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INTRODUCTION.

The Colonial Agricultural Probationers' surveys of peasant farming were undertaken with the guidance of Mr. C.W. Lynn, Lecturer in Agricultural Advisory and Extension Methods.

The object was to familiarise the student with the technique of agricultural surveys, as a preliminary to investigation, research and extension work, and to serve as a basis for any extension work which the College may undertake in the future. Agricultural extension should be a function of the local Department of Agriculture and the college should only undertake this work for the purpose of demonstrating to and training students in the methods involved.

On account of transport difficulties an area near the College had to be used. Crops and cultivations in the district are diverse but unfortunately the area is predominantly urban and the large majority of the cultivators are not true peasants but wage earners who subsidise their earnings, in direct contrast to the true peasants with whom most of the probationers will be dealing in their Colonies.

The survey was undertaken between October 1948 and June 1949. It afforded me adequate opportunity of seeing the small cultivator at work, talking to him and familiarising myself with many tropical crops and fruits - this forming perhaps its most useful function.

The report contains a general survey of the area, giving background information, accounts of the agriculture of the lowland and hill areas, and recommendations for improvements of the agriculture. The appendices contain lists of crops and fruits cultivated, descriptions of soil types, rainfall distribution and a note on share cropping practised by the St. Benedict Monastery Estate. A general map of the whole area and a soil map of the southern area are included.

Photographs, other than those acknowledged, were taken by the writer.

NATURAL RESOURCES.

LAND. The survey area lies approximately within three miles radius of the Imperial College of Tropical Agriculture at St. Augustine, in the Tacarigua Ward of the County of St. George, Trinidad, B.W.I. Within this area there are two distinct topographical units - an area of flat to undulating country in the south, and in the north an area of hills and valleys forming part of the Northern Mountain Range. (See MAP 1.)

SOILS. The soils of the lowland area have been surveyed and mapped by Chenery (See MAP 11.). They are mainly derived from pleistocene and recent alluvial, colluvial and detrital deposits and vary in texture from sands to clays. The soils are mainly acid and deficient in plant
nutrients. In the south they suffer from impeded drainage. According to Chenery's Soil Productivity Map most of these soils are graded as "low" or "very low" (grades IV and V) for sugar cane production. (REF. A.)

The northern area has not been soil surveyed in detail. The soils are derived from cretaceous mica schists with quartz and limestone deposits. Due to erosion, on the steep slopes the soils are lithosols and are shallow with numerous rock outcrops. These soils have been provisionally classified as Maracas sands and are graded "low" or "very low" for cacao production. They are generally deficient in available nutrients although richer deposits occur in pockets and some valley bottoms. Soil samples were analysed from the hill area in 1947. (REF. B.)

CLIMATE. The I.C.T.A. meteorological station is within the lowland area. There are no records for the hill area but the general climate would be similar, except that the temperatures might be slightly lower and the rainfall higher. The climate is tropical. The extreme shade temperature range is 60 to 95 degrees F. The average day temperature is 84 and the night temperature 74 degrees F.

The average rainfall from 1929 - 1943 was 67.9 inches of which only 7.7 inches fell in the dry season, January - April. In most years two or three weeks of dry weather occur about September giving the "petit carème". According to Hardy (REF. C.) in his analysis of "effective rainfall" by Mohr's method, this area is one with a marked dry season (evaporation exceeds rainfall during part of the year and soils dry out to a considerable depth). SEE APPENDIX

NATURAL VEGETATION. According to Beard (REF. D.) the hillsides were covered with lower montane rain forest, the intermediate areas with semi-evergreen seasonal forest and the lower areas with swamp forest merging into palm swamp.

The lowland areas were originally cleared and drained for sugar cultivation and now carry little natural vegetation. The hill forests were cleared for timber and cacao growing. The cacao plantations have been mainly abandoned and the land utilised for shifting cultivation. Some of the abandoned areas quickly revert towards the climax vegetation via quick-growing, soft wooded trees. Much of the abandoned hill land, due to erosion and annual fires, carries a vegetation of cocorite and other fire resisting palms with coarse grass between them. St. Joseph Savanna is covered with rough grass and very few bushes. There is some doubt as to whether this is a natural savanna or man-induced by frequent burning of forest on thin poor soil.

WATER RESOURCES. The area is drained by several rivers which rise in the hills as fast flowing streams and then cross the flat plain, slowly draining into the Caroni to the south. At times during the wet season these streams carry considerable volumes of water and after torrential rain are liable to flood. During the dry season the main streams still
flow but at a greatly reduced volume. Springs break out at several places along the foothills and are able to supply water to the vicinity. South of the Churchill Road ground water occurs at or near the surface in the wet season and within 10 to 15 feet of the surface in the dry season. Many shallow wells are used for non-drinking purposes.

HUMAN FACTORS.

POPULATION. The majority of the people are either East or West Indians of 'Peasant' and working classes. In the St. Augustine and Santa Margarita areas there are considerable numbers of middle class families including many of European origin. The West Indians are mainly descendants of slaves who were brought from Africa to Trinidad or other West Indian Islands. The East Indians comprise those who came from India to Trinidad as 'indentured labourers' and their descendants. (REF. E.)

REligions. Several religions are practised and there are at least the following places of worship:
- Churches - 2 Roman Catholic, 2 Anglican, 2 Presbyterian, 1 Methodist and 1 Salvation Army.
- 2 Hindu temples.
- 2 Muslim mosques.

EDUCATION. There are several elementary schools run either by the government or by religious organisations - 2 Government, 4 Roman Catholic, 2 Anglican, 2 Canadian Mission. Elementary education is free, compulsory between the ages of 5 and 12, and voluntary from 12 to 15. Schools tend to be overcrowded and the attendance regulations are not rigorously enforced. All the houses within the survey area are within two miles of a school, the majority being well under one mile. Some of the schools have school gardens.

There is a secondary school attached to the St. Benedict Monastery. Other pupils travel to Port of Spain. There is a proposal for a girl's secondary school at St. Augustine.

OCCUPATIONS. Much of the area is urban and acts as a suburb to Port of Spain seven miles away. Some of the populace are of business or professional classes and others are urban workers, taxi drivers, small shopkeepers, etc. Many of these people cultivate a small area of land as part time garden. On the outskirts of the urban area in particular there are many families who derive their living from 'peasant' farming often combined with labouring work, mainly on sugar estates. Labour on sugar estates and the interests of the peasant tend to conflict especially during the peak period of rice cultivation. Sugar estates find difficulty in obtaining sufficient labour in the busy period of July and
August for planting cane and weeding as at that time peasant rice lands are being cultivated and transplanted. Rice harvest in November/December does not seriously clash with sugar cane work as it occurs during a slack period. Carnival and the Indian Wedding season during the dry season tends to retard cane harvesting. Cane farmers and the estates cut cane at the same time and tend to compete for labour. (REF.E.)

**LAND TENURE.** Most of the land is owned freehold by large or small landlords. Part of the St. Augustine area is on a long lease from the Crown and is virtually freehold.

a. **Estate.** - hires labour and mainly cultivates own land, e.g. Caroni Estates.

b. **Estate** - subdivided into tenant peasant plots, e.g. Streatham Lodge.

c. **Small landlords** - up to 20 acres which they either cultivate or rent to peasants.

Small tenancies are generally on an annual basis with no written agreements, legal security of tenure or compensation for disturbance. Holdings are generally let bare, no services being supplied by the landlord. Sub-letting is common. Premiums are sometimes paid by prospective tenants to the former tenant.

Houses and house-plots are obtainable freehold, leasehold and rented.

