their time to assisting in a friend's garden than was recorded for Sughu and Ghauvalisi. During the survey period, many Hatare/Poinaho households were establishing new gardens, necessitating the clearing and digging of new lands, which was undertaken on a cooperative basis.

Food preparation and other subsistence activities are fairly consistent throughout the three sites and between sexes, with the exception of the relatively less time spent by the Hatare/Poinaho males.

Only the Hatare/Poinaho people were involved in any cash cropping activities during the survey period, namely processing coconut into copra and diving for trochus shells. Males performed both activities and females also dove for shells. The Hatare/Poinaho people are actively involved in growing coconuts as a cash crop. It may well be that more time than indicated is actually spent on cash cropping, particularly coconuts, at all sites since, at the time of the survey, copra prices were at a low of \$A65 per ton having fallen from a high of \$A140 in February 1971. Moreover, the Hatare people suffered a major cyclone in July 1972 that felled some coconut palms and stripped many others of nuts, mature as well as immature.

Males spent some time on wage employment at all sites whereas no females had any wage employment. In Ghauvalisi, one man was

employed as a laborer on the Babanakira airstrip, that was in the final stages of completion, and in Sughu one man was paid for agricultural work. At these two sites, wage employment was a relatively minor item and accounted for no more than 28 hours (Sughu) and 12 hours (Ghauvalisi) whereas at Hatare/Poinaho wage employment was a major activity and accounted for 552 hours. Seventeen percent of the time spent by Hatare/Poinaho males was in regular, full-time wage employment. Four men held permanent jobs: a primary school teacher, an agricultural laborer for the Department of Agriculture, a worker on the Guadalcanal Weather Coast road project, and an agricultural laborer employed by a Hatare farmer.

In Ghauvalisi and Sughu, attendance at church services accounted for all such activity classified as "social" but for the people of Hatare/Poinaho the range was much wider. There were bazaars, both church- and social-sponsored; soccer matches, one against a visiting team from Honiara; dancing, which included the practice of custom dances for a village feast and a dance social featuring a power band and plaster dancing.³⁶ Time was also spent in church attendance, awaiting the arrival of a ship, visiting the nearby health clinic, and in village meetings. What is of particular interest here is the variety of activities available to members in a Weather Coast community and the fact that a trip to Honiara is not always necessary to provide

³⁶The pidgin English phrase, power band, means a group playing electric guitars and the phrase, plaster dancing, means a male and female dancing together as a couple. Traditional dancing in the Solomons generally involves a group of men or a group of women dancing as a unit.

some diversion from the routine of daily village life.

The travel category indicates that the people of Hatare/Poinaho were the most mobile in making journeys outside the village area. In one case a family travelled together for a court appearance in Honiara and another family visited the village where the husband taught school for end-of-year festivities. Most of these travel activities were of lengthy duration, that is, one week or more, and therefore quite different from walkabout.

The final category, free time, is generally consistent throughout the research sites and accounts for about 50 percent of all leisure activities, including time spent walkabout, talking, resting, doing nothing, or for any unaccounted time in the daily survey period of 12 hours.

The data in Table 19 is presented in alternate form in Table 20, in which the percentage of time spent on a particular activity is converted to relative time, in hours and minutes, of one 12-hour day. For example, Hatare/Poinaho males spend 7.9% of their time on subsistence gardening activities which, in an average 12-hour day, would equal 56 minutes.

As previously noted, all activity categories may be aggregated into two broad groups: labor or work-related activities (subsistence gardening, food preparation and other subsistence activities, cash cropping, wage employment) and leisure (social activities, travel, free time). Grouped in this way Hatare/Poinaho males spent 33.4 percent of their time at work (Table 19), or 28 hours per week (Table 19 and Table 20). In Ghauvalisi the comparable figure for males was 37.4

Table 20

Activities: Average hours per category (12-hour day)

	Hatare/ Poinaho	Ghauvalisi	Sughu
Males			
Subsistence gardening	56 min	2 hrs 51 min	2 hrs 13 min
Food preparation and other subsistence	36 min	2 hrs 7 min	2 hrs 8 min
Cash cropping	25 min	-	-
Wage employment	2 hrs 2 min	6 min	8 min
Social	1 hr 4 min	29 min	28 min
Travel	1 hr 5 min	-	54 min
Free time	5 hrs 45 min	6 hrs 27 min	6 hrs 9 min
Total hours	11 hrs 53 min	12 hrs	12 hrs
Females			
Subsistence gardening	2 hrs	2 hrs 31 min	3 hrs
Food preparation and other subsistence	2 hrs 4 min	1 hr 42 min	3 hrs 6 min
Cash cropping	6 min	-	-
Wage employment	-	-	-
Social	53 min	49 min	41 min
Travel	2 hrs 28 min	-	1 min
Free time	4 hrs 29 min	6 hrs 58 min	5 hrs 10 min
Total hours	12 hrs	12 hrs	11 hrs 58 min
Labor/Leisure Hourly Breakdown			
Males			
Labor	3 hrs 59 min	5 hrs 4 min	4 hrs 29 min
Leisure	7 hrs 54 min	6 hrs 56 min	7 hrs 31 min
Females			
Labor	4 hrs 10 min	4 hrs 13 min	6 hrs 6 min
Leisure	7 hrs 50 min	7 hrs 47 min	5 hrs 52 min

Source: Field notes.

percent or 31 hours per week, and for Sughu males 42.3 percent of their time, or 35 hours per week. Females in both Hatare/Poinaho and Ghauvalisi also devote about one-third of their time to work-related activities, compared with about one-half in the case of Sughu females.

Table 21 presents the hours worked per week for three different locations along the Weather Coast and three sites in New Guinea. In order to provide a valid comparison the Weather Coast data had to be disaggregated to be consistent with the New Guinea data. The column, subsistence production work, includes all work activities relating to subsistence gardens, food gathering, hunting, fishing, and building. Activities such as food preparation, firewood collection, and local council work were not included and were subtracted from the category, food preparation and other subsistence, as presented in Table 20.

Of especial interest in this comparison is the consistency of the total hours worked per week for both sexes at all sites except for Ghauvalisi. The Orokaiva worked the fewest hours per week, for an average of 19.0, whereas the Ghauvalisi people worked the greatest for an average of 26.9. The range is narrow for five of the sites and suggests a unity of work habits in Melanesian villages. In addition, there may be a certain continuity of time spent on work-related activities. Farmers in these six areas all raised root crops in gardens. In writing of hunters and gatherers, Sahlins states that, "Reports . . . of the ethnological present suggest a mean of three to five hours per adult worker per day in food production."³⁷ The lower end of this

³⁷M. D. Sahlins, Stone Age Economics (Chicago, 1972), 34.

Table 21

Activities: Average hours worked per week at selected sites

	<u>Subsistence production work</u>				<u>Cash work</u>				<u>Total</u>	
	Male		Female		Male		Female		Male	
	M/F		M/F		M/F		M/F		M/F	
Weather Coast ^a										
Hatare/Poinaho	9.8	14.7	12.3		17.2	.7			27.0	15.4
Ghauvalisi	30.9	22.1	26.5		.7	-			31.6	22.1
Sughu	22.0	22.0	22.0		.8	-			22.8	22.0
										22.4
New Guinea										
Inonda ^b	14.0	15.1	14.6		12.0	.9			26.0	16.0
Sivepe ^c	n.a.	n.a.	17.6		n.a.	n.a.			n.a.	n.a.
Orokaiva ^d	17.5	16.8	17.2		3.4	.3			20.9	17.1
										19.0

n.a. = not available.

Source: ^afield notes.^bR. G. Crocombe and G. R. Hogbin, "Land Work and Productivity at Inonda," New Guinea Research Unit Bulletin, no. 2 (August, 1963), 63.^cE. W. Waddell and P. A. Krinks, "The Organization of Production and Distribution Among the Orokaiva," New Guinea Research Bulletin, no. 24 (September, 1968), 85.^dM. Rimoldi, "Land Tenure and Land Use Among the Mount Lamington Orokaiva," New Guinea Research Bulletin, no. 11 (April, 1966), 28.

suggested range of 21 to 35 hours per week is consistent with the subsistence agricultural practices for the three New Guinea and three Weather Coast sites summarized in Table 21.³⁸

In addition to the uniformity of total hours worked, the similarity between Hatare/Poinaho and Inonda compared with the other four sites is of concern in that both Hatare/Poinaho and Inonda record a greater number of hours engaged in cash work and, conversely, a lesser number of hours spent in subsistence production. Since the hours worked per week at five of the sites are about 21 hours, it appears that when cash work is available there is a resultant decrease in the time devoted to tasks associated with subsistence production.

The Weather Coast data in Table 16 relating to kumara production supports this conclusion. In Hatare/Poinaho the projected supply of kumara exceeds the projected optimal consumption of kumara by 32 percent, whereas the comparable figures for Ghauvalisi and Sughu are 142 percent and 193 percent, respectively. Hatare/Poinaho farmers work fewer hours per week in the gardens and have a smaller projected surplus of kumara. A comparison of average garden acreage per household from Table 5 indicates that the average acreage per household in

³⁸In making a comparison between these figures of hunters and gatherers with bush/fallow agriculturists the point is that a twenty hour work week is fairly standard. There is a difference in the type of work performed. The bush/fallow agriculturists maintain gardens and livestock and there is a wider range of work activities available. A factor partly responsible for the ability of the people to engage in more activities is due to the use of steel tools rather than stone tools. As Salisbury estimates, in the days of stone tools it took three times longer to clear land, construct fences, or build houses than with steel tools. This additional time may be used for other activities. R. F. Salisbury, From Stone to Steel (Melbourne, 1962), 219.

Hatare/Poinaho is .724, in Ghauvalisi .418 and in Sughu .953. The average yield of kumara per mound in Ghauvalisi (Table 10) is almost three times that of Hatare/Poinaho yet Hatare/Poinaho's gardens are less than twice the size of Ghauvalisi's. The yields in Sughu exceeded Hatare/Poinaho by one-third yet Sughu's average household garden size is .229 acres greater than Hatare/Poinaho's. These comparisons serve to confirm the fact that Hatare/Poinaho's production and projected supply are smaller than the other two sites because fewer hours of work are devoted to subsistence production.

In Inonda, Crocombe and Hogbin report on the relationship of paid employment and subsistence production.

Owing to their employment, the paid workers were able to spend less time on food production, and the average area of food garden was less (per consumption unit) in households where the adult males had paid employment than in those where only did not. The three households wherein the only man had paid work had an average of 0.72 acres under cultivation per consumption unit, the two households wherein the only man did not have paid work had an average of 1.66 acres under cultivation per consumption unit, and the three households containing two men (in each case one working and one not) had an average of 0.79 acres per consumption unit. Food intake was maintained partly by the purchase of store foods, particularly rice.³⁹

They conclude, however, that,

Men who are engaged in paid work still engage to some extent in other types of productive work. The main substitution is not paid work for other productive work, but paid work for non-productive occupations.⁴⁰

³⁹R. G. Crocombe and G. R. Hogbin, "Land, Work and Productivity at Inonda," New Guinea Research Unit Bulletin, no. 2 (Canberra, August, 1963), 66.

⁴⁰Ibid., 66.

This conclusion is based on a comparison of the average man-hours per week of men with paid employment, during two weeks of a six week survey, and all men for the six week period.⁴¹ One man in the survey had regular full-time employment for five of the six weeks and all other employment was casual. Additionally, four men also had employment for the first two weeks of the survey.⁴² Temporary employment of this nature supports the conclusion that paid work was substituted for non-productive work. It seems likely that a man would give up some social time for an infrequent opportunity to earn cash. Crocombe and Hogbin's conclusion that paid work is not performed at the expense of subsistence activities is inconsistent with their earlier comparison of garden acreage. The average garden size of an Inonda household with no wage earner is .94 acre larger than the households with the only adult male in paid employment. The fact that most Inonda wage earners are temporary casual laborers does not explain the difference in garden area either. Some other factors besides the availability of wage employment must account for the size of the gardens.

Crocombe and Hogbin's conclusion does hold for temporary employment. In the Hatare/Poinaho survey there were four wage earners who worked during the survey period. One man had been employed for four years, one for 13 months, one for three months and one for one month. These lengths of period in paid employment are long enough, in three

⁴¹A total of eight households was included in the survey.

⁴²R. G. Crocombe and G. R. Hogbin, Op. cit., Table 12, 64.

of the four cases, to affect the size of a household's garden acreage.

Fisk indicated that it is important to identify the concealed labor surplus in a subsistence economy as it can be used as a basis for future development. In this description of subsistence agriculture the Hatare/Poinaho data indicates that men have taken advantage of opportunities for wage employment and cash cropping and that these new work opportunities have been substituted for subsistence production work. Consumption of kumara at Hatare/Poinaho is less than at the other Weather Coast sites but this has been offset by a better quality diet which includes fish. A lesser amount of kumara may be one of the reasons why coconut is a primary feed for pigs, although kumara is occasionally used. Regular cash incomes have allowed the substitution of canned meat for pigs to some extent in traditional feasts. The status the farmer realized from large gardens, particularly of yam, may now have been partially transmitted to an acquisition of status from cash crops or wage employment. The next chapter presents information of Hatare and their level of cash cropping and wage employment. The method of land tenure is reviewed and its consequent effect upon the development of cash crops. Other factors affecting cash cropping are examined such as the transportation system, agricultural extension services, availability of credit, opportunities for wage employment, and degree of participation in a monetary economy.

CHAPTER III

HATARE CASE STUDY

Hatare

The name of the case study site, Hatare, means a place where one can walk along a beach, an apt description of this area with three miles of white sandy beaches along the coast. There are 15 villages in the Hatare area with Su'u the easternmost and Komunikau the westernmost village (Figure 3). The villages were made up of from one to five households and Table 22 indicates the relationships of each household within a village.

There are 34 households within Hatare and all are headed by a male. Of these, five households have heads 30 years of age or younger, 19 heads are between 31 and 50 years old, and 10 are 51 years old or older. Seventeen household heads, one-half, have had no formal classroom instruction yet 15 were able to read the 'Are'are language although none were literate in English. Sixteen heads have had between one and seven years of school while one household head, who is now a teacher, had 10 years of education (Table 23). All of those with some education were able to read the 'Are'are language and six were literate in English.

All of the household heads have traveled to Honiara and many of them have worked in other parts of the Solomons. Twenty-two out of 34 of the heads have been employed outside of the Weather Coast and held 34 different jobs with the length of time in employment ranging from one month to 16 years for an average of 4.8 years per worker (Table 24).

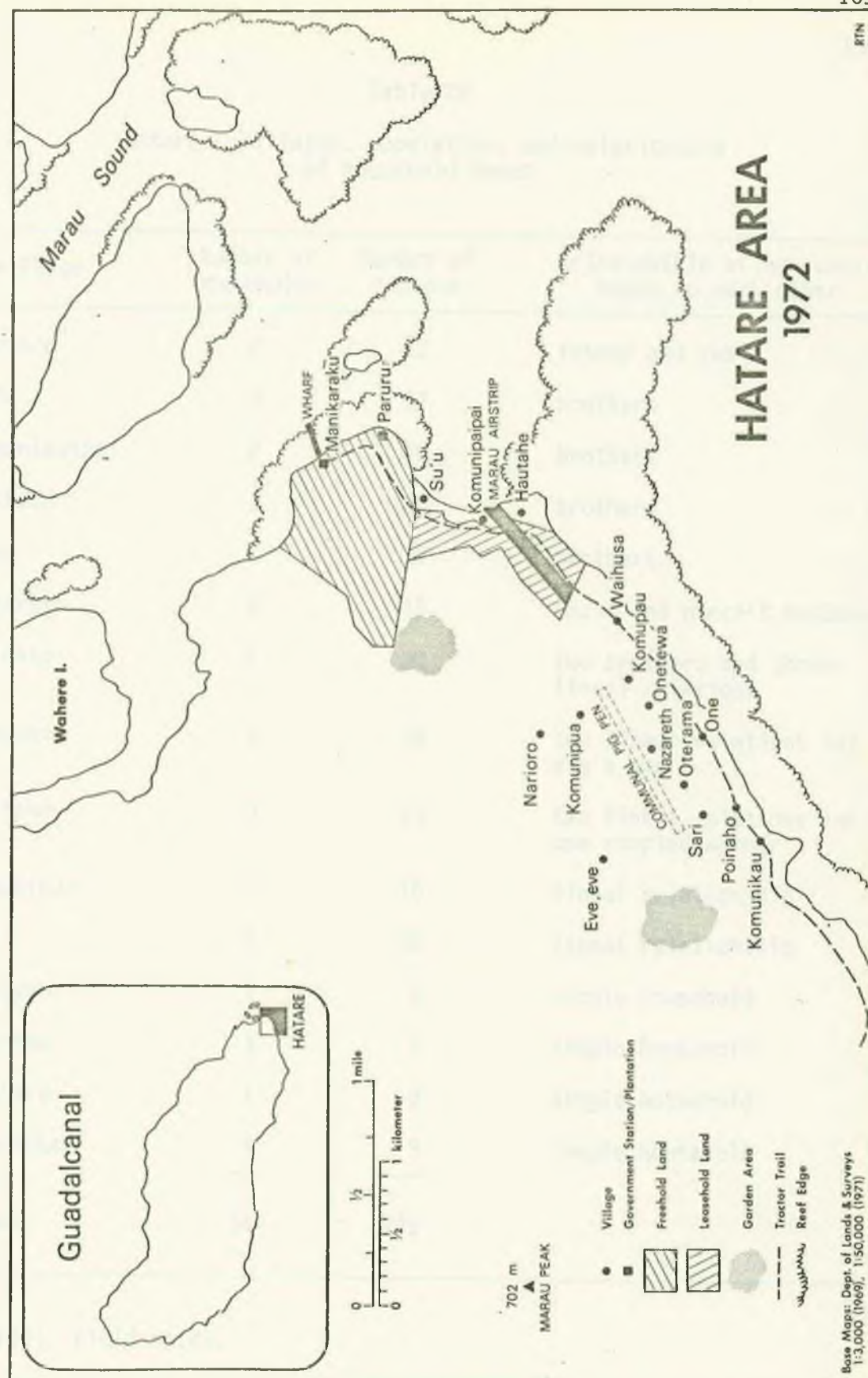


Figure 3

Table 22

Hatare: Villages, population, and relationship
of household heads

Village	Number of households	Number of persons	Relationship of household heads to each other
Narioro	2	12	father and son
Su'u	2	17	brothers
Komunipaipai	2	19	brothers
Waihusa	3	22	brothers
Sari	2	19	brothers
Nazareth	2	15	uncle and niece's husband
Poinaho	5	30	two brothers and three lineal relations
Komupau	3	18	two lineal relations and one's son
Hautahe	3	23	two lineal relations and one adopted member
Komunipua	3	15	lineal relationship
One	3	25	lineal relationship
Onetewa	1	6	single household
Oterama	1	7	single household
Eve'eve	1	8	single household
Komunikau	1	9	single household
Total	34	245	

Source: Field notes.

