



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

THE ROLE OF AGRICULTURE IN THE ECONOMY OF GRENADA

Roy Banfield

(Manager, Grenada Agricultural Bank)

Introduction

Agriculture is the largest sector of the economy of Grenada in terms of contributions to the Gross Domestic Product (GDP) employment and foreign earnings, so much so, that agriculture might be considered the life-blood of the economy and the foundation for economic development.

Our social history, land holdings distribution and market opportunities, among less important factors, have left us with a land use pattern that is needful of change and at the same time difficult to change.

During the 19th century sugar cane emerged the dominant crop to supply the British market with sugar and alcohol. Later, cocoa increased in importance and then nutmegs came into its own as a leading crop. Sugar cane retreated to the south-east where it was too dry for the successful production of cocoa and nutmegs. Cocoa and nutmegs were predominant in the higher wetter areas towards the north of the island and farmers planted them together on all plantations in order to avoid putting their eggs in one basket.

The rise in importance of banana production followed the national disaster of 1955. This came about as a measure to assist in covering the cost of rehabilitating the fields of cocoa and nutmegs that had been devastated by the hurricane. Although banana was a welcome diversification, it was also being used as a shade crop for the replanting of cocoa and nutmegs and as such one would expect that its importance would be short lived as the banana would be taken out once the cocoa and nutmeg came into production. It is not, therefore, surprising that banana production in Grenada is on the decline today.

Today, the existence of traditional and assured markets has led to the revival of tree crops after the 1955 disaster. The lack of foresight by our farming community has caused us to miss the golden opportunity offered in 1955 to diversify our agriculture and to place more emphasis on intensive crops.

The predominance of tree crops is a result partly of the cost of changing crop patterns and partly of the lack of an assured market for crops other than banana, cocoa and nutmegs. This is particularly true of the large holdings where the landowners do not wish to be troubled with having to seek markets for new crops. Furthermore, the farm labouring population have their heritage in our slave history and had remained a very cheap source of labour until the rise of trade unionism in Grenada during the 1950's, a factor which has allowed the persistence of extensive cultivation that is an element of tree crop cultivation rather than intensive type crops.

Livestock has never really played a large part in Grenada's agriculture since our agricultural production has been export oriented. Today, the decline in the livestock industry continues largely because of the relatively higher capital investment needed for the establishment of livestock farms and the short supply of credit at rates of interest sufficiently low to encourage investment in agriculture.

Another significant feature of the agricultural sector is the emphasis on primary exports. As a result, the benefit of value added by processing is lost. It is only in recent years that any meaningful measures have been taken to do any processing of our agricultural products; and only by the rise of tourism, again in recent years, that there has been some meaningful linkage between agriculture and other sectors of our economy.

Because Grenada was not endowed with natural resources other than people, land and sunshine, the

agricultural sector is shouldered with a great responsibility for the development of the country's economy. In more recent times, this responsibility has been shared by the development of a tourist industry. However, an industrial sector has proven more difficult to develop despite efforts by the Government to attract investment and encourage industrial development. This is not surprising since Grenada is small and as such offers both a small domestic market and a small relatively untrained labour force. In addition, there are no mineral resources or natural sources of energy. All this points in one direction, that Grenada must seek development through agriculture.

Characteristics of Grenada's Agricultural Economy.

Size of Holdings and Land Use Patterns

According to the 1946 and 1961 census and the figures accepted by the Ministry of Agriculture to-date, Grenada has a total area of 85,000 acres of which 67,000 are held in farms. This means that about 79 per cent of the land is under crops. Further, it was shown that some 11,000 acres of cultivable land were not under cultivation, leaving just under 7,000 acres uncultivable, or built up.

It is also indicated that much of the cultivable land that is not cultivated is either located far from the settled areas or are part of larger holdings.

According to the 1961 census 66.1 per cent of our land was held in lots of 10 acres or more, while 46 per cent was held in lots of 100 acres and over. In other words nearly half of our total land is held in large lots.

Among the lands in holdings the larger holdings have the larger area of uncultivated lands. It must be remembered that the larger lot contains more land that is not cultivable. However, it is known that the larger land owners leave some cultivable land fallow in an effort to reconcile their private costs. It is also true that some estate lands are left idle because the estate production is export-oriented so that much of the lands that are not suitable for growing of export crops are deliberately left unused.

Table 2 indicates that 53.4 per cent of land in holdings of more than 500 acres is left uncultivated. Since 1961 five holdings of over 100 acres have been redistributed in lots ranging between 3/4 acre to 2 acres (see Table 3).

It is not clear what effect this redistribution will have on the area of uncultivated land that will be brought under cultivation. It is expected that the new owners will construct dwellings on these lots, and when one considers the small average size of lots quite a large proportion of these lands will come under the heading of building lands.