Common rents - rice land £10 per acre.

other low land £8 per acre.

hill land £5 to 8 per acre.

Some rice land is sublet for dry season vegetable gardens at £3 - 5 per acre.

(See appendix for note on sharecropping).

**HOUSING.** The better class houses have mains water, baths, electricity, telephones, etc. These modern facilities are not found in the poorer class houses.

Many houses have a separate outside kitchen frequently covered with a thatch or iron roof, and sometimes with walls. Wood, charcoal and oil are used as cooking fuels and oil or candles for lighting.

In the urban areas houses are constructed of wood and corrugated iron, and sometimes also brick and concrete. They vary from rough, small, dirty, semi-derelict shacks to well built modern houses. In the East Indian community in the south, houses built of mud and tapia grass with thatched roofs and earth floors are common, although this type of house is found throughout the area. (REF.F.)

See over for photograph of mud and thatch house.

Many of the cultivators live in the towns and others in villages in the more rural outskirts where the houses have larger gardens around them. There are very few isolated houses.
DOMESTIC WATER SUPPLY. Most families can obtain mains water from stand-pipes found at frequent intervals in the housing areas, and throughout the year adequate clean drinking water can easily be obtained, although water pressure is sometimes low at peak periods of the day during the dry season. Many people use well and stream-water for bathing, washing clothes and watering livestock.

COMMUNICATIONS. There are good rail and road communications to Port of Spain and other parts of Trinidad. The main roads are maintained by the Public Works Department in good condition and are suitable for all traffic. Most of the subsidiary roads are metalled and maintained in fair condition by the Tacarigua Local Road Board, and some roads and earth traces by the Warden's Office. The traces on the south of the Streatham Lodge Estate are impassable for most of the year thus making access to peasant lands in the area extremely difficult. These traces were estate property but are to be taken over by the Crown for repair and maintenance.

FOOD SUPPLY. The majority of the people obtain the bulk of their food, much of which is imported, from local shops and markets. There is a large potential market here for an expansion of local food production. Most of the so-called peasants, unlike the true peasants of other countries, obtain substantial quantities of food from local shops and are far from being self supporting. The rural East Indian is in general more self providing than the West Indian.

ECONOMIC CONDITIONS. The rural populace is poor and lives at a low standard. As far as I could ascertain there is little serious indebtedness to shopkeepers, etc., and although some inhabitants still do obtain credit from local shopkeepers. There are no agricultural credit or cooperative societies in the area. Bridgeland (REF. F.) mentions the occurrence of 'Su Su' or 'slate' clubs amongst the East Indians.
RURAL ORGANISATIONS. There are no organised groups amongst the rural population and the absence thereof would be a handicap to any proposed agricultural extension services.

The Imperial College of Tropical Agriculture, the Government Stock Farm and the Government Nursery are within the area but very few local peasants utilise these institutions for advice. Some take their female stock to the Government Stock Farm and obtain a few plants and seeds from the Nursery.

LAND UTILISATION. Much of the land on either side of the Eastern Main Road is occupied by houses. The remainder of the lowland area, except for a few acres of rough grazing and 'lastro', is cultivated either by estates and institutions or by peasants.

The northern hill area contains many temporary gardens and a few small patches of semi-derelict cacao. The rest is covered with bush in various stages of reversion.

The St. Joseph Savanna is not utilised.

AGRICULTURE.

This survey being concerned with peasant farming, the agricultural practices of the estates are not discussed. The estates employ large numbers of the rural population on regular and casual work.

SOUTHERN AREA.

There is a considerable variation in the nature of the holdings and methods of farming. Generally the peasant's house is in a village or town area with a garden or yard adjacent to the house, varying from a few square yards to a quarter of an acre. He commonly cultivates from a quarter to three acres of land which is rarely in one block and lies from a few yards to 2 or 3 miles from his house. Very few of these peasants make their holdings a full time occupation although the amount of outside work may vary from a few days per year to practically full time.

Many of the peasants employ casual labour as well as family labour for preparing and cultivating land, planting and harvesting rice and for the sugar cane harvest.

The areas south of the Eastern Main Road were, until the late 19th century, sugar estates which failed. At present much of the land between the main roads is occupied by institutional lands and housing. Many peasants live within the area and both East and West Indians have cultivated land there. South of the Churchill Road there is an East Indian village beyond which are rice lands.

Tools and implements. Most of the cultivation is by hand. Long and short handled hoes, forks, crowbars, sickles, cutlasses and brushing-cutlasses are used. A few bullock ploughs and harrows are used for rice and cane cultivations. Two-wheeled bullock, donkey and mule carts are common.
Livestock. Many of the peasants keep some livestock around the housing area.

Fowls are common — predominantly of creole, bare-necked types and rather nondescript, although many have Rhode Island Red and other improved breeds in their 'pedigree'.

Ducks are fairly common and other domestic poultry are seen.

Poultry are generally allowed to wander at will picking up what food they can from around the housing area. Some are given rice husks, corn, coconut, weevilled grain and pulses, and domestic food scraps. Some of the poultry are supplied with rough houses and pens; others roost under houses, in stock pens and on trees. Very few poultry are confined to a wired run.

Cows and goats are kept for milk production.

Bullocks, mules, and donkeys are used for cartage work and sometimes for cultivations.

At night the stock are tied up in open stalls constructed of mud, bamboos or timber with an iron or thatched roof.

(Wood & Thatch Open Cattle Shed with Loose Boarded Floors.)

In some of these stalls proper care is not taken to conserve in a hygienic manner the pen manure produced. Frequently too little bedding is used and rain water and run-off is not kept out. Thus in some cases not only is there a large loss of nutrients by seepage of effluent or by leaching, but objectionable smells and flies result. Most of the manure obtained is used on the land near the house.

With very few exceptions none of these people have any grazing land or grow any fodders. The stock are tethered out on roadside verges, traces, waste land or on agricultural land between crops and left to forage for themselves and/or stall fed with grass and crop residues cut and collected from these places.

(See the photographs on the next page.)
JUNIOR MEMBERS OF FAMILY COLLECTING GRASS.

CARTING GRASS IN A TYPICAL LOCAL CART.

DONKEY TETHERED ON ROADSIDE VERGE.
During the cane harvest some of the stock receive cane tops. The opportunity of receiving cane tops is an incentive for stock owners to work on sugar estates during crop time when grass is normally scarce.

Working animals generally are not given concentrates. Many peasants who own a cart are able to supplement their income considerably by cartage work, especially from December to May during the rice and cane harvests.

Milking cows are often given varying quantities of coconut meal, rice husk, corn, etc., as a supplement to grass. Milk yields from fresh calvers are up to 2 or more gallons a day. Short lactations and failure to hold to service are frequent complaints.

Calves are usually allowed to suckle their dams after partial milking. They are also generally tethered out and may receive coconut meal in water as a supplement.

There are very few pigs in the area. These are frequently badly housed under filthy conditions, are poorly fed and full of worms. Poor quality and late maturing pork and bacon are produced. Adult stock in the area look fairly healthy but thin at the end of the dry season. Occasional ill and scrub stock are seen. Young stock appear stunted and in poor condition as if ill fed and suffering with internal parasites. Ticks are common on all stock which are tethered out at grass.

Cattle vary from Zebu to high grade Holstein and other European blood; goats - nondescripts to British Alpine and Nubian types; donkeys - generally small creole types.

Services of high quality sires are available at low rates at the Government Stock Farm. Some use is made of these facilities but the majority of the local peasants utilise local sires.