Table 23

Hatare: Educational levels of household heads

Years of education	Age of household head			Total
	up to 30	31 - 50	51 and over	
None	2	8	7	17
1	1	-	1	2
2	-	4	-	4
3	1	4	1	6
4	-	-	-	-
5	-	2	1	3
6	-	-	-	-
7	-	1	-	1
8	-	-	-	-
9	-	-	-	-
10	1	-	-	1
Total	5	19	10	34

Source: Field notes.

Table 24

Hatare: Employment of household heads outside of Weather Coast

Years spent in each job	Honiara	Rural Guadalcanal	Russell and Florida Islands	Santa Isabel	Western District	Eastern District	Outside of Solomon Islands	Total
Up to 1	1	1	-	-	-	-	1	3
1 to 2	4	3	7	3	1	1	1	20
3 to 5	1	2	1	-	1	-	-	5
6 to 10	1	1	1	-	1	-	-	4
11 to 15	1	1	-	-	-	-	-	2
Total	8	8	9	3	3	1	2	34

Source: Field notes.

The average length of time spent in each job was 3.1 years. Six of these 22 men have also worked for wages in Hatare (not including casual agricultural labor). The remaining 12 men have not worked outside of Hatare but eight of them have worked locally within the Hatare area. Only four of the household heads have never held a position of wage employment.¹ Outside employment is generally sought prior to marriage and after the completion of school, although one man did have his wife with him in Honiara when he was working. Chapman indicates there is a seasonal movement associated with wage employment in the central part of the Weather Coast.² Men from Duidui and Pichahila will go to Honiara, to commercial and to village plantations, for work between the months of February to August as this is the time when they are least busy with garden work and repairs to houses and pig pens. In Hatare, by contrast, there was no evidence of an annual seasonal pattern of wage employment; what does emerge is that seeking of outside employment is related to the life cycle.

Land Allocation

Until it was settled in the mid-nineteenth century, the Hatare area is believed to have remained unoccupied as it was used as a fighting zone by the Mbota Moli people living in the surrounding hills.

¹By comparison, 11 of the 15 Sughu household heads have worked outside of the Sughu area for an average of 3.3 years per man. In Ghauvalisi two of the seven household heads have worked outside of the area for an average of 1.5 years per man.

²M. T. Chapman, "A Population Study in South Guadalcanal: Some Results and Implications," Oceania, XL (December, 1969), 138-139.

The flat coastal terrain of the area afforded little protection from the warfare that characterized Melanesian society. In about 1860 a family group, under the leadership of Vaisare, left the island of Wahere in Marau Sound and settled in the easternmost part of Hatare near the present day village of Komunikau.³ Initially, the settlers were permitted a relatively peaceful existence as a result of the marriage of a Mboti Moli woman and a Hatare immigrant. Subsequently there were some inter-group conflicts, but the Hatare people maintained their new settlement. Migration from the islands of Marau Sound and Malaita has continued and the 'Are'are speaking people of Hatare still retain close ties with Malaita.⁴

Hatare society is organized along patrilineal lines. Customarily, land use rights are transmitted from father to son and primary interests in land are established by usage. The first individual or group to clear a section of virgin forest has the rights to that land because of the labor expended in clearing it. Land holdings are divided among male offspring. These holdings would include any that the man acquired by his own labor in addition to those he may have inherited or acquired from another individual. If, at the time of his father's death, the eldest son is too young to take over his father's

³Vaisare chose to leave Wahere because his grandfather had been ritually murdered. A "custom house" was under construction and one of the supporting posts would not stand straight. Vaisare's grandfather was killed and his body placed in the post-hole to insure verticality of the structure.

⁴Migration from Malaita to the islands of Marau Sound is believed to have commenced about three centuries ago.

land, a male relative acts as executor over the land until the son marries. In a family with no sons, land rights will revert to a male relative, although any daughters will have rights to periodically harvest coconuts on the household land. In this situation, the land rights will be given to a male relative that has shown particular interest in the welfare of the family.

Land Use

Land control in Hatare takes one of two forms: customary land and registered land. The Solomon Islanders control land through traditional means, while an expatriate plantation owner and the Protectorate government have access to land through freehold or leasehold registration. No Solomon Islander holds registered land in the Hatare area.

Among the Solomon Islanders land is used for household sites, gardens, livestock, and commercial crops. Household sites usually consist of a sleeping house and a cook house located in, or adjacent to, coconut groves under the control of a household member. Relocation may occur when a leaf house deteriorates, when there is a desire to be closer to new coconut plantings, or because of the recent phenomenon of too much traffic on the road.⁵ It was not evident that house sites were moved because of a change in location of a garden plot. As indicated in Table 5 the average time to a garden plot is

⁵At the time of the study there were seven motor vehicles along the 28 miles of road: four tractors, one Datsun pick-up, one Landrover, and one World War II vintage American jeep.

20 minutes and there is an average of almost three separate garden plots maintained by each household in different locations. Moving closer to one garden plot would probably mean being farther from another garden plot.

Secondly, land is used for the cultivation of garden produce. As indicated in Chapter II, gardens are planted to kumara, yams, or pana, with one garden site in use for 18 to 24 months before a new site is cleared. Since the duration of production is relatively short and all the produce from the garden is for the household's consumption, a garden may be located anywhere on land under the control of any other Solomon Islander. If another's land is to be used for gardening purposes, permission must be given but there is no rent payment of any type required. Although land is under the control of specific individuals or families, this does not prevent others from using the land for subsistence production.

A household generally has gardens located at three different sites. Within Hatare there are two areas specifically designated for gardens and all households have at least one plot at one of these locations. The garden area at the western end of Hatare has been in use for the past 40 years. Household use of these gardens is such that fallow periods are of only two to three years' duration.

A second garden is planted in conjunction with the extension of a coconut grove. New land is cleared adjacent to the household's grove and, initially, a garden of kumara or yam is planted. At a later time, coconut seedlings are planted in the same area. At the end of the two year garden production period the process is repeated; another adjacent

area is cleared and the interplanting of garden crops with coconut continues. Two-thirds of the households follow this practice.

A third site of a garden is frequently located in areas where secondary growth has reached a height of 20 to 30 feet. For cases where this type of land is under the control of another household gardening is still permitted. The head of the controlling household is requested to grant permission to allow a garden to be planted on his land. There is no payment involved. The use of the garden only for household consumption and its relatively short time span allow for such practices. As Allan notes, "normal practice is that permission would be granted for the planting of all but cash crop trees."⁶ There are certain courtesies and restrictions, however, regulating the use of another household's land.

Even though there is a certain ease in the selection of land for planting gardens, there remains a definite quality of exclusive possession by the one having primary interest in that land. This is best exemplified by the use of a tabu. Discussing the meaning of the concept of the tabu, Allan states that "the application of customary prohibition on cultivations, and the respect which is given to it, is a significant element of ownership and possession."⁷

To illustrate, the following incident occurred during the time of the study. Five women were assisting another woman in the clearing

⁶C. H. Allan, Customary Land Tenure in the British Solomon Islands Protectorate (Yagoona, 1957), 140.

⁷Ibid., 196.

of underbrush for a new garden. After attaining permission from an elderly man to use his land the women proceeded. The man's son was concurrently clearing land for a new coconut grove. The two groups were working towards each other and the women felt the son would limit the size of their garden by clearing too close to their plot. The women erected a tabu stick, a six foot long stick stuck upright in the ground with ti leaves wrapped around the top to form a packet. The tabu meant that the son should clear no further than the location of the stick. This action was reported to the man who, in turn, was offended by the women's attempt to hinder the actions of his son. As a result, a fine in the form of pig was levied against the women. The women's garden was enlarged no further. Since the tabu is used to assert ownership the women were overstepping themselves. The man, as holder of the primary interests in the land would be the one to assert ownership and not allow someone else to do so.

The third use of land, for livestock pens, is of relatively recent origin. In an attempt to institute public health practices in the rural areas, a local governing body decreed in 1951 that all pigs be fenced away from houses.⁸ Prior to this pigs were free ranging. Initially, fences were constructed around village compounds to keep pigs away from the buildings. Later, it was decided it was more appropriate to enclose pigs rather than people. At the western extremity of Hatare an area was surrounded with a wooden fence and

⁸In 1951 the fine for pigs defiling the road was \$US16.80 and for keeping pigs in the village it was \$US6.30.

all pigs were placed inside. In time this became inconvenient for the people living at the eastern end of Hatare and the pen was abandoned. A new wooden pen was constructed in 1963 which crossed the land of a dozen men. In 1967, individual farmers began constructing their own pens of pig wire on land under their own control and in proximity to their houses. Presently 14 households keep their pigs in the communal pen, 12 households keep them in pens made of pig wire, and eight households have no pigs. The reason for not having any pigs is not related to the type of pig pens. Two of the households have recently moved back to Hatare and were not completely re-established. Two other men expected to be in Hatare only temporarily. Another three men had other family relations in their village with pigs and one man did not want to bother with pigs.

During the period of this study, construction of a communal pen for cattle was commenced. The pen will be used as a holding area for newly purchased cattle arriving by sea transport until delivery to farmers and for cattle destined for the Honiara market. At the outset, the holding pen was to be constructed on portions of land under the control of three individuals. Two of them are involved in establishing commercial cattle ventures while the third man has no interest in raising cattle. The latter man feels that since cattle are to be raised as a commercial project he should be entitled to rental payments for that portion of the pen on his land. Construction of the cattle holding pen has been delayed.

In Hatare, the fourth use of land is for coconuts, the only commercial crop. Prior to their commercialization, the coconut was

grown and used for subsistence purposes only. With the introduction of drying and selling of copra, the coconut became a source of cash income. Coconuts are maintained by 32 households on a commercial basis on land under their own control. The remaining two households do not have any coconuts under cultivation. Both men are in their twenties and have come to Hatare from Malaita to marry. They plan to remain with their wives' families temporarily and then return to their homes.⁹ Men with coconuts under cultivation have received their lands through patrilineal inheritance.

Land boundary markers may be large boulders, river beds, or large trees. The major method of designating boundaries, however, is to specifically plant a certain type of shrub or tree. There are three plants commonly used for this purpose; they include the araara (Codiaeum variegatum), mamu, or taupara. The first two plants are bushes with waxy red or green leaves; the latter is a coconut variety with a red tinged growing crown. The araara and mamu are usually planted at six foot intervals along the edge of a coconut grove while the taupara is spaced at distances of 25 to 30 feet. Virtually all farmers use this method to designate boundary lines between coconut groves. The only exception to this method is for coconuts surrounded by secondary or virgin growth; the boundaries of these groves are obvious.

Occasionally, other methods are employed to delineate boundary

⁹The two men do have access to land for commercial purposes on their home island of Malaita.

markers. Fallen palm fronds are cleared from under trees and laid between two groves. In a single case, a dirt mound border two feet wide and one foot high was constructed. The method of defining boundaries within subsistence gardens is related in Chapter II.

Disputes involving land occur over land left to fallow for many years. Four elderly men comprise the chief's court which judges local land claims. The determining factor in settling a land case is the establishment of the identity of the person originally clearing the virgin land for a garden. Two younger men, in their fifties, will replace two of the older men in judging land cases. There is no formal selection process involved; the two younger men are respected within the community and are knowledgeable in the customs of the area. It is agreed that these men will assist in settling land disputes when the oldest men on the chief's court die. This indicates that a certain amount of planning does occur in Hatare and that the people are not waiting for an event to transpire before any action is taken.

Part of the land in Hatare has been alienated and registered with the Land and Survey Office. This land has been developed as a commercial coconut plantation. Two hundred thirty acres are under freehold title and the balance of 68 acres is held under leasehold title. Since its initial acquisition in the 1920s, Paruru plantation has been operated as a commercial enterprise by the Malayta Company Limited, Fairymead Sugar Company, and C. H. V. Hodgess Pty. Limited. In 1960 the 298 acre plantation was purchased by an expatriate individual and, at the time of the survey, the plantation

was maintained at a minimal level.¹⁰

The Protectorate government has maintained an active interest in Marau Sound, particularly since the 1950s. In the late 1940s and early 1950s there was a degree of political and social unrest in parts of the Solomons, particularly on the island of Malaita. The activist organization of this time was the Marching Rule movement.¹¹ Because of Hatare's close ties with Malaita there was an interest in politically aligning the Marau area with the Malaita Council instead of the Guadalcanal Council. It is probable that the government commenced various developmental activities because of these political confrontations and the need for more social welfare services to the isolated people of the Weather Coast. In 1941-1942 there was not much to spend for social services and total government expenditures amounted to slightly over \$US250,000. In 1950 government expenditures totaled over \$US1.0 million and by 1968 expenditures had reached \$US7.9 million.¹² Thus, there has been more money in recent years to spend on development projects throughout the Protectorate.

The initial public development project undertaken in Hatare was the construction of a dirt road. The road commences at Manikaraku and

¹⁰The coconut palms are 45 to 50 years old and secondary growth reaches 30 feet under the palms. The owner has discovered that locally available sea-shells yield a higher profit than copra. The lack of maintenance contrasts markedly with the well-maintained coconut groves on customarily held land.

¹¹Cf. Leadership sub-section for a description of the Marching Rule movement.

¹²J. Tudor, ed., Pacific Islands Year Book (Sydney, 1972), 437.

extends west for 28 miles to the village of Sukiki on the south coast of Guadalcanal. Construction and maintenance of the road, ongoing since 1961, is hampered by heavy rainfall, which averages 182.96 inches annually in Marau (Appendix F). Bridges must be replaced and deep ruts filled. Some river beds west of Sukiki are so wide that bridge construction will be expensive and river fording will be nearly impossible. The road traverses the land holdings of numerous individuals. When road construction necessitates the destruction of cash or garden crops, compensation is paid by the government (Table 25). The project has met with little criticism and the people are pleased with the road and anxious that construction continue.¹³

In 1962 a 100 foot wooden wharf was constructed, together with a rest-house, at the eastern extremity of Hatare. The following year additional medical and administrative facilities were added and government employees assigned to what is now known as Manikaraku station. An agricultural extension group, malaria control team, medical assistant, midwife, and other administrative personnel reside at the station. The next official to be assigned is a policeman. The entire station has been constructed on land subleased from the Paruru plantation. The lease is of 15 years' duration and the annual rent is one shilling. A total of 4.4 acres is now used by the station.

¹³The residents feel that various positive economic effects will result from the extension of the road along the Weather Coast. There are several that would prefer to have the road constructed in the direction of Honiara for reasons of their own convenience. They said they would much rather go to Honiara by road than to any other Weather Coast village.

Table 25

Compensatory rates paid for crops and trees (\$A)

Crop or tree	Amount paid per crop or tree
Coconuts	
Mature - in good plantation	\$A5.00
Mature - in isolated planting	4.00
Immature - 1 year	1/4 full rate
2 years	3/8 full rate
3 years	1/2 full rate
4 years	5/8 full rate
5 years	3/4 full rate
6 years	7/8 full rate
Cocoa	
In plantation	1.50
Isolated planting	1.00
Ngali nut	4.00
Betel nut	1.00
Pineapple	.15
Kumara hill	.05
Yam hill	.20
<u>Pana</u> hill	.20
Taro	.10

Source: Department of Agriculture, Honiara.