Cropping Patterns

One of the distinguishing features of Grenada's crop pattern is its emphasis on tree crops and in particular export crops.

In its early years of commercial cultivation, Grenada was a sugar cane economy. However, towards the end of the 19th century the market for West Indian sugar weakened and this gave the opportunity for cocoa to become predominant in Grenada. At the same time, nutmeg also expanded to share predominance with cocoa. Although other tree crops such as limes, coconuts, breadfruit and avocados enjoyed some expansion, they were not heavily demanded in export markets and did not receive quite as much attention. Most large holdings grew a mixture of most if not all, of the tree crops, a pattern which has persisted through the years to the present day.

As mentioned earlier, the growth of banana production followed the destruction of Grenada's

agriculture by Hurricane Janet in 1955. This crop had the advantage over cocoa and nutmeg having a short gestation period and being suitable for intensive cultivation. However, it was used chiefly as a shade crop for the re-establishment of the traditional cocoa and nutmeg, rather than as a main crop planted in pure stand. Further, it is the small farmer who became more interested in banana production, but as was shown earlier the land holding pattern in Grenada placed a large portion of the land in large holdings. Consequently, banana did not take deep roots in Grenada and in fact at present, is experiencing some decline as they are removed from the maturing cocoa and nutmeg fields of the large holdings, as these latter crops come into production.

In addition banana was just coming into the Eastern Caribbean during the 1950's, so that farmers had not developed any confidence in its market stability, and at this time cocoa was enjoying a period of favourable world prices. Cocoa and nutmegs are not flexible to change because of their long maturation period and high initial capital costs, and furthermore, their maintenance cost is relatively low once the field is in production. In any event the cost of establishing a new field, particularly where credit is inadequate, is a consideration that would prevent the farmer from switching to another crop. So even when prices are low and immediate market prospects poor, the farmer is prepared to wait in hope of better conditions rather than change to another crop.

The importance of sugar cane as an export crop is no longer significant. However, this crop still has great importance as an important substitute for sugar and rum, and contributes to employment and cash earnings of farmers of the south-eastern area of Grenada.

There is a wide range of tropical green and yellow vegetables produced widespread throughout the island.

One of the basic problems experienced in Grenada is one that has been common to most countries at some time in their history, and that is the familiar drift of people away from agriculture as other job opportunities become available. The rise of tourism during the 1960's and the expansion in the construction sector which followed provided such job opportunities. It is hypothesised that wage differentials are normally the main cause for a general movement of labour from one sector to another. In order to test this hypothesis for Grenada it will be instructive to compare wages in agriculture with wages in other sectors.

The movement of labour from the land to other sectors is mainly to unskilled labour in the construction and distribution sectors and to semi-skilled in the tourism and construction sectors. It is clear that wages are the motive behind the move to semi-skilled jobs, but the motive behind the move to other labour is not clear. It seems that labour moves to labouring jobs in the construction sector with the hope that within a short time they would be able to move to semi-skilled jobs in that industry. In the case of labouring jobs in the distribution sector, it appears that the attraction of working in the towns is more important than the job or what it pays. To work in the towns, particularly the capital, carries a certain status symbol among the rural folk.

This analysis shows that the diversion of labour away from agriculture needs more than increasing incomes in the agricultural sector to levels comparable with alternative job opportunities in other sectors. Any strategy must take into consideration the land hunger and pride of ownership that are part of our people. It must also seek to increase the respectability of farming in Grenada.

It would appear then that land ownership would increase the respectability of farming. But at the same time, the overall development of agriculture must be the main criterion limiting the extent of land distribution. In other words the size of the unit must be sufficient to provide a viable agricultural project to the farmer. One way of ensuring this is to use units which will provide the farmer with an income that is comparable with what he can earn in other sectors.

Agriculture's Contribution to the Economy of Grenada

The Gross Domestic Product (GDP) of Grenada has shown a slow but steady increase over the last ten years. Moreover, the increase has been consistent in all sectors. (See Table 6.)

However, the figures show that although agriculture remains dominant that the increase in contribution to GDP has been very slow in terms of absolute figures. In relative terms distribution, services and hotels and construction have outstripped the performance of agriculture since 1961. Nonetheless, agriculture's dominance remains clear contributing approximately 30 per cent of total GDP in 1970.

Agriculture's Contribution to Employment

Agriculture accounts for approximately 30.5 per cent of Grenada's employment as is indicated by Table 7. When considering this table it must be remembered that 1970 was during a peak period in the construction industry, and much of the labour in that sector was provided by movement of people away from agriculture. Today, many of these people are idle or have moved back to the land or the sea. It must also be remembered that many people are part-time farmers and/or part-time fishermen, so that the total employment in agriculture is larger than the figures indicate. These figures must also be cast against the high unemployment of 17 per cent that obtains in Grenada today.