House gardens. Around the houses coconut, mango and other fruit trees are common and in the gardens many different vegetable crops are grown, usually as mixed crops.

(Palms and mangoes around the houses can be seen in the background of the photographs at the top and bottom of the previous page and in the first photograph on the following page.

Fruit and vegetables grown are given in the appendix.)

Also in the area there are several gardens away from the houses used for mixed crops. These gardens and house gardens are usually still laid out as they were when cane beds, on 21 feet wide cambered beds with drains between them. The land is either dug by fork or hoed and often crops are grown on ridges across the beds. These cambered beds and ridges reduce the chances of damage due to flooding after torrential rain. Both mixed cropping and pure stands are found. Pigeon pea, corn, cassava, yams and egg plants are the commonest crops planted at the beginning of the wet season. In the dry season these gardens are either not cultivated or are used in a similar way to the rice lands. Unless there is water available these higher lands, especially north of the Churchill Road, dry out
quickly and cannot be utilised for so much of the dry season.

Rice land. During the wet season most of the land south of St. Augustine and much of Streatham Lodge is used for padi, either in the irrigated area from the Tacarigua or from rainfall and drainage water. Peasants have from a quarter to three or more acres of rice land, one acre being a common area. In the past the land has been levelled and bunds constructed making padi fields of upwards of 1/10th of an acre. Those peasants within the irrigation scheme area have more control over water supply and drainage, and are less likely to suffer from excess water or drying out. Throughout bunds, irrigation and drainage ditches are not kept in the best condition. This is especially the case on Streatham Lodge.

RECENTLY REPAIRED PADI FIELD BUNDS.

Cultivations. Towards the end of the dry season, or soon after the rains, any tall vegetation is cutlassed and the bunds cleared. The following methods are used -

a. Roughly dug with a fork before the rains. Intense cracking makes digging possible but hard work.

b. Dug with a fork after the rains have softened the soil but before it becomes sticky.

After flooding (a) and (b) may be hoed and trodden to get a creamy tilth.

c. Ox ploughed after rains have softened the earth and later cultivated when flooded.

d. Ox ploughed, harrowed and levelled when flooded. Some peasants contract this work at $20 per acre.

PREPARING PADI LAND
FOR PLANTING.
Hoed and trodden when flooded. One man can prepare about 1/10th acre/day.

A few people hire a rotary hoe and level before the rains, following the example set by the Department of Agriculture.

Some of the peasants make padi nurseries, puddled or dry, either in a corner of their fields or at their homes and then transplant in July and August into the flooded fields. One worker plants about 1/8th to 1/12th acre per day. Others broadcast the seed on to the rice land. Generally the rice crop does not receive any manure although the nursery might. Some of the crops are hand weeded once during the growing season.

The main crop rice is harvested November/December, often in standing water. The padi is usually cut with a sickle and bunched into unified sheaves one day, then thrashed over a bamboo table erected on the field the following day.
The thrashed grain is winnowed, then bagged and carted home.

WINNOWING AND BAGGING RICE

Outside the houses the padi is spread out on sacks to dry in the sun until fit for storage. Cutting - winnowing takes about 18 to 25 man days per acre.

Most of the straw is left on the field. Some is carted away by peasants for use as stockfeed, bedding and thatch.

Main crop yields of about 2000 lbs. - varying between 1500 - 3000 lbs. - of padi, and ratoon crops from 200 - 800 lbs. (higher yields from earlier harvested crops and wetter conditions) are normally obtained.

There is a great variation in the dry season utilisation of the rice lands and a peasant may treat parts of his land in different ways.

a. Left for ratoon crop of rice and then rough grazing.

If the main crop is harvested early some peasants harvest a ratoon crop and then grow a dry season crop.

b. Woolly pyrol (Phaseolus mungo) is sown in the stubble and when mature is pulled, carted off and thrashed out.

c. Whilst the land is still wet it is dug with a fork and ridged up, allowing for irrigation where possible and an early start with the crops.

Cabbage, beans, tomatoes and sweet potatoes are common.
a. Dry season crops grown on the flat — okra, tomato and cow pea are the commonest crops. (SEE APPENDIX) Many methods of planting.

1. Hoe off stubble — seed or plant, clean weed.
2. " " " " " " " " " " " " , use rice straw as mulch.
3. Hoe planting holes — seed or plant, slashed weeds used as mulch around plants.

A few peasants with land near the river grow a second crop of rice, planting out again soon after harvest.

Due mainly to praedial larceny the more distant land is generally left for ratoon crops and woolly pyrol and the more easily accessible for cow peas and okra. Tomato, cabbage and cucumber are more popular on land near the owner's house.

Cane Farming. In the east of the area there are a number of peasants who grow cane under contract for the Orange Grove but within this area there are several beds used for rice or mixed crops.

These farmers take four or more ratoon crops of cane. Early in the wet season some of the farmers fork between the cane stools: others do little except harvest the cane. Some of the farmers apply pen manure and artificial but this is not a common practice.

The cane farmer is not allowed to fire his cane before cutting. The canes are cut and topped with a cutlass and loaded on to the farmer's or a hired bullock cart and taken to Orange Grove weighbridge. The cane is supposed to be delivered there according to a pre-arranged schedule but this is often not observed.

Between plantings of cane the farmer often takes one or more seasons of mixed crops. The land is either ox-ploughed or dug by fork.

For replanting cane the bed is either ploughed or forked, usually at the beginning of the rains. The beds are then forked into ridges about two feet wide and nine inches high, two feet apart across the 21 feet cane beds. Cane sets, frequently soldiers, are then planted in the furrows and the ridges are planted with mixed crops usually of corn, pigeon pea, okra or sweet potatoes.

OKRA, PEAS AND CORN ON RIDGES.
CANE SETS IN THE FURROWS.
Some farmers even plant crops between the cane sets in the furrows. As these catch crops are harvested the ridges are forked back into the furrows around the cane stools. Cane sets are most frequently planted early in the wet season but are also planted throughout the wet season, other crops being taken off earlier. Towards the end of the rains the planting of cane sets in the furrows together with sweet potatoes on the ridges (the latter being harvested during the dry season) is a fairly common feature.

Farmers' cane yields are generally lower than those of the estates, partly due to poorer soils, lack of manuring and more ratoon crops. (REF.G.)

Seed and planting materials.

Seed padi - from farmer's or neighbour's crops.
Corn, peas, beans, okra, yams, sweet potatoes, etc. - from farmer's or neighbours' crops.
Tomato - farmer's seed or imported seed.
Brassicas - imported seed, usually obtained from the control board.

Selected seed of corn or pigeon pea can be obtained from the marketing division of the Department of Agriculture (REF.H.) but is not often used in the area. A small quantity of corn and pea seed is sold by I.C.T.A. to local peasants.

Cane sets - from farmer's own crop. Orange Grove supply soldiers at $2 per 1000 to cane farmers who can thus obtain improved varieties.

Utilisation and disposal of produce.

Sugar cane carted to Orange Grove weighbridge - contracts and conditions governed by Cane Farming Ordinances. (REF.G.)

Most of the padi is used by the growers and is stored in barrels and drums until required. It is tipped out and sun-dried at intervals during storage. Padi is taken to a small local mill which separates the grain, leaving the husk and bran mixed together giving a low quality stockfeed. Surplus rice is usually disposed off at 'black market' prices. Rice milling at local mills costs about 6 cents per pan of about 20 lbs.

Corn, woolly pyrol, yams and cassava are used by the peasants' families although some are sold.