In 1967 Marau airstrip was established on 16.4 acres of the leasehold land of Paruru plantation and 3.7 acres of land held by Solomon Islanders. The plantation owner was paid \$A600 for the unexpired portion of the lease and it is now government land. An annual rent of \$A15.00 is paid on a 35-year lease to the Solomon Islanders who had previously planted the land in coconuts.

Several miles to the north of the Hatara area is another registered land holding. The Catholic Mission at Makina was first granted a 33-year lease on 240 acres of land in 1914 with an annual rent of £3. The lease was renewed in 1961 under the same terms after a 14-year period during which no one had been aware that the lease had elapsed. The lease was continued under these nominal terms in recognition of the educational services the Mission was offering to the children of southeastern Guadalcanal. Partially supporting the Mission's religious and educational function are various agricultural activities: vegetable gardens, a coconut plantation, and livestock.

The people in Hatara are familiar with alternative forms of land control. In addition to their own traditional forms of land control they are acquainted with registered holdings of land through the expatriate controlled plantation, the Mission lands, and government public works projects.

Their land consciousness was raised to an extent that a formal claim was made to the Registrar of Titles with regard to the leasehold portion of Paruru plantation. It was claimed that compensation was not paid for the parcel of land at the time of its initial acquisition. The claim was dismissed in its entirety in October 1972. The major

reason for its dismissal was that no prior claim to the land had ever been made. For example, no claim was made at the time the airfield or sports field was constructed. In conclusion, the Registrar of Titles indicated that, "There is no evidence whatsoever to support the claim which appears spurious and perhaps even mischievous."¹⁴ Rather than mischievous, the claim may be indicative of a new cognizance of land as a valuable asset. As can be seen in Figure 3 the leasehold land is located directly behind three villages thereby causing the residents to pass over the leasehold land to reach their gardens and coconut groves. Since the plantation is not well-maintained, some people would like to see the land better utilized. Already several food gardens are located on the periphery of the leasehold land, the cattle holding area is located on part of the land, and a new pig pen was being planned for another part of the land. The farmers have all gained permission to use the land from the plantation owner for these alternate purposes. This particular action also supports the view of the Registrar of Titles that the people, by their actions, acknowledge the control of the land by the plantation owner. The claim may have been made because the people knew of no other manner in which to gain possible access to the land. After the negative decision of the Registrar of Titles was received, it was suggested that an attempt be made to purchase the land. Just prior to my departure from the Protectorate, a Hatare representative went to the Lands and Survey Office to enquire about the purchase of the land. He was told it was not for sale.

¹⁴Registrar of Titles, Application No. 137/69 (Honiara, 1972), 5.

Coconuts

The coconut is the only commercial crop now grown within the Hatare area. Of the 34 households, there are 32 households with coconuts under cultivation. The other two households do not have access to land for coconut growing. Coconuts have been grown commercially for approximately 50 years. The first coconuts were planted in an area west of Komunikau on land previously used for gardens by the first settlers in Hatare. These groves are generally small with only 20 to 30 trees. The groves become progressively larger to the east and inland. Some new groves, planted with the assistance of government grants, are 12 acres in size.¹⁵

A household generally classifies their coconut holdings as "old" and "new". The old coconuts are those planted by the household head's father while the new are those planted by the household head. During the past five years, the farmers have been actively planting new groves. Twenty-four of the 32 coconut growing households have established new groves and, of the 24 households, 10 have planted with the assistance of government subsidies, while the other 14 have planted with no government assistance. Several factors are responsible for the new plantings. Many of the old groves will soon be past their prime bearing period which occurs at the fiftieth year. The construction of the road and wharf have facilitated transportation. Farmers have been taking advantage of the Department of Agriculture's New

¹⁵Cf. Agricultural Extension sub-section for description of government grants.

Planting Coconut Grants.

The coconut groves are generally well maintained to facilitate the gathering of coconuts. After coconuts have been gathered and cut for drying, there are three copra dryers in the villages of Su'u, Hautahe, and Oterama for use by the farmers. The dryers were built jointly and are available for any Hatare farmer's use. When drying copra, the individual farmer is responsible for gathering firewood and maintaining the fire.

Most of the copra sold by the Hatare farmers is sold through the Hatare Community Development Association (HCDA).¹⁶ There is pressure on the farmers to sell through this cooperative enterprise.¹⁷ The HCDA, since its inception, has purchased the amounts of copra shown in Table 26. There is no way to determine how much copra was purchased from Hatare farmers alone as non-Hatare residents also sell through the HCDA. Copra is also sold to trade stores, one located at Paruru and another one-half mile west of Komunikau.

As shown in Table 26, during the first six quarters purchases of copra were fairly stable and averaged 49,154 pounds per quarter. For the last quarter, October to December 1972, purchases fell approximately 75 percent from the average to 12,447 pounds. Two factors may explain this decrease: the fall in copra prices in April 1972 and a

¹⁶Cf. Hatare Community Development Association for description of this enterprise.

¹⁷One farmer related an occasion when he took his copra to another trader, since the price paid for copra was one-half cent higher per pound. The farmer was told by the HCDA manager that he should support the local cooperative effort and not sell copra to another outlet.

hurricane in July 1972. Prices paid by the Copra Board for one ton of first grade copra during the past 3½ years are shown in Table 27. It is now difficult to separate the effects of the hurricane from the effect of the farmer's response to the fall in copra prices. The greatest amount of copra purchased in a single quarter occurred during the third quarter of 1972, after the price fall and the hurricane. The hurricane had blown all nuts off the palms, in addition to felling some trees, so that farmers gathered and processed all fallen nuts. Immature nuts were also blown off, thereby affecting future copra production as seen in the copra purchases during the last quarter of 1972.

Table 26

HCDA: Copra purchases (pounds)

Date	Weight
1971	
April-June	46,277
July-September	44,675
October-December	54,864
1972	
January-March	50,456
April-June	42,961
July-September	55,690
October-December	12,447

Source: HCDA records.

Table 27

Prices paid per ton of first grade copra
by Copra Board (\$A)

Date	Amount paid
October 1, 1969	\$A120
March 1, 1970	126
May 25, 1970	130
September 1, 1970	120
November 1, 1970	130
February 1, 1971	140
April 1, 1971	130
June 1, 1971	120
September 1, 1971	110
September 16, 1971	100
April 1972	65
June 1972	70
February 1973	80
March 1973	90
May 1973	105
June 1973	120

Source: Copra Board Annual Reports and BSI News Sheet.

The people of the Marau Sound area were fully aware of the effect on their coconut production as a result of the hurricane. Their attempt to transmit their perception of the damage suffered to the government took the form of a protest demonstration at the Manikaraku station. There is an annual \$A6 tax to be paid by all adult males and

a \$A2 penalty if the tax is not paid by July. Approximately 100 demonstrators protested the \$A2 penalty stating that the hurricane had damaged their coconut palms too heavily to enable them to pay the penalty. There were no protestations of the \$A6 annual tax. The double effect of the hurricane and copra price fall did cause a 75 percent decrease in copra handled through the HCDA. For the Protectorate as a whole there was a 19 percent decrease in copra production in 1972 as compared to 1971.¹⁸ At the time of the protest in October 1972 government officials appeared skeptical of the alleged negative effects of the hurricane.

Copra prices have fluctuated greatly in the period, October 1969 to June 1973 (Table 27). A farmer who cultivates coconuts is limited in his responses to changing copra prices. The processing of the fallen coconuts into copra can be delayed for several months but the nut will eventually begin to sprout. If the price of copra falls too low, the farmer may not process any coconuts and may seek alternate sources of income. In Hatare there are alternative sources of cash but, to many farmers, it is copra as a source of income or nothing. If a lengthy period of low prices is anticipated it is still unlikely that a farmer can switch from copra production to another cash crop; the coconut is a tree and has a 50 year period of production. On the other hand, if copra prices are expected to be high, a farmer cannot readily respond to the higher prices as the coconut requires seven years before

¹⁸"Copra Production for the Fourth Quarter," BSI News Sheet, no. 2/3 (16 January to 15 February 1973), 4.

production commences. During a period of higher prices it is likely that fewer coconuts will be used for consumption purposes and, therefore, more would be sold.

Market Linkages

The central marketplace for the Solomon Islands is the capital, Honiara. The necessity to transport produce to the capital from the large number of islands within the Protectorate has resulted in the development of an elaborate interisland shipping service and an internal air service employing light aircraft. Marau has both transportation systems linking it to the central market. Flying time to Marau is 30 minutes; travel by boat takes eight hours. There is no road connecting Marau and Honiara and a trip on foot requires three days.

In addition to the traditional use of dugout canoes for fishing purposes and as a means of transportation among the islands of Marau Sound, the major commercial sea transports are motor vessels operated by the government, private firms, or individuals. A government boat, the M. V. Mary, visited Marau once a fortnight until January 1973.¹⁹ The Mary would travel to Marau from Honiara, unload supplies, proceed half-way around Guadalcanal and then return to the capital again via Marau. On the return passage, the ship would take on cargo and passengers bound for Honiara. A scheduled overnight stop en route to

¹⁹The M. V. Mary was taken out of service and burned due to her age.

Honiara precluded many passengers from using this as a means of transportation from Marau.

A privately owned vessel, the M. V. Meringe,²⁰ also has been operating out of Marau. It makes the round trip to Honiara twice a week, with no stops en route. Consequently, the Meringe was more often utilized by passengers while the Mary was utilized for the transport of cargo. Passenger fares between Marau and Honiara have been \$A2 on all ships. The cost for transporting a bag of copra to Honiara on any of the ships has been \$A.40.

Just prior to this study, in July 1972, an agreement was made between the manager of the HCDA cooperative store and its major supplier in Honiara to handle all shipping between them. The supplier agreed to ship all trade goods free of charge on his cargo ship, providing the goods were purchased from him. The co-op was to ship its copra at the rate of \$A.40 per bag. Free passage for one store representative was also to be included. The trip was to be made once a month. The verbal agreement was made prior to full assessment of the damage caused by the hurricane which had occurred approximately three weeks earlier. Partially as a result of that natural disaster and the 75 percent drop in production, the HCDA was unable to guarantee adequate supplies of copra for the return trip to Honiara. Thus, the agreement went unfulfilled.²¹

²⁰The M. V. Meringe has a capacity of forty bags of copra or 10 passengers.

²¹Other ships do call at Marau on an irregular basis but do not carry out cargo or passengers.

Air service began at Marau in 1965 with the construction of an airstrip, and air service between Honiara-Marau-Avuavu-Honiara was initially provided on a fortnightly basis with a five-passenger aircraft. Due to the popularity of the service there are now two flights per week with a nine-passenger airplane. Passenger fare between Marau and Honiara is \$A9.80. A limited amount of freight may be carried at a cost of \$A.05 per pound.²² Utilization of air service for the shipment of the area's major crop, copra, is not feasible.

Facilitating the shipment of produce from the southeastern coast of Guadalcanal is a road leading to the wharf. Construction of the road commenced in 1961.²³ The road presently extends 28 miles west from the wharf and is not yet completed.

²² During the survey period there was only one occasion when the air freight service was used. One woman sent a 10 pound portion of a cooked pig to her son in Honiara.

²³ The government has established various criteria in order to determine priorities of road construction throughout the Protectorate. These factors include:

- (1) where there is a suitable level of economic activity available or likely to be stimulated by the opening of a road;
- (2) where urban conditions exist and motor traffic has already built up;
- (3) where other communications termini, such as ports or airfields, require servicing;
- (4) where stretches of road, built for reasons given in (1) above, require to be linked into a single system. Such links may not be economically justified in themselves, but would be justified as parts of a larger system.
- (5) where specific development projects, such as a hydro-electric scheme, require servicing. Such roads may be constructed privately, by Government, or jointly financed depending upon circumstances.

Hatare Community Development Association

One of the largest cooperative business efforts in the Solomons is located in Hatare and is known as the Hatare Community Development Association (HCDA). The purpose of the HCDA is to provide business investment opportunity to the people in southeastern Guadalcanal.

The idea of a trade store centered business was originally conceived by one man in an effort to gain respect and status. He approached six of the local Hatare leaders with his plan for a cooperatively owned store. Informal discussions followed with other men in the community and it was decided to construct and stock a store. At this time, during the first half of 1970, copra prices were on the ascent and there was strong desire to invest in a money making activity.

The six original leaders initiated plans for the selling of shares and the building of the store. A share in the store was established as \$A40 per male and \$A10 per female. The purchase of a share is on an installment basis, with the prospective shareholder determining the amount and rate of payment. Table 28 indicates the rate of investment in the HCDA. A total of \$A1,278 was invested prior to the opening of the store on April 1, 1971, and a total of \$A2,889 had been invested through the end of 1972. Shareholders are distributed from Poposa to Sukiki, but 78 percent of the shareholders are from the Hatare area. Of the 34 Hatare households there is at least one shareholder from all 34 households and 23 households have two or more shareholders, including shares in the names of children. The average investment per Hatare household is \$A65.29.

Table 28

HCDA: Investment by Hatare and non-Hatare residents (\$A)

Date	Hatare	Non-Hatare	Total
7-70 to 9-70	304.50	2.00	306.50
10-70 to 12-70	148.50	--	148.50
1-70 to 3-71	615.00	208.00	823.00
Total investment prior to opening trade store	1,068.00	210.00	1,278.00
4-71 to 6-71	318.00	145.00	463.00
7-71 to 9-71	373.00	101.00	474.00
10-71 to 12-71	236.00	30.00	266.00
1-72 to 3-72	161.00	114.00	275.00
4-72 to 6-72	45.00	40.00	85.00
7-72 to 9-72	20.00	28.00	48.00
10-72 to 12-72	--	--	--
Total investment	2,221.00	668.00	2,889.00

Source: HCDA records.

The HCDA is not a government registered cooperative enterprise as the leaders did not want to be bound by various governmental regulations. Moreover, there are no written constitution or by-laws. A comparison of investment in the HCDA with average investments for government-sponsored cooperatives in the Protectorate is shown in Table 29. In each category the HCDA far exceeds the average of the government-sponsored cooperative societies.

Table 29

Comparison with government-sponsored cooperatives

	Average per government- sponsored cooperative	HCDA		
		Hatare residents	Non-Hatare residents	Total
Capital per member	\$A9.23	\$A23.37	\$A24.74	\$A23.68
Total capital per co-op	480.00	2,221.00	688.00	2,889.00
Membership per co-op	52	95	27	122

Source: HCDA records.

BSIP, Sixth Development Plan 1971-1973 (Hong Kong, 1971), 95.

The HCDA is managed by a Board of seven men of whom four have the positions of store manager, president, treasurer, and secretary while the three other men are members. The terminology of the titles is definite but the positions themselves are not well defined. Selection to the Board is based on geographic location and family groups: members of the Board are only from within Hatare and are usually from different villages.²⁴ Meetings of the shareholders are held every month. The meetings are generally not opportunities for the shareholders to reach decisions concerning the activities of the association. Rather, one or two of the leaders tell what decisions have been made on

²⁴Two brothers, however, act as store manager and president of the HCDA.

behalf of the organization. This particular method of operation is acceptable for the most part, as the HCDA leaders are not only among the most educated people in the area, but have had a wide range of contact with people and institutions outside of the community.

The HCDA consists of three different types of business operations: (1) trade store, (2) copra and trochus shell marketing, and (3) freight hauling.

The trade store opened April 1, 1971, with a stock valued at \$A1,208. An inventory for October 1972 was valued at over \$A4,500. Between April 1971 and December 1972 average monthly sales were \$A1,587 with a range from \$A1,059 to \$A2,172. The store is stocked with a variety of goods: canned food, housewares, and agricultural tools. Special orders may be made for higher priced items, such as bicycles, radios, and pig wire.

Financially, the store has been successful since its inception. None of the association leaders had any previous business training although all had had some formal education. Other than the cost of trade goods, the biggest expense items are sea-freight charges averaging \$A40 per month and wages averaging \$A42 per month. Fairly detailed records²⁵ are maintained although the HCDA's leaders are not fully aware of how to interpret the information and, consequently, are

²⁵ Among the records maintained by the store are:

Quarterly financial statements	Invoices - paid and current
Daily cash sales register	Tractor - receipts of money paid
List of shareholders of HCDA	Tractor income book
Copra sales book	Tractor rates book
Check register	Wages book

unable to make sound financial decisions. Record keeping is viewed as an introduced necessity, but not as a tool for management.²⁶

The marketing of copra and trochus shell is handled by the HCDA. Copra is purchased by the trade store and held in a locked storage house until it is transported to the wharf for shipment to Honiara. Average monthly gross copra sales income was \$A609 from the opening of the store to December 1972 with a range from \$A10 to \$A1,771. The low in the range was a result of the drop in copra prices and hurricane damage. Gross profit on copra sales averaged 24 percent. Trochus shells are also purchased and account for \$A65 average monthly gross sales income. Trochus shell diving is one of the few commercial activities in which women are involved.

The gross sales income for the HCDA in 1972 from the trade store was \$A20,978 and its gross income from copra sales was \$A5,434. These sales compare with the average sales figures for government-sanctioned co-ops throughout the Solomons of \$A2,400 in trade goods and \$A1,600 in the marketing of primary produce. In 1971, the net profit of the HCDA amounted to approximately 15 percent of total sales or \$A3,178 for the first nine months of operation, April-December 1971.