Vegetable crops are usually sold and unless prices are low are not consumed by the peasant. Vegetables are sold at the house, to local shops or traders, retail markets in Tunapuna and St.Joseph controlled by the Warden's Office, or to the wholesale market at Port of Spain.

Milk, eggs and poultry are usually sold by many peasants either locally or to traders and retailers.

(For prices of produce see appendix).

Problems in the Southern Area.

The soils are naturally of low fertility and as there is only a limited supply of pen manure it is generally used near the house as a light dressing in and around plants/holes. Artificialis are used only in small quantities in a haphazard way. Yields are usually low.
Rice yields are low due to late planting, poor cultivations, lack of water control.

Flooding around the houses south of the Churchill Road is common in the wet season. This is due partly to blocked drains in the rice area and partly to the great volume of water carried by the streams from the hills and built up areas after heavy rain.

The traces in the south of Streatham Lodge Estate are impassable in the wet season owing to flooding and large holes.

Much time and energy is used daily in the search for grass, in moving tethered stock and cutting and carting grass. This job is especially time-consuming during the dry season when grass is very scarce.

Most of the holdings are fragmented and bare, aiding the all too common praedial thief.

Many of the peasants express a desire for sufficient land to be full time peasants. Lack of capital, shortage of available land and high rents prevent this.

**NORTHERN AREA.**

Regular visits were made to holdings approachable from the Balata Road.

[Image of cleared and cultivated hillside]

[Image of secondary bush and clearings on steep hillsides]

on the west of the Maracas Valley, and less frequent visits to other parts of the Maracas and Monastery Valley areas.
The Balata Road area is fairly typical of the cultivated hill areas although at the moment a larger percentage of the land is being cultivated.

From the asphalt road at Floradale House the cultivated hill is approached by a steep but well maintained Crown trace unsuitable for wheeled traffic. This passes through the demarcated area and stretches as far as the two cottages near the beginning of the cultivated area.

Above this there is only a rocky path winding its way up the hill which is kept clear by the passage of peasants and donkeys. Small tracks run across to the peasants' gardens from this path.

Except from an area at the foot of the valley, purchased by the Crown for soil conservation and now demarcated as forest reserve, all the land is privately owned by a few people who rent their land through agents to local peasants, on unwritten annual agreements, at rents of $5 - $8/ per nominal acre. (An acre seems to be a very flexible area and although the gardens were originally marked out, the boundaries are now non-existent and the peasant encroaches on neighbouring bush land.). The landlords provide abandoned land without any services and except for collecting rent seem to take no interest in the land. Until about 1930 this land was cacao estates. Low prices, poor soils and disease made cacao no longer profitable so that the estates were abandoned and later rented to peasants for hill gardens. In 1948/49 about one third of the area was cultivated, the rest being in various stages of reversion to bush.

Slopes in this area were measured by a fellow student, R.S. Carne:

- Overall slope of the hill 35°
- A small 'flat' area 10°
- Most of cultivated land 30°- 40°
- Many small areas within gardens greater than 45°.
Drainage is provided by streams which run throughout the year although in the dry season they appear and disappear in their course along the stream beds. Peasants use these streams for drinking water. During the rains the streams are fed by water from the gullies and after torrential rain are roaring, muddy torrents which however soon become crystal clear once again, and much reduced in volume.

Except for the inhabitants of the two cottages by a derelict cacao drier at the top of the Crown trace nobody lives on the hill. Most of the peasants live between the Maracas pumping station, Curepe and St. Joseph, and either walk with barrows or cycle to Floradale House whence they walk up the trace to their gardens, taking from ten to over thirty minutes to reach the more distant plots. A few peasants use pack donkeys. Many of the peasants build small thatched huts on their gardens to provide shelter from the rain. Some of them cook a meal for themselves from their garden produce when they are working for a long day.

There are three main types of peasants –

a. Full time or major occupation - generally 2 or more acres.

b. Major occupation non-agricultural ) use garden to supplement income and

c. Retired and pensioned ( as an insurance – usually about

The peasant may have two or more pieces of land on the same or another hill and possibly some lowland. (See Southern Area). He may keep some stock at his house.

Generally they employ no labour except for the aid of wife and family at peak seasons of work. Some employ adult male labour to help cut bush for preparing a new garden.

Implement. Due to the thin, rocky, steep-sloped soils and difficulty of transport the range of tools that could be used is severely limited. The cutlass is the most common and useful tool and is used for cutting bush, weeding, cultivating the soil and making planting holes. Some of the peasants use only a cutlass and matches. Hoes, sickles and brushing cutlasses are sometimes used. The use of forks and spades is rare.

Preparation of the land. In April or May the peasant, with or without hired labour, cuts the bush and fells any palms or trees on the area.
Ten to twenty man days per acre are required depending on density of bush and size of trees.

Thicker and taller bush in process of clearing.

By law fire traces must be cut around the area and a licence to burn be obtained from the Warden's Office. Most of the peasants do this but frequently at the end of the dry season fires occur which spread over the hills. The cut bush, if it has not already been burnt, is fired by the peasant in May, a few days before the rains are anticipated. If the fire fails to destroy most of the bush, the unburnt and partly burnt bush is collected into heaps, often around a tree stump which the peasant wishes to remove, and burnt again. Partly burnt palms and trees are left to rot where they fell.
A too early burn is not favoured by the peasant as weed growth starts all the sooner. A garden may be used for two or more years before fertility declines severely and weed growth is too great. Very few gardens are used for more than four consecutive years. The land is then abandoned to bush and cleared again in 3 - 10 years.

On land which has been cropped the previous season, crop residues and weed growth are slashed down with a cutlass and usually burnt.

Thus at the beginning of the rains all the cultivated land is bare of vegetation and ready for planting.

**Crop**. Difficulty of transport on these steep slopes forces most peasants to carry off their produce on their heads or backs (a few use pack donkeys) and influences the choice of crop grown, especially with the full time peasant. Thus there is a marked tendency for the full time peasant to grow a larger proportion of valuable cash crops and the part time peasant to grow more food crops for his own consumption.

Pigeon peas, string beans, tomatoes, cassava and corn are the more common crops, the first named occupying about half of the cultivated area.
After the first rains the peasant commences to plant seeds. Usually he scratches the surface of the soil with a cutlass around the area in which he will plant. Spacing etc., is usually by eye and on many gardens with rock outcrops and stones, seeds are sown in the pockets of soil.

Three to seven pea seeds are planted together at about six feet spacing. Between the peas earlier maturing crops such as corn and string beans are sown. The corn and beans are harvested from September onwards and the peas are picked green at the beginning of the dry season. Some peasants prefer to sow their peas from October to December, after and among other crops. These peas give very few pods during the dry season.
but from October onwards they produce peas when prices are high. With this latter method the peas generally die earlier in the dry season, so that the peasant takes the risk of a poor stand by the end of the dry season and he may have to replant many of them.

String beans and corn are sown in June and September/October and two crops can be obtained. More frequently they are grown as catch crops between pigeon peas and cassava.

Hill padi was grown by a few peasants in 1948/49 and several more intend sowing it in 1949/50. The padi is usually grown as the first crop after bush when the weed problem is less severe. Three or four padi seeds, sometimes sprouted, are dibbled into the soil at about one foot intervals and pigeon peas are often sown among them with a spacing of 6 feet. The padi takes about four months to mature and after the rice harvest the peas are left to mature. Padi yields of 400 - 1200 lbs. per acre are obtained.

Tomatoes are grown as a wet season crop, frequently between peas but sometimes as a pure stand. As is usual in Trinidad the tomatoes are not staked or trained but grow as straggling bushes.