The third enterprise conducted under the auspices of the HCDA is

²⁶For example, a checking account is maintained by the store. All bills are paid by check and cash deposits made to a bank agency in Paruru. Other deposits are made by the Copra Board directly to the HCDA's Honiara account. However, the checkbook had never been balanced with the bank statement during the first 20 months of their operation, a period in which more than \$A30,000 had been deposited. When the account was balanced, it was learned that there were errors totalling \$A900 in the HCDA's favor.

the tractor freight hauling business. When the tractor was purchased in early 1972, the available vehicles on the Weather Coast road were: 2 Guadalcanal Council tractors, 1 government-owned Landrover, a privately-owned Datsun pickup, and a privately-owned World War II vintage jeep. It was felt that the purchase of a tractor and trailer would enable the HCDA to deliver copra to the wharf for shipment, to pick up trade goods arriving at the wharf, to provide a new service in the form of a tractor for hire to local farmers and residents, and, possibly, to provide a visual symbol to people of the HCDA's existence.

The area along the road was divided into three sections and varying rates were established, with the cheapest rate assigned to the area around Hatatare. Rate schedules were assigned for the rent of the tractor service, for different cargo units, and for passengers.²⁷ Certain exceptions were made, for example, a woman carrying a full food basket or water jugs would be carried free of charge. Some traditional beliefs were extended to the operation of the tractor, that is, a woman cannot ride if she is having her menstrual period. This follows the local custom of a woman staying in a separate lean-to house, away from the family's main house, during her period.

In November 1972, nine months after its purchase, there was a

²⁷ The rate schedule is:

<u>Item</u>	<u>Area 1</u>	<u>Area 2</u>	<u>Area 3</u>
Tractor hire	\$6.00	\$8.00	\$10.00
Copra, bagged	.20	.30	.40
Pig	1.00	2.00	2.00

Area 1 - Hautahe to Waimaea; Area 2 - Waimaea to Sangassere; Area 3 - Sangassere to Mballo/Sukiki.

proposal to sell the tractor. The reason given was that the tractor had cost \$A3,680, yet it had only generated \$A240 income, therefore, the tractor was too expensive a proposition for the HCDA. At a shareholders meeting, amortization and non-recorded tractor income were discussed. Once the tractor cost was amortized over a five-year period and values were assigned for the hauling of HCDA cargo and copra, the tractor operation proved to be operating at a break-even point. It was decided to keep the tractor.

One mile to the east and three miles to the west are the nearest competitors of the HCDA. Both operate trade stores and copra marketing facilities and one also operates a bakery. These operations are private enterprises; in addition, both owners have purchased full \$A40 shares in the HCDA. Neither view the co-op as a threat to their own enterprises, but rather as an indication of the economic growth of the area. The fall in copra prices had a far more deleterious effect on their attitude.

Within nine months of the opening of the trade store, an attempt was made to purchase a store in Honiara. It was felt that having a Honiara "branch" would enable the store to avoid the middleman in obtaining supplies and that this would yield greater profits. It was decided that lack of capital precluded a second store at that time. Later, in September 1972, the HCDA investigated the leasing of a warehouse in Honiara. An annual lease would have cost \$A480, but another firm leased the warehouse before they were able to travel to town. Another attempt was made to secure a business and an interest was indicated in purchasing a store in the Protectorate's capital along

with another piece of property. A request was made to the Agricultural and Industrial Loans Board (AILB) for a \$A19,000 loan to make the purchase possible. The loan request was rejected because the AILB felt there were too many small trade stores in town, thereby limiting profit potentials. This attitude is consistent with the AILB's commitment to rural development.

In 1971, the HCDA wanted to extend its services at the local level by opening a retail beer outlet. Its request for a license was denied due to a lack of a building constructed of permanent materials in which to store the beer and due to the lack of police officials in the area. There were also objections to a bar from some local residents because of possible behavioral problems.

The largest single purchase of the HCDA was a Massey Ferguson tractor and trailer in March 1972 for \$A3,680. A \$A2,000 down payment was made with the balance to be paid over a 10 month period although payment was completed within seven months.

In January 1973 the HCDA purchased a car for \$A1,768. Plans were in process to operate a taxi service in Honiara. A young Hatara man living in Honiara was to operate the taxi.

There is a definite tendency for the HCDA to look to Honiara as a place to use their accumulated capital. This tendency is understandable as Honiara is the major commercial area in the Solomons. Younger members of the HCDA feel that there are other possible rural development opportunities: the purchase of a freezer for storing and selling meat and fish for example, purchase of a fiberglass canoe and engine for fishing purposes, or of power saws for the clearing of land

and possible rough cutting of timber.

The need for a single full-time manager of the HCDA is apparent. Shareholders and the board have agreed that a manager is necessary and are willing to pay a monthly salary for such a person. An educated person is desired and they thought they had one in a young man of Hatare who was to complete a Form II education. However, after completing school he chose to remain in Honiara to work.

The Hatare people have shown an interest in activities that would improve their level of living but they lack full knowledge of how to proceed.

A government official did visit the area during the survey period with suggestions of rural development projects. A meeting was held with this official and 20 Hatare men to discuss these projects. It was described how Hatare could become a "little Honiara" with the gift of a generator to power a few lights and a movie projector. A "listening center" was also proposed for which a radio would be presented by the government along with various magazines. The people would be required to build the necessary buildings. One man responded with a question about the possibility of a piped water supply and the meeting was concluded. Afterwards the official departed and a discussion ensued. Several points were made: a generator was located 100 yards away from the meeting site to provide radio communications with Honiara; several transistor radios were already owned by residents and one was always kept on in the HCDA store; and, besides, there was no desire of making Hatare into a "little Honiara". Others attempted to define rural development and it was agreed that the best rural development projects

were those that generated additional income. The next day it was reported that a group of people living on one of the islands in Marau Sound responded positively to the idea of a movie house. Various Hatare people thought this an excellent idea. Let someone else build the movie house and they would occasionally visit it. The people were left, however, with no further understanding of methods to improve their level of living.

Cooperatives

An outgrowth of the financially oriented HCDA is the Community Association,²⁸ a labor cooperative. Prior to the organization of the HCDA, an unsuccessful attempt was made to organize a cooperative that would work together on various community projects. After the HCDA was established, another attempt, this time successful, was made to establish a labor cooperative. The HCDA was used as an example of how the people of Hatare could work together.

The geographical limits of the labor co-op membership coincided with the area included in this study. All 34 households belong to the Community Association. There appears to be no defined goal of the cooperative beyond that of the accumulation of capital, which totaled \$A700.²⁹ There is a consensus that the most beneficial project for the

²⁸The similarity between the terms, Hatare Community Development Association and the Community Association, should be noted and differentiated.

²⁹Of this amount, \$A360 has been invested in the HCDA, while the balance is in a savings account.

area would be the installation of a piped water supply system. All potable water for the area is from two springs which are so located that some women must walk daily over four miles for water. With regard to this project, however, there is no concept of the appropriate source of water and of the costs of a piped water supply, nor has any planning been done.

The Community Association is a labor pool comprised of all the residents in the Hatare area. The Association has designated specific times during which the pool will be available; two weeks of cooperative work are alternated continuously with three weeks of individual work, when the Association's labor pool is unavailable. For example, a man wants assistance in planting a new garden. He will request 15 people to assist in the labor. The garden will be planted with the help of members of the co-op during the two-week community period. During this time it is the responsibility of the requestor to provide the laborers with a noon meal and to pay into the treasury of the Community Association an amount of \$A.20 per individual laborer. In this manner, the present capital holdings were accumulated, save for an initial membership fee of \$A.50 per male and \$A.20 per female.

An additional method of money-making was initiated in 1972. The Community Association members cleared a .9 acre site and planted a garden of kumara consisting of 35 rows which are 160 feet long and seven feet wide. Upon maturity in December 1972 the right to harvest a row was sold for \$A2 and such rights were all sold within three days. At a later meeting, the decision was made that in 1973 there would be another garden planted and sold each quarter. The response to these

gardens reflects the desire of the Hatare people to support their own Community Association and indicates a need for additional sources of garden produce necessitated by the number of males employed in wage labor.

The Community Association activities are coordinated by a president, a secretary, a treasurer and four appointed members. The president is the man who began the association and the other members were appointed. These appointments reflect geographic and family diversity but are not selected in a formal or electoral manner. There is no over-lap of Board members between the Community Association and the HCDA.

During the period of this study there was a proposal to utilize the leadership of the Board of Directors as an advisory body for the Birao Ward Committee instead of the chief's court.³⁰ The stated reason for the suggested change was that the chief's court was making judgments based on traditional or old fashioned values; it was felt to be desirable to base these judgments on the new life. The Community Association's Board of Directors consented. There was, however, no occasion for them to advise in this role prior to the completion of this study.

There is one further organization that the people have formed and actively support. The Football League Association has been successful and during the 1972 season six teams from Marau Sound were

³⁰The governing committee is to advise on matters of a minor disciplinary nature for action by the Ward Committee.

fielded. The people worked together to clear land adjacent to the airstrip for a playing field. Four members make up the Football League Association's Board of Directors and coordinate activities. A football fund was created and totaled \$A377 but, again, the people are unsure what to do with it.

Marau Market

A monthly market was initiated in mid-1972 at Manikaraku to provide for the exchange of vegetable crops and fish. It is generally felt that rural Solomon Islanders are able to provide for themselves through subsistence agriculture. A need was perceived for a marketplace, however, by the agricultural extension staff. The 20 government employees and family members at Manikaraku must buy all their food as they do not maintain gardens. Approximately 50 men from southeastern Guadalcanal work full time on the Weather Coast road and are unable to devote much time to their gardens. People living on the islands in Marau Sound are considered to have an advantage in providing fish and shell fish while not having extensive gardens. The people of the Guadalcanal mainland have root crops to exchange for sea food. Therefore, the Guadalcanal people would offer root crops, the island people would offer fish, and the wage employees would inject cash into the exchange. The market is scheduled on the last day of the month to coincide with the government pay day.

People attending the market came by canoe from the islands in Marau Sound and from as far north as Poposa on Guadalcanal. Along the coastal road, people came from as far west as Sukiki. By mid-morning,

30 to 40 dugout canoes would be tied alongside the wharf and 250 people would be in attendance. Of the 34 Hatara households, all had been to one or more of the market days to buy and/or sell. The Hatara women generally sold pineapples or puddings made of kumara. Fish and bread were purchased. The range of products available at the market was broad, although not all food items were available on every market day. During the research period the following products were offered for sale:

kumara	fresh fish
taro	baked fish
pumpkin	oyster
baked pudding	clam
green beans	turtle
watercress	cooked beef
green onions	chicken
tomato	break
pineapple	betel nut and pepper leaf
papaya	watermelon

Root crops and shellfish were available in abundance. Fresh fish was the most desired item and the most difficult to purchase, a seeming anomaly in an area surrounded by water. People were anxious to obtain special food items. For example, one man carried a turtle into the marketplace on his shoulder. As he swung the turtle off onto the ground, a buyer proffered \$2 and the turtle was sold before it hit the ground. A baker brought in 26 loaves of bread which were sold within 10 minutes. These "special" items were in short supply because of a degree of uncertainty surrounding the market. The market is scheduled for the last day of the month, the government pay day. However, for two of the three observed market days the pay clerk and payroll had not yet arrived from Honiara. Sellers were, therefore,

hesitant to bring any but the most basic food items to the market.

Capital and Credit Sources

In Hatare, the pig is a main commodity of exchange within the traditional structure, although now supplemented by canned meat. The exchange of pigs and root crops is a reciprocal affair at weddings, funerals, and other ceremonial occasions. A household may present a pig to another household in which there has been a death. After all pigs and other foodstuffs have been received, the receiving household will divide all foodstuffs among those persons giving gifts. The only stipulation is that the same pig will not be returned to the family that initially presented it. This practice is followed in every case in which food or service is given. This customary reciprocal exchange indicates a sense of debt and obligation.

Another basic item of exchange is shell money.³¹ A six foot strand of shell money has been assigned a value of \$A2 for transactions involving both shell money and Australian currency.

Money lending in the rural areas does not appear to be an institutionalized practice, partially due, no doubt, to the lack of necessity of western currency for many traditional functions. There are three stores in the Marau area (only one, the HCDA store, is within the geographic limits of the survey area) and all of the stores accept

³¹Shell money is still used to "purchase" a bride and the current bride price is 32 strands of shell money. The Roman Catholic Mission priest requires that a portion of the bride price be paid to the girl's family before he will marry the couple in the church.

shell money as collateral for a loan. The great majority of uses for money obtained in this fashion is for the \$A2 boat passage to Honiara. None of the stores currently has credit available for the purchase of any item although it is possible to "layaway" an item with the small down payment for later pick-up, when full purchase price is made. No loans were made during the period of this research; however, the lay-away plan was used to purchase two rolls of pig wire and several cases of canned meat for a village feast.

The demand for local credit sources is minimized due to the availability of local wage labor opportunities. Within the 34 household survey, there were 19 men with permanent employment, although not necessarily full-time work, that is, 40-48 hours of work per week. Table 30 lists these jobs by source of income, how many men work at the job, the individual monthly salary paid, and the monthly aggregate income.

Governmental sources of wage labor account for 11 employment positions and eight positions can be considered as being within the private sector. The three storekeeper positions are at least partially dependent upon the government wages paid within the district. Government spending is not a recent and temporary phenomenon as is shown by Table 31 which indicates the length of time spent by wage employees in their respective jobs.

Eleven of the 19 wage earners have held their job for more than one year, an indication of a degree of job stability. The eight men that have worked for less than one year are a result of normal job turnover, new positions, and of employment positions that are full-time

Table 30

Hatare: Wages of employed males, by position and sector (\$A)

Position title	Total number employed	Monthly wage	Total wages per month
Private:			
Storekeeper	3	2 @ 16	32
		1 @ 12	12
Tractor driver	1	10	10
Shell worker	3	1 @ 30	30
		1 @ 26	26
		1 @ 24	24
Casual laborer	1	15	15
Total - private sector	8		\$A149
Government:			
Agriculture laborer	3	1 @ 30	30
		2 @ 23	46
Road worker	3	3 @ 17	51
Radio operator	1	16	16
School teacher	1	50	50
Tool keeper	1	10	10
Native Court president	1	8	8
Pensioner	1	12	12
Total - government sector	11		\$A223
Total - private and government sector	19		\$A372

Source: Field notes.

Table 31

Hatare: Length of service of employed males
by position and sector

Position title	Less than one year	One year and over
Private:		
Storekeeper (3)	1	2
Tractor driver (1)	1	
Shell worker (3)	1	2
Casual laborer (1)	1	
Government:		
Agriculture laborer (3)		3
Road worker (3)	3	
Radio operator (1)		1
School teacher (1)		1
Tool keeper (1)	1	
Native Court president (1)		1
Pensioner (1)		1
	—	—
Total	8	11

Source: Field notes.

but are generally filled on a rotational basis. All of the employed men also have gardens and coconut plantations that require their attention and the men prefer to have some time to devote to their agricultural endeavors.

In addition to regular wage employment, there are also opportunities for general agricultural labor. There are 10 farmers that hire temporary agricultural laborers for work, primarily in coconut groves. The work consists of the initial clearing of land, the planting of coconuts, the weeding or brushing of established coconuts, and the harvest and preparation of coconuts for copra. Six men are known for their availability for this type of work. They are young and single or men without coconut plantings of their own. Wages for agricultural labor are paid either as a daily wage or as a flat sum for the job. The daily wage is \$A.50 or \$A.70 a day. The lower wage is paid when the laborer lives with, and is fed by, the hiring household, while the \$A.70 wage is paid to a man living at his own home, but working during the day. Occasionally, a flat rate of \$A10 or \$A20 will be offered to two or three men to clear a designated area. The laborers are free to determine how long the job will take.

There is, therefore, a monthly in-flow of capital in the form of wage payments in the amount of \$A372. The 19 wage earners represent 11 of the 15 villages in the survey district. The flow of capital throughout the area is facilitated by the basic unit of the village structure, the extended family. The sale of copra also provides cash at various times and 32 of the 34 households do raise coconuts. The price of copra had dropped to its lowest level in several years by

April 1972. At that time it was selling for \$A65 per ton versus \$A140 per ton in February 1971. For this reason, coupled with the hurricane in July 1972, there was little copra being sold. Therefore, the effect of copra sales within Hatara was difficult to ascertain during the research period.

An income and expense survey was conducted during November 1972 for the five households in Poinaho. The results of this survey are shown in Table 32 which gives some indication of sources of income and kinds of goods purchased.

Table 32

Hatare/Poinaho: Income and expenses, November 1972 (\$A)

Income		Expense	
Full-time labor	\$A 89.00	Food	\$A11.80
Agricultural sales	11.53	Personal items	2.70
Gift	3.00	Tobacco/Betel nut	2.98
Total	\$A103.53	Agricultural (pig wire) ^a	52.00
Average per household	\$A 20.71	Gift	1.00
		Tax payment	6.00
		Total	\$A76.48
		Average per household	\$A15.30

^aThe \$A52 expense item for pig wire is not a random purchase because 12 of the 34 households have purchased pig wire to enclose their pig pens.

Source: Field notes.

Thirty-three Hatare households were inventoried for personal possessions and the current replacement value per household of these items is shown in Table 33. Possessions fall into four broad categories of: household items, custom items, luxury items, and agricultural tools. Household items include pots, plates, kerosene lamps, and storage boxes. Custom items are hand-crafted items including strands of shell money and bamboo flutes. Luxury items consist of sewing machines, radios, and bicycles. Agricultural tools are all enumerated individually in Table 34.

Table 33

Hatare: Value of household possessions
per household (\$A)

Item	Mean value	Percent of total
Household goods	\$A73.74	37
Luxury goods	52.73	26
Custom goods	34.23	17
Agricultural goods	40.40	20
Total	\$A201.10	100

Source: Field notes.
Based on inventory of 33 households.

Table 34

Hatare: Agricultural tools and equipment

Item	Number of households owning	Total number of items inventoried
Machete	33	86
Axe	33	68
Goggles, fishing	26	37
Copra knife	23	32
Hammer	21	23
Fish spear	21	45
Canoe - 3 persons or less	16	17
Fish pole	15	30
Crowbar	14	20
Shovel	14	16
Pig wire, roll	12	12
Adze	8	11
Plane	7	7
Pick	4	4
Canoe - over 3 persons	4	4
Hoe	2	2
Rasp	1	2
File	1	1
Fish net	1	1

Source: Field notes.

Based on inventory of 33 households.

A local or rural based credit exchange is occasionally used in Hatare for consumption purposes. Credit for agricultural purposes is available through governmental sources. This agricultural credit takes the form of grants through the Department of Agriculture and loans through the AILB, a governmental agency.

Grant payments were initiated to encourage agricultural development throughout the Protectorate. Coconut subsidies have been the most requested of the available subsidies in the Hatare area. Coconut grant payments are paid at a rate of \$A8 per acre for the first year and \$A4 per year for the next four years. Of the 14 subsidies in Hatare, \$A148 were received by farmers in 1969, \$A134 in 1970, \$A364 in 1972, and \$A326 in 1972. A portion of these payments are used to pay laborers for the maintenance of the coconut groves. All of the farmers receiving grants did state that they hire laborers to at least assist in the care of the coconuts.

The AILB was created in 1955 to make capital available in the form of low interest loans, to encourage the further development of agriculture and industry, particularly in the rural areas. From 1955 to 1972, there were 279 loans approved in the Protectorate for a total of \$A1,449,947, and in 1972 there were 31 loans approved amounting to a total of \$A144,567.³² The rate of non-repayment of loans has been two percent.³³ No loans have been made to farmers in the Hatare area.

³²Agricultural and Industrial Loans Board, Report for the Year Ended 30th September, 1972 (Honiara, 1972), 6.

³³Statement made to author by B. E. Ferguson, Small Business Credit Scheme Advisor, AILB.

One Hatare man had previously applied for a loan to extend his coconut plantation and was turned down as the Department of Agriculture was commencing its grant programs. During the latter half of 1972, six loan applications originated from Hatare farmers, which were all for the establishment of pig raising projects or the purchase of cattle. Additionally, a loan application was made by the local cooperative store to expand its business operations into Honiara. The latter loan application was rejected while no decision had been made on the agriculturally related loan applications by January 1973.

The increase in loan requests during the past year was the result of a new position created by the Department of Agriculture, that of a special projects officer. The loans officer acts as a liaison between the Department of Agriculture, the AILB, and the farmer. He works in the rural areas to explain the loans program and to judge the suitability of loan requests. He visited Hatare in July 1972, hence the six loan requests. Table 35 is a summation of the loan applications made in Hatare in 1972.

I reviewed the loan applications prior to interviewing the farmers. When I talked with the individual farmers, they acknowledged the loan applications, but were unaware of the number of head of livestock and the dollar value of the loan request. The farmers had indicated an interest in a particular project and a loan, while the special projects officer determined all other aspects of the loan request, that is, the cost of the project, the number of head of livestock to be purchased, and the loan repayment period. An opportunity to educate farmers in this business activity has been missed.

Table 35
Hatare: Loan applicants, 1972 (\$A)

Number	Planned project	Amount requested
1	Purchase 10 head of cattle	\$A600
2	Purchase pig wire for community pig pen	500
3	Purchase boar, pig wire, and construction materials for piggery	180
4	Purchase boar and construction materials for piggery	150
5	Purchase five head of cattle	300
6	Purchase boar, pig wire, and construction materials for piggery	420
7	Purchase trade store in Honiara	19,000

Source: Loan applications, District Agriculture Office, Manikaraku.
Field notes.

Agricultural Extension

Agricultural extension services became available to the people of Marau with the establishment of the Manikaraku station in 1965. The station is the headquarters of the South Guadalcanal district, one of three agricultural administrative units for the island. Department of Agriculture personnel assigned to the station include a senior field assistant, field assistant, extension assistant, clerk, and trainees.³⁴ The extension group has been provided with housing, office, and storeroom as part of the structural complex, a Landrover for transportation along the coastal road, and a 25 foot fiberglass canoe and engine for transport among the islands of Marau Sound. In addition, a large three-bedroom house was constructed with the intention of providing housing for an European agricultural officer. The isolation of the area, however, has precluded any European contract worker from accepting the position.

The aim of the extension group is two-fold: education of farmers in improved agricultural practices and development of profitable commercial crops. A realization of these goals has been attempted through a series of Department of Agriculture subsidy plans.

³⁴A field assistant has three years of formal agricultural training while an extension assistant receives on-the-job training. The district's senior field assistant tours the district once every three months and visits the field assistants or extension assistants. Most of his time is spent working with farmers situated along the Weather Coast road. He works primarily with individuals who are responsive to the ideas of the Department of Agriculture. In practice, this means those farmers who are interested in obtaining the various grants offered by the Department. Apart from a cattle advisory committee, which was established during the period of this study, there are no other village agricultural groups or committees.

The subsidies available are as follows:

1. Coconut New Planting Grant
2. Coconut Replanting Grant
3. Coconut Rehabilitation Grant
4. Cattle Fencing and Stockyard Grant
5. Pasture Grant
6. Fertilizer Grant

Coconuts and cattle-related activities receive the primary governmental emphasis in subsidies. Copra is the Protectorate's leading export and it is anticipated that it will remain as such. The raising of cattle by Solomon Islanders is a relatively recent phenomenon. It is hoped that increased cattle herds will reduce the Protectorate's dependence upon imported meat products.

The most popular subsidy with the south agricultural district has been the Coconut New Planting Grant, with 128 of these being granted in the period, April 1969 to December 1972, with a mean acreage of 4.76. Table 36 shows the distribution of the New Planting Coconut Grants along the southeastern portion of Guadalcanal. The last column, the percent of households receiving grants, indicates that Hatare farmers have been most responsive to the grants. By contrast, there have been no requests for the Coconut Rehabilitation Grant and the Coconut Replanting Grant. The qualifying conditions established by the Department of Agriculture for a Coconut New Planting Grant are as follows:

- (a) Land - the applicant must have the right to use the land on which plantings are to be made. The land should also be reasonably accessible to market outlets.

Table 36

Southeastern Guadalcanal: Distribution of
New Planting Coconut Grants

District	Number of grants	Total number of acres	Total number of households in district	Percent of households receiving grants
Marau	26	122.75	96	27
Hatare	14	70.50	34	41
Balance	12	52.25	62	19
Tetekanji	7	44.00	84	8
Moli	41	174.50	304	13
Avuavu	28	144.00	149	19
Talise	18	79.75	156	12
Vatukulau	8	39.50	265	3
				—
Total	128	604.50	1054	12

Source: District Agriculture Office, Manikaraku.
1972 Weather Coast Project Census.

- (b) Soils - the soils on which the plantings are growing must be suitable for coconuts.
- (c) Planting Material - must be selected from good quality seed coconuts which have been grown in an approved nursery.
- (d) Acreage - blocks of new coconut plantings of three acres or more may be eligible for the grant. The block may comprise several contiguous blocks but the planted area must form an identifiable unit, the boundaries of which must be marked so that the date of completion of planting can be readily determined.
- (e) Spacing - palms must be regularly spaced at more than 60 and less than 90 palms to the acre for all varieties.
- (f) Planting Out - selected seedlings must be planted out in a brushed area and in suitably prepared planting holes and mulched. The planting out of an area for which a grant is sought must be completed within nine months.
- (g) Maintenance - the palms must be kept mulched, free of all bush and weed growth and free of all pests and diseases.³⁵

In order to verify these requirements, a member of the extension staff must inspect each farmer's proposed coconut site. A qualifying farmer will receive an initial payment of \$A8 per acre, which is intended to be partial compensation and inducement for the clearing of the site. Subsequently, the farmer will receive an annual payment of \$A4 per acre for a period of four years and a potash fertilizer.³⁶ Annual payments will be made only after an extension worker inspects the coconuts to insure that the planting is well maintained and free

³⁵BSIP, Department of Agriculture Public Notice, FN. 12702/3613, 1 September 1971.

³⁶Fertilizer is provided at a rate of .25 pound per palm in the first year increasing to 1.5 pounds per palm in the final year of the grant. During the period of the subsidy, 3.25 pounds of fertilizer will be given per palm. The use of fertilizer on a regular basis can show significant gains in production. Tests on coconut yields at the Dala Experimental Station showed that after seven years of fertilizer applications there were yields of 504 nuts per acre. On non-fertilized land there were yields of only 62 nuts per acre. Department of Agriculture, Dala Experimental Station Annual Report 1971 (Honiara, 1972), 52.

of underbrush. The annual payments are to assist in defraying the costs of clearing secondary growth. An on-site inspection must be made before any subsidy payment is authorized.

Subsidies relating to cattle raising are approved for two purposes: fence construction and pasture grass planting. Acquisition of cattle then follows. A farmer desiring a fencing subsidy must initially cut posts and purchase 25 percent of the barbed wire necessary to enclose the paddock. Upon completion, and after extension inspection, additional wire will be supplied to complete the fencing of the paddock. Cash payments will be made to defray construction costs. The next step is to clear the enclosed paddock and plant a government supplied pasture grass. A subsidized fencing and pasture grass operation must be at least five acres in size. Extension personnel are active in all phases of the development of an acceptable paddock and must again verify the work at various stages so that the farmer may qualify for the subsidies.

In addition to the subsidized coconuts and cattle-raising activities, the Department of Agriculture is attempting to introduce the widespread cultivation of the tabasco chillie. The chillie requires more intensive care and attention than the coconut. Shaded seedbeds must be established, transplanting must occur and harvesting requires care and selection of only the ripe chillie. The drying of the chillie requires a day of a low even heat in a specially constructed hot air dryer. The extension personnel are prepared to advise on chillie cultivation and the construction of the chillie dryer although there are difficulties identifying the proper variety.

Limitations on chillie growing are a lack of readily available planting material, farmer resistance to the crop and expense of transporting the dried chillies to the Honiara market.

There is no regular supply of chillie plants from governmental or private sources and nothing is available locally. A farmer could establish his own seedbed, but a long red chillie grows wild in the area and is very similar in appearance and is easily confused with the desired tabasco type. One farmer received seedlings from extension personnel which he planted. The farmer followed the proper cultivation procedures. However, when he took the chillies to market in Honiara he discovered that they were the wrong variety and he was unable to sell them. He purchased new planting material from a commercial source. The old chillies were removed and the new ones planted. Within a few weeks all had died and the farmer is looking for more plants to try once again.³⁷

The attitude of the majority of farmers is in contrast to this farmer's perseverance and patience with chillies. They feel that chillies as a cash crop require too much effort for the price paid, \$A.15 per pound. Many of them are also hesitant to invest their time

³⁷Perseverance in the face of adversity may be a common trait. Another Hatara man attempted to earn cash by catching, drying and selling beches-de-mer (sea-slugs or trepang). For several days he caught them, boiled them and dried them. Several other men were also interested in the process and within three days the three Hatara area copra dryers were used for drying beches-de-mer. After 10 days several hundred pounds of dried beches-de-mer were taken to Honiara for sale. They were unacceptable because the drying process had been done incorrectly. However, the man now understood the proper process and returned to the sea to begin catching a new load of beches-de-mer.

in chillies because they are unfamiliar with the crop. They have heard about the techniques of chillie cultivation but lack first hand experience. This is an important point in working with farmers in this area; they feel here the need to see a new technique in actual practice. As in many non-western societies, verbal explanations alone do not adequately transfer practical knowledge, which instead, requires demonstration.

Transporting of the chillies to the Honiara marketplace can be an expensive effort. According to farmers, an average dried harvest of chillies will yield about 25 pounds in a two week period and will bring about \$A3.75. The round trip transportation to Honiara is \$A4 for one adult. An attempt was made by the owner of Paruru plantation to act as a central buying point in the area for chillies. He purchased approximately 100 pounds of chillies on one occasion during the previous year and took them to town for sale. The entire lot was rejected as being the wrong variety. No other cooperative efforts at marketing chillies have been attempted.

If the chillie is to become an economic crop in the area it appears that a first consideration must be accurate identification of the crop. Secondly, it will be important to encourage the cooperative marketing of the chillie so that all income from the crop is not used to pay for transportation costs.

The export earners, copra and chillies, and the import saver, cattle, have been discussed. The Department of Agriculture also has some citrus seedlings available for planting which could provide a good nutritional addition to the regular diet. However, in the 18

month period, January 1971 to July 1972, only four orange seedlings and four grapefruit seedlings were distributed in the South Guadalcanal agricultural district. By contrast, 159 seedlings, including orange, grapefruit, lemon, and pomelo, were distributed in the West Guadalcanal agricultural district. In either case, the scale is insignificant with regard to dietary improvement along the Weather Coast.

Among the 34 households in Hatare, all of the men knew the extension personnel, which is understandable considering the proximity of the extension station. Ten of the men stated that they had formal contact with the extension agents because of the subsidy program. The coconut subsidies have been in effect since 1968 and in the period April 1969 to December 1972, these 10 farmers made application for a total of 14 subsidies (four men have two subsidies each). These new plantings range in size from three to 12 acres with an average of seven acres per farmer (Table 37).³⁸ It is noted that one-half of the Hatare household heads have had some formal education (Table 23), and one-half of the farmers who are receiving subsidies have been to school. In a positive sense this indicates that the subsidy program does transcend educational deficiencies and that the agricultural extension agents are an educational unit in the rural districts.

³⁸In comparison, Rimoldi did a survey in New Guinea of a group of 12 households that lived in a district in which the local council made provision to register individual title to land. This project was to enable individual farmers to raise cash crops on land allocated by landholding groups. The plan was adopted in 1956 and 10 years later, at the time of the study, only four households maintained individual coffee plots comprising a total of one acre of land. M. Rimoldi, "Land Tenure and Land Use Among the Mount Lamington Orokaiva," New Guinea Research Bulletin, No. 11 (April, 1966), 83.

Table 37

Hatare: Distribution of New Planting Coconut Grants

Household number	Acres	Date approved
1	5 4	May 1969 February 1972
2	7 5	June 1969 February 1971
3	6.5	January 1970
4	6	March 1970
5	5 4.5	November 1970 August 1971
6	4	February 1971
7	3.5	May 1971
8	9 3	October 1971 February 1972
9	3.5	February 1972
10	4.5	March 1972
Total	70.5	

Source: District Agriculture Office, Manikaraku.

Leadership

The Hatare area people have been described in Chapter II as producing adequate kumara for their consumption. Moreover, they are working, on the average, a greater number of hours per week in cash cropping and paid employment than the people at two other Weather Coast locales. An account has been given of these two economic endeavors. Various aspects of the marketing system have been discussed and it was indicated that much of this economic activity has developed within the past decade.

Rogers has described subsistence agriculturists as being of a peasant subculture which exhibits certain common traits throughout the world. It is important to identify these traits as, "peasants are the key element in overcoming food and population problems."³⁹ Rogers has enumerated several elements that characterize the peasant subculture,

1. mutual distrust in interpersonal relations; 2. perceived limited good; 3. dependence on and hostility toward government authority; 4. familism; 5. lack of innovativeness; 6. fatalism; 7. limited aspirations; 8. lack of deferred gratification; 9. limited view of the world; and 10. low empathy.⁴⁰

Evaluating the Hatare people by these characteristics, however, leads to the conclusion that the Hatare people do not fit this set of expected traits at all well. Almost every element is not applicable to the Hatare situation as can be discerned from the case study.

³⁹E. M. Rogers and R. J. Burke, Social Change in Rural Societies (New York, 1972), 418.

⁴⁰Ibid., 419.

A degree of mutual trust between Hatare people or rising aspirations among some of the farmers does not alone explain the changes that have occurred in Hatare. Certain leadership qualities are in evidence among the men and a discussion of this trait may explain, to some extent, the economic activities that have taken place in Hatare during the past decade.