Except for perennials and harvesting of peas there are no dry season crops as the land dries out too much for dry season vegetables.

Control of weed growth, especially after the first season of crops, occupies much of the peasant's time. Clean weeding either with a hoe or using a cutlass as a hoe is commonly practised. Under tall pigeon peas and cassava some peasants only slash the weeds at ground level. During the dry season the weeds are usually left to grow around the ripening crops.

No manures are used on the hills.

Harvesting. Peas and beans are generally picked green by the peasant and his family. A man can pick about 100 lbs. of peas during the best part of a day and this is about as much as he can carry down to the road. Corn is sometimes carried off on the cob but some peasants prefer to remove the corn from the cob on the hill and only carry down the grain. Root crops are generally carried down in small quantities as required by the family and when there is no cash crop to carry. Hill padi is cut with a sickle and thrashed out in the same manner as on the lowland. The padi is then carried down. A few peasants carry grass from the hills for their stock but this is not a common practice.

Disposal of produce.

a. Consumed by peasants - most of the ground provisions; some of the corn - also for fowls; surplus pigeon peas which have dried out.
b. Sold at home to neighbours - most products.
c. Sold in St. Joseph market - very few regularly do this.
d. Sold in Port of Spain wholesale market - most of the peas, beans and tomatoes:
   1. Carts crops in own donkey cart and sells them.
II. Sends goods "by cart of lorry and travels in by bus."

III. Some of the peasants combine together and take turns in visiting the market.

Cartage rates from St. Joseph area to Port of Spain are about 60 cents per bag of produce.

Seeds and planting material. Practically all are grown by the peasant or obtained from a neighbour. Peas are often grown from the odds and ends which are left dry on the bushes at the end of the season, and not damaged by maggots.

Reasons offered by peasants as to why they tenanted hill gardens and not lowland ones:

a. No good flat land available so near their homes.
b. Losses from praedial larceny are very small on the hills.
c. Land straight from bush is more fertile.
d. Cooler and easier work once the garden is reached.
e. Better crops are obtained on the hill and they suffer from fewer pests and diseases.

Taken as a whole these are good reasons from the tenant peasant's point of view for cultivating land which ought to be forest. (a) and (b) are undoubtedly true in this part of Trinidad. On the hill there is no heavy digging and cultivating to be done. The only really heavy work is cutting bush and carrying off the produce. In the first year or so out of bush the land probably does yield a higher return for labour than regularly cultivated but unmanured land in the south. The hill land soon deteriorates and produces much less than the lowlands but the cultivation is extensive enough not to build up a high concentration of pests and diseases.

Problems in the hill area.

Most of the peasants appear cheerful and seem satisfied with the present state of affairs. Praedial larceny is not prevalent and there are no serious pest and disease problems. As elsewhere in Trinidad pigeon peas are grown as an annual crop mainly because the plants are killed by canker. Maggots are troublesome in late pigeon peas left to mature and not picked green.

Transport of produce and the time and energy used in reaching the gardens are limiting factors.

Soil erosion and maintenance of fertility of these hill lands are serious problems. The fertility of the soil is diminishing rapidly and gardens have to be abandoned earlier now. The land is not being left long enough under bush to regain its fertility before being cleared and cultivated once again.

Soil erosion.

Soil in the area is remarkably resistant to erosion. In other countries with similar treatment on such slopes, with the same torrential rain, there would now be no soil at all. Here the easy weatherable rock is
near the surface and lost soil is replaced fairly rapidly. Serious soil erosion has taken place and is characterised by the following:

- Shallow soils with no horizon differentiations.
- Rapid fall in fertility of soils when cultivated.
- Surface stones and rock outcrops. (See photograph on page 12).
- Exposed roots of tree stumps.
- Gullies, land slips and erosion dumps.
- On some gardens small avalanches of soil and stones occur when walked across or cultivated.
- Streams are muddy after torrential rain.

Very few of the peasants admit that they have seen runoff water except near the bottoms of the slopes. (Probably due to the high infiltrability of the soil surface serious runoff rarely occurs).

Most of the recognised methods of causing and enhancing soil erosion are practised in this area:

- Deforestation and cultivation of steep slopes. (See photo on page 11).
- Burning of bush and crop residues on cultivated lands at the end of the dry season.
- Uncontrolled annual burning of bush and forest lands partly caused by fire escaping from cultivated areas.
  
Due to (b) and (c) much of the land is bare when rain commences.
- Crops are not planted on the contour.
- Clean weeding is practised. (See photograph on page 11).
- Gully sides and bottoms and stream beds are cleared and cultivated. (See photograph on page 12).
- Hillsides are indiscriminately cleared and cultivated from the ridge to the gully. (See photograph on page 20).
- Trees and palms are not felled on the contour.

If soil erosion is not checked on these and similar hills the following is probable. — The rate of soil loss will increase, more rock outcrops and larger gullies will appear, the water holding capacity of the soil will decrease and crops suffer more from dessication in the dry season. The fertility of the area may be so decreased that it will be unable to carry useful crops or forest, becoming a liability to the colony and increasing the land hunger which already occurs. Increased flooding of the Northern Plain, caused by greatly increased runoff from the hills, with damage to crops and property as well as roads and bridges. (See photograph on the next page). Streams will have greatly reduced or no dry season flow, causing hardship to people who utilise water from springs and streams in the area.

The present returns from these mis-managed hill lands, with the soil-mining attitudes of tenants and landlords interested only in immediate gains, do not justify the legacy of desecration they will leave behind them if allowed to continue unchecked.
Lower Foothills.

Most of the lower foothills themselves are partly residential or fairly near residential areas. Some of the land is under permanent tree crops e.g. citrus and cacao. There are also several small dairies some of which have a few small paddocks for grazing. House gardens are usually semi-permanently cultivated as in the lowland area. Some of the land is treated in a similar way to the higher hill lands.

As in the other areas shortage of grass for stock in the dry season is a problem. Over much of the area soil erosion is occurring and needs controlling.

Recommendations.

Northern Area.

There is great need for soil conservation work in the Northern Range, between Arima and the Bocas, not only in the survey area. Fortunately with these erosion resistant soils and shifting cultivation, although there is urgent need to prevent further deterioration, the present system could probably be carried on for another decade and still be partly controllable.

I recommend that a soil conservation experimental station should be established as soon as possible in a typical hill area of the Northern Range. This station should carry out experiments on rotational bush fallowing, contour clearing and felling; non-burning of bush in preparing gardens; effects of artificial manures; contour earth works; permanent orchard and tree crops on steep slopes with soil conservation practices.

The proposed station could be staffed and controlled by I.C.T.A. in consultation with the local Agricultural and Forestry Departments:

a. I.C.T.A. has an urgent need for teaching and experimenting with soil conservation methods.

b. I.C.T.A. is more likely to obtain and keep a senior staff member on soil conservation experiments unhindered by other work.
c. The station should be used for training members of the Trinidad Departments' staff for soil conservation extension work.

Before and after the station is established, I.C.T.A. students could usefully record the runoff and loss of soil, etc., on both cultivated and bush hill lands in the area. With the cooperation of some of the local peasants it should be possible to do this over a number of years and determine the rate of deterioration.

Action should be taken by the Agriculture, Forestry and Public Works Departments to make the Legislature and the people aware of the dangers of soil erosion. Capital should be made out of every flood and other incidents traceable to erosion. Local cinemas could be induced to show as 'shorts' erosion films in their main programmes. From what knowledge there is available they should help planters and peasants who wish to practise soil conservation. Some control is better than none.