In Melanesia, the major political figure is the "big-man" whose influence is dependent upon a network of interdependent relationships. A man desirous of achieving this status begins with a coterie of family members and starts accumulating various goods, generally garden produce, pigs, and shell money. The careful redistribution of these goods to others develops a series of relationships, obligations, and loyalties. A big-man gathers a group of followers usually numbering between 70 and 300. As a big-man can achieve status he can also lose his status to another who becomes more adept at acquiring and redistributing goods and favors. Sahlins has described this type of leader as follows:

The Melanesian big-man seems so thoroughly bourgeois, so reminiscent of the free enterprising rugged individual of our own heritage. He combines with an ostensible interest in the general welfare a more profound measure of self-interested cunning and economic calculation.⁴¹

Within Hatare there is one man who qualifies for big-man status, or more appropriately, who was once a big-man. Due to this man's age, which was ascertained to be about 87 years, and failing health he is

⁴¹M. D. Sahlins, "Poor Man, Rich Man, Big-Man, Chief: Political Types in Melanesia and Polynesia," Comparative Studies in Society and History, V (1963), 289.

confined to his home. He is respected for his former status and his age and is consulted about major decisions that would affect the area. His main function is to define and/or clarify that which is traditional or customary. He is not a conservative traditionalist as he has had planted a grove of coconuts under the New Planting Coconut Grant, has purchased shares in the HCDA, and has sent one of his sons away to school; this boy is presently in Form II.

It does not appear, however, that a traditional big-man will evolve to take his place. The availability of wage employment in the local area has tended to diffuse opportunities for acquiring status and to enable younger better educated men to avail themselves of these new opportunities. The various agricultural grants are available to any farmer. A diffusion of leadership within the area has resulted from these factors.

An administrative hierarchy has been established by the various Boards of Directors of the HCDA, the Community Association, and the Football League Association. Such organizational hierarchies and attempts to develop and broaden the economic base of Hatare are not new in the Solomon Islands. The methods used to achieve big-man status have certain economic development aspects. There are historical antecedents of organizing the people to achieve developmental goals also.

As the fighting between the Allies and the Japanese was drawing to a close on Guadalcanal, a social political movement known as the

Marching Rule was developing on Malaita.⁴² Much has been made of the emergence of this movement at the time of World War II and the opportunity of the Solomon Islander to be a recipient of the American G. I.'s largesse. The Marching Rule has been viewed as being a cargo cult awaiting the millenium. Another point of view is that the Marching Rule was a nationalistic movement of a Melanesian group living under a colonial government. Worsley has defined the origin of the movement to be "the result of internal responses to the violent upheaval of the war."⁴³

Initially, the government took no action against the Marching Rule as the "leaders . . . preached a policy of larger gardens, concentration into villages and cooperation with Government and missionary societies."⁴⁴ Several leaders were identified with the movement and they established an organizational hierarchy to further the aims of the Marching Rule. The island of Malaita was divided into nine districts each of which was administered by a head chief and assisted by a full chief. The people moved into new towns which

⁴²Allan and Worsley state that the name Marching Rule is actually an anglicization of the 'Are'are word masinga which means "brotherhood" or "the young shoot of the taro". However, Cochrane suggest that the word comes from a South Seas Evangelical Mission hymn: "We're marching along together" The hymn was sung by the Malaitans on their way to the mission gardens.
C. H. Allan, "Marching Rule," Corona III (March, 1951), 93.
P. Worsley, The Trumpet Shall Sound (New York, 1968), 173.
G. Cochrane, Big Men and Cargo Cults (London, 1970), 95.

⁴³P. Worsley, op. cit., 174.

⁴⁴Annual Report on the British Solomon Islands for the Year 1948 (London, 1949), 26.

were governed by leader chiefs and in the larger of the towns each clan was directed by a line chief. As the formerly disparate groups of Melanesians were brought together a degree of unity developed and in parts of the Protectorate the "Marching Rule had now become the de facto government."⁴⁵ This placed the Protectorate government in an untenable position and it was necessary to take action against the leaders of the Marching Rule. The annual report for 1948 states why the government felt action was necessary.

By the end of 1947 complaints of false imprisonment and the high-handedness of Marching Rule leaders, together with the threat of retaliation by those opposed to Marching Rule, had reached such a pitch that Government was forced to concede that a policy of tolerance towards the Marching Rule, coupled with attempts to guide it into proper channels, could no longer be successful.⁴⁶

A number of the Marching Rule leaders were jailed, and that, coupled with a rise in copra prices, was the beginning of the end of the movement. The final political breach was healed in 1952 when a new High Commissioner visited Malaita and proposed a new Malaita Council with Malaitan representation. The most important elements of the movement were "the demands for minimum wages, for improved educational and social services, for independence and self-rule, for national self-expression."⁴⁷ As Worsley noted, "We have here, in fact, a modern nationalist body with overwhelming popular support . . . and

⁴⁵p. Worsley, op. cit., 178.

⁴⁶Annual Report on the British Solomon Islands for the Year 1948 (London, 1949), 27.

⁴⁷P. Worsley, op. cit., 182.

we enter the world of nationalist politics."⁴⁸

The Marching Rule was popular among the Hatare people and a new town was built along the coast in accordance with Marching Rule suggestions. When the Malaita Council was formed the 'Are'are people in the Marau Sound area wanted to join it rather than the Guadalcanal Council. The local Marching Rule leader refused to turn "over tax money he had collected to anyone but the Malaita Council."⁴⁹ Opposition to Protectorate government officials was a characteristic of the time also.⁵⁰

More recently, in an area about 18 miles west of Hatare, the Moro Movement has evolved. To some extent it appears to encourage ethnic identity along with economic progress. Davenport and Coker indicate the grievances of this group.

They are dissatisfied with living conditions; missions and Government have not provided enough schools; Europeans have alienated lands and helped themselves to other valuable resources such as crocodiles, without permission or just compensation; the Guadalcanal Council interferes with pig husbandry by decreeing that pigs must be kept off paths and out of villages, and pigs are valuable because they can be used to settle disputes and pay indemnities. . . . the implied purpose of seeking out "custom" is to advance toward a better and more civilized life. They want progress as they see it and money is the way to achieve it.⁵¹

⁴⁸Ibid., 182.

⁴⁹W. Davenport and G. Coker, "The Moro Movement of Guadalcanal, British Solomon Islands Protectorate," Journal of the Polynesian Society LXXVI (1967), 131.

⁵⁰C. H. Allan, Customary Land Tenure in the British Solomon Islands Protectorate (Yagoona, 1957), v, vi.

⁵¹W. Davenport and G. Coker, op. cit., 139.

Even though Moro claims adherents from about half of Guadalcanal the Hatare people do not subscribe to this movement. This is due, in part, to the still strong ties with Malaita.

There are similarities between the Marching Rule, the Moro Movement, and the Hatare people. The goal of economic progress, under their own direction, is compatible with the aims of all the groups. The Hatare people do not want to align themselves with the government-sponsored cooperative societies. There is a fear that the government will somehow gain control of their lands. The three cooperative groups in Hatare all have a Board of Directors with a number of officials which is reminiscent of the structured administrative hierarchy of the Marching Rule. In the 1950s, the 'Are'are of Malaita had a system of committees whose function was to direct farm production. This has its parallel with the nascent plan of the Community Association to develop the community gardens. All is not communally or group oriented and there remains in many endeavors the individualism characteristic of the big-man concept.

CHAPTER IV

SUMMATION AND CONCLUSION

Summation

An increase in agricultural production is related, in part, to the security of tenancy inherent in the form of land tenure. A land tenure system which enables a farmer to feel confident about his occupation and use of land can lead him into making long-term commitments to the agricultural development of land under his control: for example, the planting of coconuts which have a 50 year production span. When individual control of land is possible this creates exclusiveness in regard to other persons and their use of and access to the land. In addition, a concept of individual control provides a basis for long-term rights of tenancy. The Hatare example of the tabu is an indication of a definite set of land usage rights with respect to an individual. The ability to define exclusive land rights is the result of a customary land tenure system and social values which are sufficiently flexible to allow for modification as new techniques, ideas, and opportunities are developed.

In order to evaluate the level of development in Hatare a contextual description of subsistence agricultural practices at three Weather Coast locales was given. At all sites the projected production of the major root crop, kumara, exceeded optimal consumption needs. This difference was greatest at Ghauvalisi and Sughu. A partial explanation of the lower excess production at Hatare/Poinaho was seen in the results of the activity survey. The survey indicated that

Hatare/Poinaho males spend more hours per week on cash cropping and wage employment than those at the other two sites, yet total hours worked per week were the same. As a result, hours worked in subsistence gardening were less thereby partially accounting for the lower level of excess production. As in the Protectorate as a whole, the major commercial crop in Hatare is the coconut which is processed for export as copra.

Crocombe examined the trend of the per capita volume exports of commercial agriculture in a number of Pacific island areas. His methods were applied to the copra export data of the Solomons at the time of its three major censuses. The per capita volume of exports based on all copra produced in the Protectorate and the total population is decreasing. The total figures were disaggregated to include only that copra produced by Solomon Islanders and the Melanesian component of the population. The per capita volume of exports for Melanesians only is increasing. An examination of export data only may not be an accurate method of investigation, particularly in less developed countries. A country's policy may be to reduce an imported food by encouraging the development of a domestic crop which would not be reflected in the country's export data. Therefore, it is important to identify crops as to their expected use: is the crop an export exchange earner, an import saver, or to provide an improvement to the nutritional value of the population's diet.

The coconut, as a commercial crop, is an export earner. The government is projecting greater copra exports during the next decade and is actively encouraging the planting of coconuts with several types

of subsidy payments. One-third of the Hatare farmers are receiving subsidy payments for new coconut plantings. Another third of the farmers have planted coconuts within the past five years without any government financial assistance. The increased acreage devoted to new coconuts is not necessarily adequate to attain the higher production goals projected by the government. The cattle project may be classified as an import saver. In 1970 the Protectorate imported 1.7 million pounds of meat, both canned and fresh.¹ Self-sufficiency in meat is predicted to be feasible by 1985.² Three Hatare farmers have initiated cattle-raising projects with the assistance of related government grants. There was little evidence to indicate that new crops or plants were being introduced to improve the quality of the diet. The best dietary improvement would probably come from fishing on a regular basis. At the time of the survey agricultural policies were supportive of crops that were classified as export earners. During the decade of the 1970s more emphasis is to be given to the import savers, cattle and fishing, which may also result in dietary improvements.

Penny's thirteen indices were used in the preparation of the survey form. Three of the indices, he contends, are adequate to determine the level of commercialization of agricultural development. These include: (4) The extent to which farmers are willing to rely

¹British Solomon Islands Protectorate, Annual Report 1970 (Honiara, 1971), 140.

²British Solomon Islands Protectorate, Sixth Development Plan 1971-1973 (Hong Kong, 1971), 50.

on off-farm sources of planting materials, (8) The use of purchased production requisites, and (13) Farmer response to extension. Therefore, commercial agriculture is related to the dependence of the farmer upon the market economy. This is similar to Fisk's discussion of the incentive factor in which he indicates that the cash return per unit of labor for cash crop development is dependent upon the processing, transportation, and marketing of agricultural products. The other aspect of marketing is a determination of the utility of money. Hatare farmers are virtually all involved in the cultivation of the main commercial crop, copra, and they sell to the market economy. They are not, however, dependent upon purchases from the market economy to sustain either themselves or their coconut groves. Penny defines commercial agriculture as being characterized by both a selling to and buying from the market economy. Since Hatare farmers sell to but are not dependent upon buying from the market economy the Hatare economic level may be described as one of expanded subsistence. This does not imply in this case that there is no utility for money. A major feature of the Hatare farmers is their accumulation of capital for their three cooperative enterprises. Their investments in the HCDA have enabled them to develop a business enterprise which can in turn enhance their agricultural development.

Fisk's three proposals for sustaining economic growth exist as current practices, or at least as policies, in Hatare. First, increasing the level of cash cropping is being accomplished by the availability of programs of government subsidies rather than by compulsion. Secondly, the cash return per unit of labor has been

increased by various public works projects to aid transportation, such as the construction of the road and wharf. Government as well as private vessels call at Marau. Finally, the existence of three private stores in the Marau area, including the HCDA store in Hatare, have increased the utility of money.

Fisk suggests that these policy proposals, in order to generate growth, must come from the government sector. It is of interest to note that in Hatare there has been a mix of both private- and government-sponsored projects. It has not been necessary for the government to involve itself in all aspects of the factors affecting economic growth. The infusion of capital in the form of wages for employees in the government as well as the private sector has provided an additional impetus for growth. Part of this infusion of capital has come from the government employees assigned to Manikaraku. The impact of the government activities, services, and employees in the Hatare area has obviously been great. Its presence has helped to develop the activities of the Hatare people on both an individual and a cooperative basis.

The wide range of government services and projects that is available in southeastern Guadalcanal has evolved for a variety of reasons. The Marau Sound area is a well protected anchorage because of the number of small islands and extensive reef formation. As a result there is a potential for year-round shipping services. The Weather Coast had received little benefit from government social services but greater government attention was given to the Weather Coast through the access afforded by the Marau Sound area partly

because of the nationalistic aspects of the Marching Rule movement which the government wanted to counter. Moreover, the development projects of the post-war period were the result of greater government revenues and grants-in-aid thereby affording greater expenditures throughout the Protectorate. As was indicated, government expenditures have increased more than thirty-fold in the period, 1941 to 1968.

The expatriate controlled plantation has also had an effect upon the Hatare area. The owner is married to a Solomon Islander and is active in the local community. The coconut plantation is not maintained in a manner to be used as a model for agricultural development and cultivation. However, there are full-time wage employment positions available at the plantation and these include jobs associated with copra production, sea-shell collection, and the trade store. The existence of this registered land in the Hatare area was a factor in the government's decision to develop the wharf, the government station, and the airstrip. All of these activities were located on the land of the plantation and contractual agreements were limited to the government and the plantation owner (with the exception of part of the land on which the airstrip is located). This eased the government's task since they were able to deal with one person rather than a group. The alienated land of the plantation has also raised the land consciousness of the Hatare people. They have attempted to recover a portion of the alienated land through a claim to the Registrar of Titles. Since that claim was dismissed they have shown an interest in purchasing the leasehold portion of the plantation.

The Hatare people are interested in certain aspects of development

but are occasionally stymied by a lack of knowledge of available opportunities and business techniques. They are not to be satisfied with a market system that only provides an infrequent stick of twist tobacco as an incentive. Their scale of development has included the purchase of a tractor and a request (though disapproved) for a \$A19,000 loan. Various development plans and activities have been proposed by the people. These have included fishing boats and out-board engines, a capability for refrigeration of fish and other foodstuffs, and power saws. However, a strong negative response to a project from the Hatare people occurred in relation to a proposed retail sales outlet for beer.

There is a range of agricultural activity among the Hatare farmers. One of the best and most active farmers is a young man in his late twenties who has had one year of school. He has planted 12 acres of coconuts and has enclosed the grove with a fence and started planting pasture grass in anticipation of raising cattle. Additionally, he has three pigs enclosed in a pen of pig wire and another three pigs in a pen built of timber and raised off the ground. He has worked closely with the agricultural extension staff with regard to the coconut, stockyard, and pasture grants. He has applied to the AILB for financial assistance to purchase 10 heads of cattle and is a member of the Community Association and the HCDA, in which he has invested \$A30. He is not the average Hatare farmer but his interests and activities are duplicated by a half-dozen other farmers.

At the other end of the Hatare scale are several farmers who are more nearly like true subsistence farmers. They do have gardens of

various root crops but have little or no livestock and have planted no coconuts in the past five years. In most every case these are older men who do not see the need to expand their plantings. Even though they are not particularly interested in commercial agricultural pursuits these men do participate in Hatare's activities, most notably by involving themselves in the leadership of the various cooperative enterprises, of which all Hatare households have financially participated.

Conclusion

The customary land tenure practices of the Hatare people have not proven to be a deterrent to agricultural development. The land control system in Hatare operates at two levels of use: subsistence crops and commercial crops. In pre-contact times, land was used to produce root crops, a few coconut palms, and other trees of economic value, all for subsistence needs. The man or household group initially clearing the virgin land was said to have control over that land and the one planting an economic tree had claim to its produce. One man would have primary interest in the land although another could control the disposition of produce from crops planted to that land. Hatare land resources were adequate for the production of subsistence crops and there was no conflict over land use practices.

Customary land tenure practices have not impeded agricultural development and there have been other factors contributing to Hatare's level of economic activity. During the past decade market linkages have been constructed: the road, wharf, and airstrip. Farmers have

been taking advantage of coconut and cattle related subsidies from the Department of Agriculture in order to extend commercial enterprises. The assignment of a Special Projects Officer representing the AILB and the Department of Agriculture to the rural areas has resulted in several loan applications for livestock purposes. Three cooperative enterprises, notably the HCDA, have been undertaken. Most recently an attempt has been made to establish a local produce market. Agricultural extension services, in particular, and formal classroom training have been improving the educational levels of farmers.

In the past decades the coconut has become more valuable as a commercial rather than subsistence crop. The coconut, with a long period of production, requires a relatively large amount of land be planted in order to insure an adequate cash return as prices are generally low and fluctuating. This necessitated that the farmers planting for commercial purposes also have primary interest in that land. At present Hatare farmers with primary interests in a parcel of land do allow others to use the land for subsistence gardens but do not permit the planting of a long-term crop such as the coconut.