In three or four years, after the station has begun to obtain preliminary results and an outline on future ideas, a Soil Conservation Ordinance should be introduced into the Legislature. I am of the opinion that soil conservation by voluntary means would not be successful in Trinidad. The suggested Ordinance should:

a. Prohibit cultivation over 500 feet altitude except under licence. (REF.J.)

b. Prohibit cultivation on slopes over 30°. (In the U.S.A. 12°, Punjab 15°, and Ceylon 30° are considered as slopes above which the land should be re-afforested).

c. Approved soil conservation practices should be used on all cultivated slopes where deemed necessary by the Director of Agriculture. (For an interim period land with slopes from 10° to 30° should be included in this category).

d. The onus of carrying out soil conservation should fall on the landlord and the penalties should be severe enough to act as an effective deterrent. The areas occupied by individual tenants are too small to be effective conservation units.

e. Technical advice and assistance should be given by trained junior members of the Department of Agriculture.

f. Loans at a low interest rate could be made available to landlords or tenants with long term leases for soil conservation work and the planting of permanent crops.

g. The Crown should be willing to purchase at its own price all land offered as redundant because of soil conservation legislation.

h. On any substantial area with slopes well under 30° and above the 500 feet contour permanent tree crops with adequate soil conservation measures could be allowed at the discretion of the Director of Agriculture. Permanent crops growing on prohibited areas could be allowed to continue under licence.

Before the legislation was enforced the Lands Department would have to demarcate land over 500 feet and between 10° and 30° below 500 feet in order
to notify the owners.

If the area is suitable the Forestry Department could carry out extensive replantings of lastro lands on prohibited areas which were unlikely to revert quickly to productive forest. Many of the displaced tenants would be able to obtain a garden and so temporarily stave off acute land hunger until methods of maintaining hill land in agricultural production had been solved. Under supervision and with some control of erosion the tenant should clear the land and cultivate it for three years. The Forestry Department should supply useful tree seeds or plants for growing amongst the crops. A rent of about $6 - 8 an acre per annum could be charged and at the end of the tenancy a proportion of the rent could be refunded depending on the stand of trees obtained. An additional bonus could be paid for above average stands.

There is great need for the Urban Authorities to consider the effects of soil erosion and excessive runoff water in the development and utilisation of hill areas for housing. In several places near the Eastern Main Road land and property have suffered damage with runoff water from uncontrolled urban development on the steeper land above.

If possible, the present fire control ordinance should be more rigorously enforced.

Southern Area.

The Department of Agriculture has been carrying out experiments with padi and should soon be in a position to extend the results. Better varieties and earlier sowing seem important factors.

The irrigation system should be increased to include the south of Streatham Lodge Estate. Plans for this have been made by the irrigation authorities. Irrigation and drainage ditches should be maintained in better condition and water made available when possible on certain fixed days so that peasants would have greater control over the water levels on their rice fields. A water rate should be levied on all who benefit from the improvements.

An East Indian agricultural assistant should be appointed for the area for extension work. He should try to foster some communal groups on which to base extension. Perhaps a Cooperative could eventually be built up around a rotary hoe and other implements and act as a basis for a communal group. The extension should encourage the usage of fertilisers to improve upon the present low yields of crops. If sound manurial advice cannot be given for the common crops, experiments should be commenced without delay.

The availability of improved varieties of pigeon peas, corn and stud stock should be brought to the notice of the peasant. (REF.H.)

Most of the holding in the area are small so that mechanisation by individual peasants would not be possible. Machines could be used for preparing rice land, thrashing rice and for cultivations of dry season crops. The Department of Agriculture could advertise and accept contract
work of this kind for a couple of seasons and if the actual demand was
great enough they could encourage the local people to form a small machinery
cooperative. The present hand methods are adequate for those with very small
areas.

The recommendation contained in "The Soulbury Sugar Commission Report"
(REF.G.) should help to improve cane farming.

I recommend that I.C.T.A., either on the new farm out of view or on the
rice plots, carry out experiments using irrigation from wells for dry
season vegetable growing. Experiments could include bullocks hauling up
large buckets of water as in India, and use of simple and cheap hand and
motor pumps and water lifts. As Orange Grove Factory utilises most of the
reduced flow of the Tacarigua River in the dry season, irrigation water is
not obtainable. Over much of the area water is available within 15 feet of
the surface so that well irrigation may be feasible.

In spite of fragmented holdings and high rents for poor land, I would
not recommend at the moment that any alteration take place as regards land
tenure and redistribution. This area is heavily populated and urbanised
with a large demand for part-time gardens.

The Department of Agriculture has a scheme for supplying grass planting
material to peasants free of cost. This campaign has not been well developed
and in any case in this area most of the stock owners would not have
sufficient land to grow even a small proportion of their fodder requirements.
If they could and did, during the dry season they would lose much grass by
stealing unless it was adjacent to the house.

After trials it may be possible to extend the growing of a quickly
maturing legume for fodder during the dry season after padi.

FUTURE DEVELOPMENTS.

The West Indies Royal Commission (REF.K.) reported: "The outstanding
agricultural need in the West Indies is the more intensive use of the land
with an increased production of food in order to support a rapidly growing
population. The most urgent need is the development of peasant agriculture.
The practice of shifting cultivation by peasant farmers must be abandoned
and replaced by an organised system of permanent mixed farming."

There is a definite land hunger in Trinidad and many of the local
peasants expressed a desire for a full-time holding.

Once results are obtained from the I.C.T.A. peasant investigation the
Department of Agriculture should establish land settlements of a suitable
type and offer holdings to some of the better part-time peasants from
areas like this survey area. Beard (REF.D.) estimated that less than
3 per cent. of the present Crown lands are suitable for peasant agriculture.
It would therefore probably be necessary for the Government to acquire
suitable sites, preferably those now derelict or producing only very little e.g. some cacao estates. Of the 614,700 acres of alienated land
in 1938 (REF.D.) only 338,900 were productive; 105,200 semi-derelict or
shifting cultivation, and the rest was non-productive. Much of this non-
productive land should never have been alienated for agriculture but left for Crown Forest. If necessary, parts of functioning estates may have to be compulsorily acquired and the present peasant area re-allocated. Before this would be practical the extension service of the Department of Agriculture would have to be overhauled and made to function.
Padi or rice. (Oryza sativa) swamp and hill - (See page 23).

Corn, maize. (Zea mays) hill and lowland - wet season - sown June and October, harvested September/October and January/February - mixed crop or pure stand. On hill yields 500 - 1200 lbs. of cobs per acre when the dominant crop.

Pigeon pea. (Cajanus indicus) hill and lowland. On hill dominant crop and when maturing practically a pure stand — (See page 22.). Found in most lowland vegetable gardens in mixed cultivations. On hill yields 1000 - 2000 lbs. per acre of green peas in pod. In Trinidad grown as an annual.

String bean, salad bean. (Phaseolus vulgaris) - wet season, cash crop on hills and in many lowland gardens. Bush and climbing types, latter only in lowland gardens. On hills sown from June onwards, 2' X 2' - 3' X 3' pure stand or between pigeon peas. (See page 23.). Picked green September - December. Price falls once pigeon peas available.

Cowpea. (Vigna species) dry season crop on rice lands and lowland gardens. Picked greenár as pulse. Often pure stand or with okra at 2' X 2' - 3' X 3' on riceland. Yields 500 - 1200 lbs. per acre green pods or 250 - 500 lbs. dry beans. (See page 14.)

Urdi. Woolly pyrol (Phaseolus mungo) dry season crop on riceland (See page 14.) - yields 200 - 400 lbs. pulse per acre.