In an attempt to increase the Protectorate's export of copra, the Department of Agriculture has instituted a program of subsidies to defray some of the initial costs of establishing coconut groves. Farmers have responded to these subsidies by increasing the amount of acreage devoted to coconuts. In addition to bringing low or non-productive land into higher productive use, these grants are resulting in greater use and control of the land by individuals. Cattle raising

operations are being planned in conjunction with new coconut plantings. Fences have been built and pasture grass is planted under the coconut palms. Land is becoming more intensively used although the beginning of a constraint to agricultural development is evidenced by the two farmers who do not have additional land available for cash cropping.

A major effect of the various grants has been to induce commercial agriculture on relatively large plots of land. One of the grant conditions is that three acres is the minimum allowed for the coconut subsidy and 10 acres for the stockyard subsidy. This requirement has minimized excessive fragmentation of agricultural land for commercial purposes. Consequently, in Hatare, the farmers who are receiving the New Planting Coconut Grant have an average of slightly over seven acres each under cultivation. Morawetz concluded that the major benefit of a land tenure conversion program in New Guinea was a consolidation of fragmented holdings.³ The coconut grants in Hatare have had a similar effect and the existing land control system has been sufficiently flexible to allow for this commercial development of agriculture. While the subsidy program has so far had the effect of encouraging larger scale coconut plantings this will not necessarily continue into the future. The Hatare people are a patrilineal society and land passes from father to son(s). These blocks of developed land, now up to 12 acres, are subject to progressive fragmentation as the concept of primogeniture is not characteristic of Melanesia.

³D. Morawetz, "Land Tenure Conversion in the Northern District of Papua," New Guinea Research Bulletin, No. 17 (May, 1967), 36.

On a short-term basis, however, the development of a group of farmers with relatively larger productive land holdings may be the result of the subsidies from the Department of Agriculture. Conceivably, this could result in the establishment of class differentials based upon the size of landholdings. On the other hand, setting upper limits to acreage for which grants would be available could inhibit individual initiative although they could be easily circumvented by requesting grants for various family members. The proportion of participation in the coconut subsidy programs varies from three percent to 27 percent in southeastern Guadalcanal districts (Table 36). The extension personnel could attempt to encourage more farmers to participate in the coconut subsidy programs or similar programs in order to more equally use land for cash cropping opportunities. The current recommendations presented to the New Guinea House of Assembly reflect a concern of the possibility that a class of large landholders will be created at the expense of the majority of the population.

The Tongan system is an example of an attempt at distributing landholdings among all eligible males equally. This may not be an appropriate solution for Hatare. Land resources are very limited in Tonga and, as a result, it is now impossible for every male to have an equal share of land. Moreover, in Tonga those who do have an 8.25 acre allotment seldom use all of it, but allow others, generally relatives, to use it for productive purposes. As a result, this superimposed western-type system of allocating land is substantially subverted by traditional Polynesian concepts. It is also unrealistic

to expect that all agricultural enterprises require an equal amount of land. A farmer attempting to raise cattle will have different land needs than the farmer raising chillies.

A land control system reflects a group's values and social organization. There have been attempts to introduce changes in land tenure in French Polynesia, the Cook Islands, the Kingdom of Tonga, the New Hebrides, and Hawaii with varying degrees of success or failure. Solutions to problems arising from a land control system are likely to have greater success if they emanate from the people. As the International Bank for Reconstruction and Development suggests, "a reasonable approach to the land tenure problem would be to place a greater responsibility on the native people . . . to work out their own solutions adapted to varying circumstances."⁴

The Hatare example has shown that a farmer can have the security of long-term tenancy within a customary land tenure system without having to forgo the advantages of the customary system. The act of surveying the land and parcelling it into blocks is no assurance that increased agricultural production will occur nor will it necessarily prevent the excessive fragmentation of landholdings. In Tonga the farmers have registered land but customary land use patterns based on kinship relations are still observed although the assignment of blocks of registered land is inadvertently causing a group to be dispossessed now that non-allocated land is short. A customary land tenure system

⁴International Bank for Reconstruction and Development, The Economic Development of the Territory of Papua and New Guinea (Baltimore, 1965), 39.

based on subsistence agricultural practices is inapplicable to larger scale commercial agriculture. Traditional practices in Western Samoa were institutionalized by land laws which have partially inhibited agricultural development in that country. The Samoans, however, have, in practice, modified their use of the land and agricultural practices to fit their needs. Hatatare farmers feel secure in the use of their land and know that by cultivating the land they reinforce their interests in that land. Their interests are further supported by the planting of bushes for boundary markers and the recognition of the chief's court as an arbiter in a land dispute. Moreover, the people do have a capacity to change and respond to their circumstances. The changeover from the production of coconut oil to the processing of coconut into copra occurred within a few years and at a time of poor communications. The "copra revolution" had a major impact upon the Pacific islands both in the alienation of land for commercial plantation development and in the changing of customary land tenure practice to accommodate for commercial agriculture.

Hatare farmers do not perceive a need to register their land at their present state of development. The current subsidy programs, as they further encourage production, may influence the attitudes of farmers toward land registration in the future as they propel them toward a monetized system which in turn will alter their social and political structure. As the land increases in value with commercial use, there may be a desire to formally register the land. This would be due both to the increase in commercialization of land and to the changing nature of traditional authority. For example, the chief's

court was relieved of its advisory authority to the Birao Ward Committee and its functions were transferred to the Board of Directors of the Community Association. This indicates the beginning of the transference of local authority from traditional to more commercially oriented leaders. In the future there may also occur a decline in the authority of the chief's court in settling land disputes thereby reducing the sense of security felt by farmers. If this takes place, the Hatare farmers may then decide that the formal registration of land is necessary to balance the loss of more traditional forms of authority.

APPENDIX A
Agriculture Household Survey

AGRICULTURE HOUSEHOLD SURVEY
(Freeman, McHure, Muhr, Witt)

Household Head

Interviewer

[illegible][illegible]

-2..

GENERAL HOUSEHOLD QUESTIONS

<u>ITEM</u>	<u>No.</u>	<u>Age</u>	<u>Source</u>	<u>Value</u> (£ Australian)
<u>A. Household Articles</u>				
Bed mat from Honiara				
Blanket				
Pillow				
Sheets				
Mosquito Net				
Table				
Chair				
Lamp				
Flashlight				
Wooden box				
Primus				
Food Safe				
Cooking Pot				
Frying Pan				
Kettle				
Teapot				
Water Bucket				
Wash Basin				
Food Bowl (bought)				
Pope (wooden food bowl)				
Plate				
Cups				
Spoon, cooking				
Spoon, eating				
Fork				
Knives, eating				
Water bottle				
Potato peeler				
Broom				
Iron				
Mirror				
Comb				
Bag, men's				
Bag, women's				
Betel nut/lime pouch				
Lock and key				
Scissors				
Needle				
Thread				
Floor Mat (bought)				
Coconut Grater				

ITEM (Contd.)		No.	Age	Source	Value (5 Australian)
B. Ornaments					
Watch					
Custom					
Necklace					
Bead Necklace (bought)					
Ring					
Earrings					
C. Luxury Articles					
Radio					
Bicycle					
Wall Pictures					
Bible					
Books, School					
Books, other					
Pens					
Pencils					
Sewing Machine					
Umbrella					
Smoking Pipe					
Cigarette Lighter					
Cigarette					
Rolling Paper					
Clock					
Razor					
Guitar, Ukelele					
D. Custom Items					
Pan Pipes					
Shell Money					
Wooden Spears					
Wooden Clubs					
E. Agricultural Tools					
Canoe, seats up to 3					
Canoe, seats more than 3					
Gun					
Bush Knife					
Axe					
Digging Stick					
Crowbar					
Hoe					

ITEM. (Cont.)	No.	Age	Source	(Value (Australian)
<u>E. Agricultural Tools (Contd.)</u>				
Spade, Shovel				
Coconut husker (bought)				
Copra Knife				
Plane, saw, hammer				
Adze				
Nails				
Crowbar				
Kove (yam cutter)				
Fishing Pole				
Fish Net				
Fish Trap				
Fish Spear				
Diving Goggles				
<u>F. Livestock Inventory</u>				
<u>Cattle</u>				
Enclosure				
Feeding				
<u>Chickens</u>				
Enclosure				
Feeding				
<u>Pigs</u>				
Enclosure				
Feeding				
Cats				
Dogs				

LAND CONTROL METHODS

1. Who does the following kinds of land belong to?

- a) Garden land _____
 b) Plantation land _____
 c) Small village land _____

2. What is the nature of the customary title?

3. How is land attained? (through mother, father?)

-5-

LAND CONTROL METHODS (Contd.)

4. Can land be leased?

a) Formally?

b) Informally?

5. Can land be secured by individual title?

6. Can land be bought and sold for money?

7. How would you go about buying a plot of land for money?

8. How are land boundaries determined?

9. If there was a problem ("dispute") about a plot of land that you worked (or owned), what would you do to try and settle it?

AGRICULTURAL EXTENSION SERVICES

1. Do you know who is :

a) the Senior Field Assistant (SFA) for this area? _____

If yes: Name and residence. _____

b) The Extension Assistant (EA) for this area? _____

If yes: Name and village of residence. _____

2. Have you received any help or advice from :

a) the SFA? _____

- what kind of help or advice? _____

b) the EA? _____

- what kind of help or advice? _____

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AGRICULTURAL EXTENSION SERVICES (Contd.)

3. What kinds of subsidies can farmers in the village get from the Department of Agriculture?
(Note: List for question 4 can serve as a check)

4. Do you know about subsidies available from the Department of Agriculture for:

- a) Planting new crops? _____
- b) Planting pasture? _____
- c) Buying cattle? _____
- d) Fencing and stockyard for cattle? _____
- e) Coconut rehabilitation? _____

5. Have you taken advantage of any of these subsidies?

- a) If yes, details? _____
- _____
- _____
- _____
- b) If no, why not? _____
- _____
- _____

6. In your food gardens, have you ever used:

- a) Insecticides? _____
- b) Artificial Fertilizer? _____

7. In your plantation/s, have you ever used:

- a) Insecticides? _____
- b) Artificial Fertilizers? _____

8. Do you grow coconuts for copra? _____

If yes,

- a) About how many palms have you got? _____
- b) In how many different plantings (groves)? _____
- c) Have you done any replanting in the last 5 years? _____
- _____

If yes,

- i). Who decided the coconuts should be planted? _____
- ii). Where did the seed nuts come from? _____
- _____ - if purchased: cost? _____
- iii). Who planted these new coconuts? _____
- _____

AGRICULTURAL EXTENSION SERVICES²³ (Contd.)

9. What cash crops other than coconuts do you know about?
(Chillies; cocoa; oil palm) _____

If cash crop/s identified:

a) How did you learn about this crop? _____

b) Have you ever planted this crop? _____
When? _____

10. Have you ever planted any other crops to earn money? _____
(That is, other than coconuts, chillies, cocoa, oil palm).

If yes.

a) What? _____

b) When? _____

c) How well did the crop grow? _____

d) Did you sell any of the crop for money? _____
- How much? _____

11. Do the following cash crops suffer from:

a) Disease

b) Insect Damage

_____ Coconut	_____
_____ Chillies	_____
_____ Cocoa	_____
_____ Oil Palm	_____
_____ Others	_____
_____ (Specify)	_____

If yes, details for each crop/kind of damage.

12. Have you started to grow any new crops in the last 10 years? _____

If yes: a) What? _____

b) When? _____

(May repeat question 10) c) Have you sold any of this crop for money? _____

- how much? _____

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AGRICULTURAL EXTENSION SERVICES (Contd.)

13. What is the biggest problem you face in growing cash crops?

14. Sometimes it is difficult to get seed for new crops. Would you plant a new crop if the seed was given to you? (That is, from the government, a mission, etc.) _____

If yes: a) What kind of seed would you most want? _____

b) When would you plant that seed? _____

15. Do you ever listen to the agriculture broadcasts on the S.I.B.S.?

If yes: a) How often do you listen? _____

b) On what night does the S.I.B.S. Broadcast the Agriculture programmes? _____

16. In your place, is there a village agriculture community? _____

If yes: a) Would you please describe the functions of the community? _____

b) When did it start? _____

c) Has the community initiated any village projects?

If yes: what? _____

d) Are you a member? _____

If yes: When did you become a member? _____

17. In this village, is credit available for agricultural purposes?

If yes: a) From what sources? (That is, trade stores, etc.) _____

b) Do people use this source of credit? _____

c) If yes: for what kinds of projects? _____

18. Has anyone in the village requested a loan from the Agriculture and Industrial Loans Board. (AILB)?

If yes: a) Who? _____

b) For what purpose? _____

c) When? _____

d) How much? _____

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AGRICULTURAL EXTENSION SERVICES

19. Have you ever requested a loan from the AILE? _____

If yes: a) When? _____

b) For what purpose? _____

c) How much? _____

d) To be repaid over what period? _____

20. Are you a member of Hatare community? _____

If yes: When did you become a member? _____21. Are you a member of the Hatare Community Development Association?
_____If yes: a) Were you a founding member? _____

b) OR when did you become a member? _____

If no: c) What are your reasons for staying outside Hatare
Community Development Association? _____

October 1972

APPENDIX B

Household Survey: Daily Schedule

GUADALCANAL WEATHER COAST PROJECT
HOUSEHOLD SURVEY : DAILY SCHEDULE

Household _____ Date _____
 Village _____ Interviewer _____
 (small name)

1. How did each member of the household spend the last 24 hours?

	<u>Name</u>	<u>Last Evening</u>	<u>Morning</u>	<u>Afternoon</u>
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____

2. Was any help from outside this household received during the day's work?

Who assisted? _____
 Relationship? _____
 Approximate Age/s _____
 How long was the assistance? _____
 Why? _____

3. What, if any, gifts were given by this household today?

To whom? _____
 Approximate age/s? _____
 Relationship? _____
 Why? _____

4. Were any gifts received by any member of this household today, (other than to accomplish the day's work)?

To whom? _____
 What? _____
 From whom? _____
 Relationship? _____
 Why? _____

5. Did anyone in this household sell anything today?

What? _____
 Where? _____
 To whom? _____
 Relationship? _____
 Form of payment? _____
 How much? _____
 Why was the sale made? _____

-2-

6. Did anyone receive any money today: For example, from wages, gifts, debts?

From what? _____
 From whom? _____
 Relationship? _____
 To whom? _____
 How much? _____
 Why? _____

7. Did anyone in this household buy anything today?

What? _____
 Where at? _____
 From whom? _____
 Relationship? _____
 How much did it cost? _____
 Form of payment? _____
 Why was it bought? _____

8. Did any other money go from the household today: for example, for school fees, church dues, council payments, tax debt payments, dog rates, gun fees?

What for? _____
 To whom? _____
 Any kin relationship? _____
 How much? _____
 Who gave it? _____
 Why? _____

9. What did anyone bring from the garden/plantation/bush today?
 (For example: root crops, European vegetables, fruits, nuts.)

	<u>Name</u>	<u>Weight/ Number</u>	<u>Where from?</u> (Eg. producing gardens; second-year garden; secondary growth, virgin bush.)
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

October, 1972

APPENDIX C
Garden Schedule

GUADALCANAL WEATHER COAST PROJECTGARDEN SCHEDULE

HOUSEHOLD _____ VILLAGE _____ DATE _____ INTERVIEWER _____

PLOT	CROP	SPACING	PLOT SIZE (FT ²)	CROP MATURITY	SEED SOURCE	CROP DISPOSAL	NOTES

Garden Soil Type _____ Topography _____

How far is this garden from the household? _____

Describe any garden buildings. _____

What is the organization (type or purpose) of the garden? _____

Who is the owner, or chief worker, of the garden? _____

How many adults (15 and over) _____

children (less than 15) _____ are fed from this household's gardens?