Tomato (Lycopersicum esculentum) - wet season on hill, dry season on lowlands. Spacing 2' X 2' - 3' X 3'. During the wet season tomatoes do not set fruit satisfactorily on the lowlands. Possibly due to physiological causes - minimum temperature too high for fruit setting.

Okra (Hibiscus esculentus). Sporadically amongst other crops on the hill in wet season. Wet and dry season in lowlands. Dwarf and tall varieties grown intermixed. Often with cowpeas in alternate rows on riceland during dry season.

Egg plant (Solanum melongena) - lowlands, generally sown in wet season in seed boxes or nursery and then transplanted at about 2' X 2'. Fruits after 3 months. Ratoon crops are often taken.

Yam (Dioscorea species) lowlands - planted beginning of rains, harvested in dry season. Pure stand on ridges approximately 3' apart and staked with bamboo. Mixed crop often with corn providing support for vines. not common on the hills.

Sweet potato (Ipomoea batatus) dry season crop on riceland. Vines planted late wet season on other lowlands. Usually on ridges 3' apart. Not usually manured - yields low - 2 to 4 tons per acre. Tubers suffer severe damage from boring of the larva of Megastes grandalis, giving many unsaleable
tubers fit only for stock feed. Found on the hills - sometimes as a perennial under other crops. Tubers lifted when required and vines left in soil.

Cassava (Manihot utilissima). Both sweet and bitter cassavas grown on hills and lowlands in pure stands but usually mixed crops. Stem cuttings planted during wet season about 3' X 3'. Tubers lifted as required after about 9 months and can be left in soil for several years.

Eddo and dasheen (Colocasia antiquorum) and tannia (Xanthosoma sagittifolium) Lowlands and hills. On hills more frequently grown on deeper, moister soils in the gullies and stream beds. Mixed crop often under bananas and plantains. Often grown as semi-perennial crop by replanting tubers, as they are harvested, when required.

Bananas, figs and plantain (Musa species). Several varieties grown. Perennials. Found in many house gardens and on hills generally in the gullies and stream beds. Not grown in this area as a commercial crop although many of the local peasants do sell odd bunches occasionally.

The following crops can be found in the area either grown sporadically in house gardens and amongst other crops, or occasionally as pure stands and cash crops:-

- Phaseolus lunatus (Lima bean - bush and climbing);
- Dolichos lablab (Bonafist bean - climbing);
- Raphanus sativus var. radicula (Radish) var. hortensis (Chinese radish or more);
- Cucurbita maxima (Pumpkin - often found trailing under other crops);
- Cucumis sativus (Cucumber - dry season crop on riceland and sporadically in gardens);
- Lagenaria vulgaris (Gourds - for utensils); Sechium edule (Christophine)
- Amaranthus viridis (Spinach, 'Bhaji'); Brassica chinensis (Chinese cabbage); B. juncea (Chinese mustard); B. oleracea (Cabbage); Brassica spp. (Chinese cabbage);
- Lactuca sativa (Lettuce); Capsicum spp. (Peppers - many types grown sporadically - in many gardens chillis, hot peppers, etc. Sweet peppers grown as dry season crop).

**FRUIT GROWN IN THE AREA.**

Most of the peasant houses have a few trees around them.

- Mango (Mangifera indica). Found throughout area. Generally large seedling trees although some grafted mangos are found. Few small orchards in northern valleys. Most mangos consumed by the family and make valuable addition to the diet from April to August. Better varieties often sold.
- Citrus fruits. Found in many house gardens, used by family and also sold. Orchards, especially of grapefruit, found in northern valleys and grown for sale. Grapefruit, sweet orange and limes common in gardens.
Coconut (Cocos nucifera) common in residential districts. Very abundant around East Indian settlements near the Churchill Road. Mainly used by peasant for drinking, eating, edible oil and stock feed.

The following are less common but often found:


Pawpaw (carica papaya). Found in many gardens. Usually suffers from pawpaw wilt so crop rarely obtained.

Cashew nuts (Anacardium occidentale). In many gardens and a few orchards.

Cashew apples home consumed. Nuts collected and roasted - may be sold.

Pineapple (Ananas comosus). In many gardens but not grown commercially.

The following are found in the area, usually in house gardens, but are not of great importance:

- Spondias mombin (Hog plum); Spondias cytherea (Golden apple);
- Annona Muricata (Soursop); A. Reticulata (Custard apple);
- A. squamosa (Sugar apple); Eugenia malaccensis (Pomme lacer);
- Psidium guajava (Guava); Achras zapota (Sapodilla);
- Chrysophyllum cainito (Star apple).

AGRICULTURAL PRICES.

Listed below are the official maximum wholesale and retail prices for 1948/49 (REF.L.) and also the range of prices which peasants said they obtained at different times of the year.

<table>
<thead>
<tr>
<th>ARTICLE</th>
<th>UNIT.</th>
<th>PRICES IN CENTS.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>WHOLESALE</td>
<td>RETAIL</td>
<td>PEASANT</td>
</tr>
<tr>
<td>Bananas</td>
<td>lb.</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Plantains</td>
<td>lb.</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Beans - green, all kinds.</td>
<td>lb.</td>
<td>10</td>
<td>12</td>
<td>6 - 12</td>
</tr>
<tr>
<td>Corn - dry shelled grain.</td>
<td>lb.</td>
<td>4½</td>
<td>5</td>
<td>4½ - 6</td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td>90</td>
<td>96</td>
<td>84 - 100</td>
</tr>
<tr>
<td>Peas</td>
<td></td>
<td>90</td>
<td>96</td>
<td>84 - 100</td>
</tr>
<tr>
<td>Black eye (dry)</td>
<td>lb.</td>
<td>6</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Pigeon - green in pod.</td>
<td>lb.</td>
<td>6</td>
<td>8</td>
<td>3½ - 8</td>
</tr>
<tr>
<td>&quot; - dry</td>
<td>lb.</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Rice (Trinidad)</td>
<td>160 lbs.</td>
<td>35.40</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Padi</td>
<td>lb.</td>
<td>16</td>
<td>20</td>
<td>10 - 20</td>
</tr>
<tr>
<td>Sweet potato</td>
<td>lb.</td>
<td>3½</td>
<td>4½</td>
<td>4½</td>
</tr>
<tr>
<td>Tomato</td>
<td>lb.</td>
<td>4½</td>
<td>5 - 7</td>
<td></td>
</tr>
<tr>
<td>Yams - Lisboh, etc.</td>
<td>lb.</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Tannia</td>
<td>lb.</td>
<td>-</td>
<td>5 - 7</td>
<td></td>
</tr>
<tr>
<td>Pumpkin</td>
<td>lb.</td>
<td>-</td>
<td>4 - 7</td>
<td></td>
</tr>
<tr>
<td>Okra</td>
<td>100</td>
<td>-</td>
<td>5 - 7</td>
<td></td>
</tr>
</tbody>
</table>
Listed below is the normal range of prices which a peasant would have to pay for his stock:

- Peasant's milking cow: $250 - 350.
- 6 - 9 months old calf: about 75 - 120.
- Donkey (depending on size and age): 125 - 250.
- Mule: 300 - 500.
- Milking goat: 35 - 60.
- Kid: 3 - 10.
- Complete bullock cart costs about $140.
- Axle and two wheels of cart: 100.

**POPULATION STATISTICS.**

The following figures have been abstracted from the Trinidad census of 1946:

<table>
<thead>
<tr>
<th>AREA</th>
<th>HOUSEHOLDS</th>
<th>POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunapuna</td>
<td>1845</td>
<td>7328</td>
</tr>
<tr>
<td>St. John's Village</td>
<td>73</td>
<td>387</td>
</tr>
<tr>
<td>Santa Margarita</td>
<td>93</td>
<td>426</td>
</tr>
<tr>
<td>St. Augustine</td>
<td>273</td>
<td>1274</td>
</tr>
<tr>
<td>St. Joseph</td>
<td>610</td>
<td>2582</td>
</tr>
<tr>
<td>Curepe</td>
<td>1206</td>
<td>5579</td>
</tr>
<tr>
<td>Monte Grande</td>
<td>272</td>
<td>1257</td>
</tr>
<tr>
<td>Pasea</td>
<td>225</td>
<td>1065</td>
</tr>
<tr>
<td>Streatham Lodge</td>
<td>495</td>
<td>2290</td>
</tr>
</tbody>
</table>

**Agricultural population of Trinidad.**

<table>
<thead>
<tr>
<th>Category</th>
<th>Male.</th>
<th>Female.</th>
<th>Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers and farm managers</td>
<td>17,007</td>
<td>2,596</td>
<td>19,603</td>
</tr>
<tr>
<td>Farm labourers</td>
<td>24,178</td>
<td>8,131</td>
<td>32,309</td>
</tr>
<tr>
<td>Subsidiary cultivators (part time peasants)</td>
<td>20,050</td>
<td>2,217</td>
<td>22,267</td>
</tr>
<tr>
<td>(Including farm labourers and managers)</td>
<td>(6,326)</td>
<td>(944)</td>
<td>(7,270)</td>
</tr>
</tbody>
</table>

117,796 people in Trinidad live on agricultural holdings of over one acre of which, 41,177 are family workers who do some work on the holding and 23,757 are hired.
RAINFALL.

The annual and monthly rainfall varies greatly and affects the crops considerably.

<table>
<thead>
<tr>
<th>Month</th>
<th>1948 Rainfall in inches</th>
<th>25 years average</th>
<th>Month</th>
<th>1949 Rainfall in inches</th>
<th>25 years average</th>
</tr>
</thead>
<tbody>
<tr>
<td>June</td>
<td>12.61</td>
<td>8.3</td>
<td>January</td>
<td>-.65</td>
<td>3.0</td>
</tr>
<tr>
<td>July</td>
<td>10.70</td>
<td>8.5</td>
<td>February</td>
<td>1.98</td>
<td>1.3</td>
</tr>
<tr>
<td>August</td>
<td>7.84</td>
<td>9.8</td>
<td>March</td>
<td>-.45</td>
<td>1.4</td>
</tr>
<tr>
<td>September</td>
<td>7.82</td>
<td>7.8</td>
<td>April</td>
<td>-.34</td>
<td>2.0</td>
</tr>
<tr>
<td>October</td>
<td>8.79</td>
<td>6.2</td>
<td>May</td>
<td>2.85</td>
<td>5.2</td>
</tr>
<tr>
<td>November</td>
<td>7.13</td>
<td>7.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>1.22</td>
<td>6.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It will be seen from these figures that in 1948/49 the dry season was unusually severe and lasted for six months instead of the normal four months.

Hardy analysed the shower falls by Wells method (REF.N.)

<table>
<thead>
<tr>
<th>Type of shower (Rate of over -.75&quot;/hr.)</th>
<th>8 wet months</th>
<th>4 dry months</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torrential (Rate of over -.75&quot;/hr.)</td>
<td>12.6</td>
<td>-.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Medium (-.45&quot; - 0.75&quot;/hr.)</td>
<td>13.3</td>
<td>2.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Light (Less than -.45&quot;/hr.)</td>
<td>32.2</td>
<td>7.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Totals</td>
<td>58.1</td>
<td>10.1</td>
<td>7.3</td>
</tr>
</tbody>
</table>

The torrential rain is liable to run off and cause erosion; 20% of the rainfall is in this category.

SOILS.

The soils of the southern area were surveyed and mapped by Dr.E.M. Cheney in 1945/46. The table below gives the principal analysis data for the surface soil of the five main soil types.

<table>
<thead>
<tr>
<th>Soil type</th>
<th>% sand</th>
<th>I.T.</th>
<th>pH</th>
<th>O.M.%</th>
<th>N.%</th>
<th>C/N</th>
<th>P.p.m.</th>
<th>P.O.</th>
<th>K.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>River estate sand</td>
<td>74.0</td>
<td>18</td>
<td>5.5</td>
<td>2.50</td>
<td>-.163</td>
<td>8.9</td>
<td>7</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>St.Augustine loam</td>
<td>21.0</td>
<td>36</td>
<td>5.0</td>
<td>3.63</td>
<td>-.197</td>
<td>10.9</td>
<td>1</td>
<td>50-150</td>
<td></td>
</tr>
<tr>
<td>Golden Grove sandy loam</td>
<td>38.5</td>
<td>24</td>
<td>4.7</td>
<td>2.26</td>
<td>-.132</td>
<td>9.9</td>
<td>6</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Streatham sand</td>
<td>63.0</td>
<td>-</td>
<td>5.0</td>
<td>-.8</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Pasea clay</td>
<td>13.5</td>
<td>35</td>
<td>6.1</td>
<td>2.10</td>
<td>-.204</td>
<td>6.0</td>
<td>2</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

River Estate sands and loams. Free draining, grey brown podzolic soils. Uniform, yellow-brown fine sand or sandy loam, merging gradually into a yellow-ochre fine sand with faint red-brown mottling. Sand hard and compact but roots can penetrate. Liable to suffer from drought. Very acidic, low in available phosphate and potash.

35.
St. Augustine loam. Free draining, azonal to yellow podzolic soil. Light to dark yellowish-brown compacted sands and loams, merging into orange red-buff mottled material. Very acid and low in available phosphate and potash.


Streatham sand. Partially impeded drainage. Yellow podzolic. Uniform bleached grey sand hard and compacted. Sub-soil is mottled compact sands merging into more coarsely mottled and gravelly material. Very acid and very deficient in available phosphate and potash. Agriculturally very poor.

Pasea clay. Drainage slow or partly impeded. Yellow podzolic, olive clay, darker olive-brown to brown sub-soils with mottling of red-brown to brown. Soil is very deficient in phosphate and is acid. Used mainly for rice cultivation in the survey area.

SHARE CROPPING ON ST. BENEDICT MONASTERY ESTATE.

The following information was derived from conversation with the manager of the estate in January 1949.

There were 14 share-cropping tenants with 5 - 6 acres of land. All the tenants were employed on the estate as labourers on task work at $1.40 per day and attended their crops in their own time. Each tenant had some productive cacao whilst the rest of the land was covered with derelict cacao or bush.

The tenants are under the supervision of the estate manager who encourages them, on suitable sites, to clear the land, plant food crops and then replant with permanent crops of cacao or citrus. The estate supplies citrus and cacao plants and also, if required, seeds and planting material for food crops. The monastery receives 50% of the produce as rent and, on approved schemes, the cacao rehabilitation subsidy.

Share-croppers, according to the manager, have a large and 'fair' market for most of their crops at the monastery if they are surplus to their requirements. The tenant has no legal security of tenure but on retiring will be able to pass on the holding to a son or near relative. A tenant losing his contract for bad husbandry (at the manager's discretion) or relinquishing his holding has no tenant rights for improvements or outgoings.

Three share-croppers to whom I spoke seemed satisfied with the conditions and had confidence in the manager and monastery.
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