Is this a first or second year garden? _____

GARDEN MAP

APPENDIX D

Fieldwork Timetable, October to December 1972

	Hatare	Ghauvalisi	Sughu
Agriculture Household Survey	Oct-Nov	31 Oct-19 Nov	Oct-Dec
Household Survey: Daily Schedule	2 Nov- 1 Dec	30 Oct- 5 Nov 5 Dec-19 Dec	26 Oct- 1 Nov 6 Dec-12 Dec
Garden Schedule	4 Dec-29 Dec	20 Oct-29 Oct	9 Nov-20 Dec

APPENDIX E

Population at Research Sites by Age and Sex

	<u>Hatare</u>		<u>Hatare/Poinaho</u>		<u>Ghaualisi</u>		<u>Sughu</u>	
	(34 households) Males	Females	(5 households) Males	Females	(7 households) Males	Females	(15 households) Males	Females
0-4	25	27	1	2	4	5	12	5
5-9	25	32	3	5	5	3	4	4
10-14	9	12	-	2	1	1	-	-
15-19	9	8	4	3	-	5	5	3
20-24	4	8	1	-	2	2	1	2
25-29	8	8	-	-	2	2	1	3
30-34	7	6	-	-	-	-	5	-
35-39	9	7	-	1	-	-	1	2
40-44	6	5	-	2	1	1	2	1
45-49	6	4	1	-	1	1	-	3
50-54	2	1	1	1	1	1	-	-
55-59	5	-	-	-	-	1	2	2
60-64	5	-	2	-	-	-	1	1
65-69	1	2	-	-	1	-	-	-
70-74	-	2	-	-	-	-	1	2
75-79	-	1	-	-	-	-	-	-
80-84	-	-	-	-	-	-	-	-
85-89	1	-	-	-	-	-	-	-
Total	122	123	13	16	18	22	35	28

APPENDIX F

Mean Rainfall, Marau, Chikora, and Tangarare, in Inches

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Marau^a													
Mean all available months	9.90	8.98	12.09	12.24	17.10	16.87	19.46	18.97	17.47	19.73	13.06	15.01	182.96
Percent of annual mean	5	5	7	7	9	9	11	10	10	11	7	8	
Chikora^b													
Mean all available months	19.93	13.94	18.00	8.44	27.09	35.39	48.70	47.35	38.80	27.35	25.48	26.70	326.92
Percent of annual mean	6	4	5	3	8	11	15	14	12	8	7	7	
Tangarare^c													
Mean all available months	14.20	16.89	19.63	9.21	6.93	6.82	10.94	8.09	8.49	9.96	6.93	10.96	125.58
Percent of annual mean	11	14	16	7	5	5	9	6	7	8	5	9	

Source: ^aDepartment of Agriculture, Honiara, Data available October 1961 to December 1969 and 1971.
^bUtah Development Company, Honiara, Data available September 1969 to December 1972.
^cDepartment of Agriculture, Honiara, Data available October 1961 to December 1969.

Data made available through the courtesy of Dr. J. R. D. Wall, Land Resources Division, Tolworth Surrey, England.

APPENDIX G

Average Number of Raindays per Month and Average Annual Percentage of Raindays at Marau (1962, 1964-69), Chikora (1970-72), and Tangarare (1962-69)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual percentage
Marau	19	18	20	20	21	21	22	21	20	20	17	19	65
Chikora	22	20	25	20	27	24	25	23	24	24	22	24	76
Tangarare	20	17	21	19	17	16	19	17	18	19	14	17	59

Source: J. R. D. Wall, "The Physical Geography of the Weather Coast" (Honolulu, 1973), 23.

APPENDIX H

Derivation of Total Yields of Kumara

In order to determine the total yield of kumara it is necessary to convert the available garden acreage and number of plants of each successive crop into the standard measurement of one acre. To this end, the number of kumara mounds for one crop (Table 9) were divided by the garden acreage of that crop (Table 7) to give the average number of kumara mounds per acre, which in turn was multiplied by the average yield per mound (Table 10). Finally, the resultant figure of yield per acre in pounds was divided by 2,240 pounds to determine the yield of kumara per ton per acre.

The Ghauvalisi and Sughu figures were reduced by 15 and 25 percent respectively to account for the presence of logs, stumps, and brush within their garden areas. It would be incorrect to assume that the yield figures are applicable on an annual basis. Field observations established the kumara growing cycles for each site to be: Hatare/Poinaho six months, Ghauvalisi three months, and Sughu five months. In Ghauvalisi it would be possible to plant a section of land to kumara, harvest the first crop, plant a second crop, and harvest the second crop all within 12 calendar months. Theoretically, the yield of one acre of land within one year would be 16.6 tons (first crop) and 6.1 tons (second crop) for a total yield of 22.7 tons. In Hatare/Poinaho, with a six-month growing cycle, there would be only one crop produced on one unit of land within one year. Yield figures were computed for only those gardens actually planted at the

time of the survey and were not used to project a year's yield (Table 38).

Table 38

Computations for total yield of kumara

Crop number	Number of mounds	Garden ÷ acre- age	Mounds = per acre	Average yield x per mound	Pounds ÷ per acre	Pounds = per ton	Tons = per acre	Adjust- ment	Adjusted total = tons per acre
Hatare/Poinaho									
1	5376	1.187	4529	3.5	15852	2240	7.1	-	7.1
2	4458	1.123	3970	2.2	8734	2240	3.9	-	3.9
3	772	.160	4825	1.8	8685	2240	3.9	-	3.9
Ghauvalisi									
1	4606	.989	4657	9.4	43776	2240	19.5	15%	16.6
2	3298	.860	3835	4.2	16107	2240	7.2	15%	6.1
Sughu									
1	16155	3.522	4587	4.7	21559	2240	9.6	25%	7.2
2	29303	6.264	4678	2.7	12631	2240	5.6	25%	4.2
3	6391	1.305	4897	2.5	12243	2240	5.5	25%	4.1

APPENDIX I

Derivation of Supply and Demand Figures of Kumara

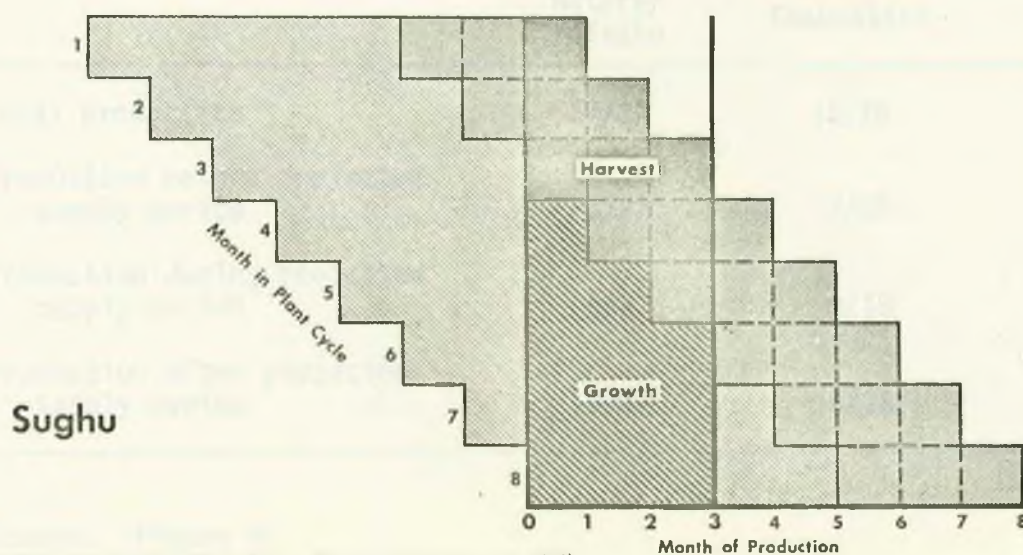
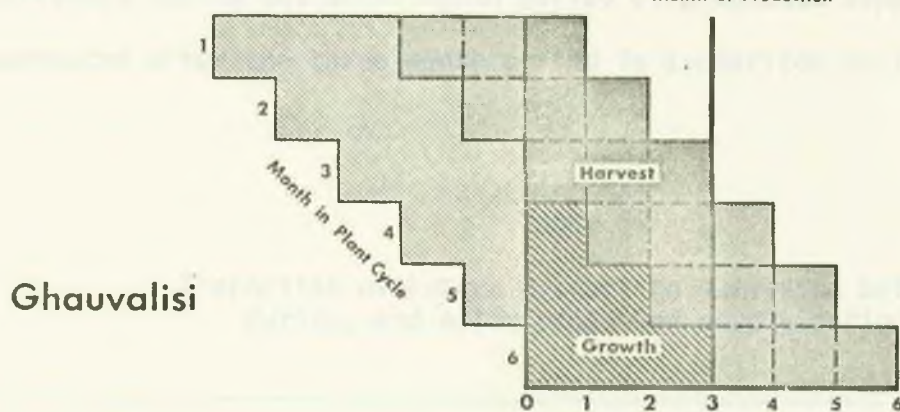
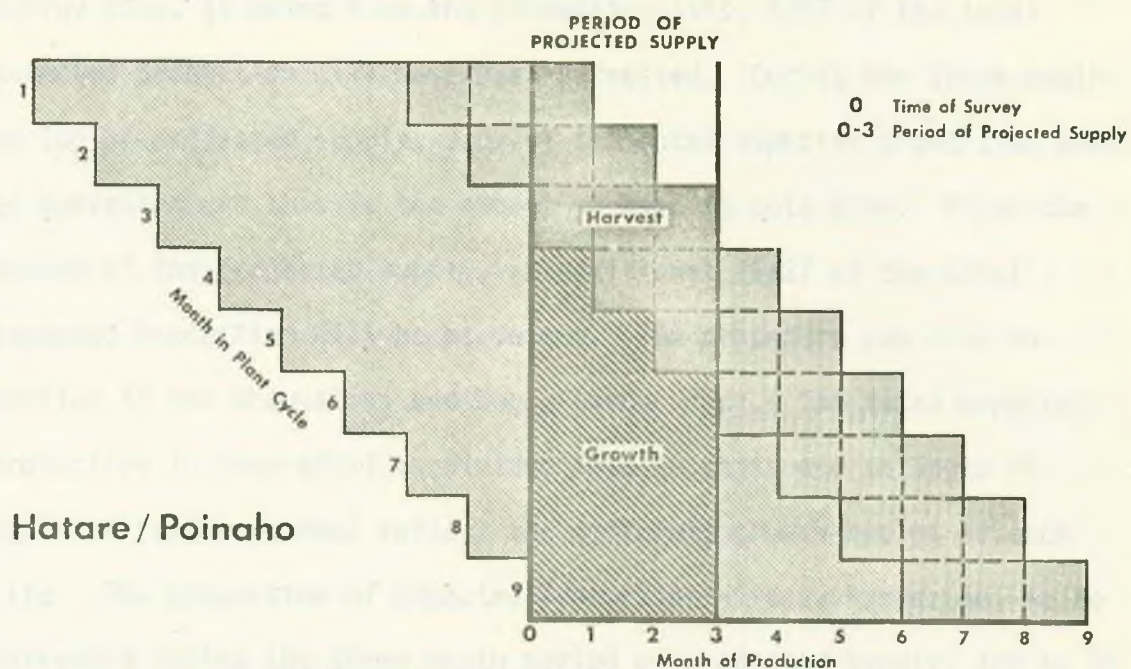
The following information is presented to indicate the basis for the supply and demand figures of kumara.

SUPPLY. Field observations established the growing cycles for each site to be: Hatare/Poinaho six months, Ghauvalisi three months, and Sughu five months. For all sites a three month period of harvest held true, and it was assumed that kumara is planted and harvested on a continual and equal basis. The expected supply of kumara was projected for a three month period because of the three month growing period in Ghauvalisi. A projection for a longer period of time would involve assumptions regarding new plantings in Ghauvalisi and involves less error than truncating longer growing periods for the other two sites. Moreover, a three month projection involves only those gardens and crops actually surveyed.

Figure 4 graphically presents the growth and harvest cycles at the three Weather Coast sites. The time of the garden survey is considered to be 0 on the production axis and the period of projected supply is between 0 and 3 months on the same axis. The three diagrams reflect the different length of growing cycles at each site. On the basis of these diagrams, it may be determined how much kumara will be harvested during the three month period of projected supply.

For example, in Hatare/Poinaho, with a nine month total plant cycle and a three month harvest period, the total expected production of the gardens is divided into 27 units (Figure 4). Prior to the

KUMARA: GROWTH AND HARVEST CYCLES



Source: Field observations (Freeman, McLure and Witt, Oct.-Dec. 1972)

RN

Figure 4

survey time, at point 0 on the production axis, 3/27 of the total expected production will have been harvested. During the three month period of projected supply, 9/27 of the total expected production will be harvested and this is the amount we wish to determine. After the period of the projected supply, an additional 15/27 of the total expected production will be harvested. The procedure can also be applied to the Ghauvalisi and Sughu garden data. The total expected production in Ghauvalisi is divided into 18 units and in Sughu 24 units--differences that reflect the different growth cycles at each site. The proportion of expected production already harvested, to be harvested during the three month period of projected supply, and to be harvested after the three month period is summarized in Table 39.

Table 39

Proportion of kumara production harvested before,
during, and after projected supply period

	Hatare/ Poinaho	Ghauvalisi	Sughu
Total production	27/27	18/18	24/24
Production before projected supply period	3/27	3/18	3/24
Production during projected supply period	9/27	9/18	9/24
Production after projected supply period	15/27	6/18	12/24

Source: Figure 4.

To calculate the total expected production, the total number of kumara mounds for each successive crop at the three sites (Table 9) is multiplied by the average weight of kumara per mound for each successive crop (Table 10). In both Ghauvalisi and Sughu an adjustment to the total expected production figure is necessary: the total figure obtained for the former must be reduced by 15 percent and that for the latter by 25 percent to allow for the presence of logs, stumps, and brush within the confines of the garden area. This adjusted figure is multiplied by the fraction of expected production during the three month period to give the projected supply of kumara as presented in Table 16 (Table 40).

DEMAND. Figures of actual kumara production presented in Table 13 are based upon that amount harvested during the survey period. A determination was made of the average daily demand per capita and then projected to a 90 day period for the population surveyed at each of the three sites.

Optimal kumara consumption, upon which this calculation is based, followed Holmes' recommendations after fieldwork in the Solomon Islands (Table 14). Since Holmes' age breakdowns for her village data do not follow standard age/sex groupings, the population figures for each Weather Coast site were adjusted for consistency. For example, the number of persons 15 years of age were subtracted from the 15-19 age category and added to the 10-14 age category, which Holmes favors, and the persons between 0 and 1 year of age were subtracted from the 0-4 age category. The adjusted population figures were multiplied by the appropriate kumara consumption figure, and then projected for the 90 day period.

Table 40

Computation for total projected supply of kumara

Site	Successive crop	Number of mounds	x	Average weight per mound	=	Total expected production	-	Adjust- ment	x	Expected production during three month period	=	Projected supply
Hatare/ Poinaho	1	5376		3.5		18816.0						
	2	4458		2.2		9807.6						
	3	772		1.8		1389.6						
	Total					30013.2		-		9/27		10004
Ghauvalisi	1	4606		9.4		43296.4						
	2	3298		4.2		13851.6						
						57148.0		15%		9/18		24287
	Total											
Sughu	1	16155		4.7		75928.5						
	2	29303		2.7		79118.1						
	3	6391		2.5		15977.5						
	Total					171024.1		25%		9/24		48101

Source: Field notes.

APPENDIX J

Activity Survey - Hatare/Poinaho

	<u>Males</u>	<u>Females</u>
Subsistence Gardening	256	572
Work in own garden	172	480
Work in friend's garden	84	92
Food Preparation and Other Subsistence	162	596
Food preparation	2	208
Care for children	12	240
Coconut gathering - own consumption	36	18
Fishing	80	12
Community work	16	--
Obtain water	8	106
Collect firewood	--	12
Build fence for pig pen	8	--
Cash Cropping	115	31
Process copra	76	--
Dive for trochus shell	32	28
Sell produce	7	3
Wage Employment	552	--
Road worker	152	
Agricultural laborer	316	
Teacher	84	
Social	292	254
Church	32	26
Bazaar	28	8
Meeting	28	--
Soccer (spectator & participant)	72	72
Await ship	16	16
Dance-social	16	8
Dance-feast	84	44
Feast preparations	16	72
Clinic	--	8
Travel	312	712
Free Time	1551	1291
Walkabout	557	96
Talk	852	864
Unaccounted	142	331
TOTAL HOURS	3240	3456

APPENDIX K

Activity Survey - Ghauvalisi

	<u>Males</u>	<u>Females</u>
Subsistence Gardening	377	665
Work in own garden	377	646
Work in friend's garden	--	19
Food Preparation and Other Subsistence	281	451
Care for children	30	76
Coconut gathering - own consumption	2	--
Fishing	4	--
Community work	22	28
Church work	44	149
Council work	6	15
Miscellaneous work	5	111
Hunting	108	--
Piggery	60	60
Laundry	--	12
Cash Cropping	--	--
Wage Employment	12	--
Airstrip laborer	12	
Social	63	216
Church attendance	63	216
Free Time	851	1836
TOTAL HOURS	1584	3168

APPENDIX L

Activity Survey - Sughu

	<u>Males</u>	<u>Females</u>
Subsistence Gardening	465	589
Work in own garden	433	587
Work in friend's garden	32	2
Food Preparation and Other Subsistence	449	610
Food preparation	7	365
Care for children	42	112
Coconut gathering - own consumption	6	1
Fishing	115	--
Church work	86	28
Co-op work	100	4
Collect firewood	5	11
Feed pigs	2	43
Build/repair house	45	--
Build fence for pig pen	25	--
Make household items	4	28
Laundry	1	5
Roll tobacco	4	11
Collect betel nut	5	--
Collect custom medicine	2	--
Cash Cropping	--	--
Wage Employment	28	--
Agricultural labor	28	--
Social	99	135
Church attendance	87	111
Illness	12	24
Travel	189	--
Free Time	1290	1018
TOTAL HOURS	2520	2352

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ABBREVIATIONS

The following abbreviations are used in the bibliography in the section entitled, Government Files.

D.A.O.	District Agricultural Office
D.O.	District Office
W.P.H.C.	Western Pacific High Commission

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AGR 4/7/1 Coconut Planting. D.A.O. Honiara.

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The people of Hatare.