Agriculture's Contribution to Exports

Grenada's export agriculture has consistently accounted for over 97 per cent of all visible exports. Further, Grenada has little invisible exports. In fact, apart from tourism, there are no significant invisible earnings. It is also clear that agriculture will continue to dominate the export scene for a long time.

Earnings

Grenada's three most important exports are banana, cocoa, and nutmegs as is shown in Table 8. The unavailability of data on foreign exchange earnings from tourism makes it impossible to indicate the proportional contribution of agriculture to all exports. However, it can be assumed that agriculture would still contribute a very high proportion, perhaps more than 60 per cent of all export earnings.

The fact that the major export crops are extensive tree crops in a country with critical man/land ratios, implies that the earnings of foreign exchange through agriculture has a high employment cost.

Production

Since the agricultural census taken in 1946 the acreages of export crops have not changed significantly. The fall in cocoa and nutmeg acreage between 1946 and 1961 is the result of the devastation of Hurricane Janet in 1955. However, since Janet, acreages have increased as can be seen in the 1971 figures. There are no figures for bananas in 1946, but this is not surprising as bananas became important in Grenada's economy only after the 1955 disaster.

Cotton has been on the decline in Grenada largely because of the high cost of production which places the crop in an unfavourable position on the world market. With regard to production the story is very much the same.

In considering the production performance table it must be remembered that the large apparent fluctuation in production is exaggerated in that the figures are taken from export figures and because of the use of stocks, exports in a particular year may be greater or lesser than production in that year. However, banana figures are close on production since no stocks are held by the marketing body, and domestic consumption is small.

Banana has a different pattern in Table 10. There was a steady rise in production to 59.9 million pounds in 1968, but since then production has fallen by 47.57 per cent to 31.5 million pounds in 1971. This decline in production was mainly because banana was planted specifically as a shade crop in the cocoa and nutmeg rehabilitation process. As the chief crop came into production the banana was removed; and low prices and uncertainty of the market owing to Britain's imminent entry into the EEC caused farmers to lose faith in bananas.

The yields of export crops have been low over the years, but research is being done to increase yields on all three of the major export crops. It is hoped that the projected yields will be obtained by 1975. However, with the great fall in banana production over the last three years, it is unlikely that the goal set for banana will be attained.

Markets

Nutmegs - Grenada is the second largest exporter of nutmegs in the world, with Indonesia by far the world's leading exporter. During the early 1960's internal political conditions resulted in low supplies from Indonesia and Grenada was able to obtain favourable prices. However, Indonesia seems to have overcome these difficulties. The effect of this is shown by the fall in nutmeg prices in the late 1960's. The indications are that nutmeg prices will be unfavourable in future years. In fact, Grenada was so cognisant of this prospect that recently she attempted to arrive at a marketing arrangement for nutmegs with Indonesia.

Cocoa - There are several suppliers of cocoa on the world market. However, cocoa has always shown wide fluctuations in supplies and world prices. FAO estimated that cocoa prices should remain at reasonable levels up to the mid-1970's. However, experience has shown that the decline in prices has come earlier than estimated by the FAO.

Bananas - The UWI survey team to Grenada in 1968 reported that the banana market for Grenada looked good in the short run, but uncertain for the long run. Part of the argument is that Grenada was best placed among the Windward Islands to absorb the demand increases on the UK market, and that prices can only be maintained if production increases keep in line with demand increases. However, Grenada's supply has declined rather than increased in very recent years, because the market continues to be uncertain both in the short term and the long term.

Lime Oil - The market for lime oil has been good and shows a sound future. However, the local situation has not been a pleasant one for limes. The local production of limes has shown some increase, but at present, there is no local processing since the Grenada Lime Factory ceased operation at the close of the last season. Since then, Government has been actively seeking a solution and is contemplating the setting up of a cooperative to establish a processing plant, since the problem appears to be the processing of limes to produce concentrated lime juice and lime oil and not one of lime production.

Cotton - Cotton, which is grown mainly in Carriacou does not have a favourable future. The difficulty experienced in finding markets in recent years has led to a considerable reduction in output of this crop. However, there is some effort being made by Government to see whether some improvement can be effected in the production of cotton so that it can be revived as an export crop.

Importance of Domestic Agriculture

Food Crops

About 1/3 of our total imports is accounted for by food items. This indicates that there is a domestic deficit in foods to be supplied before Grenada can look forward to an export trade in foods.

White potatoes are not grown in Grenada so that unless import controls are used to regulate or stop the importation of this item, it is unlikely that the quantity imported will fall by any significant figure.

The figure that is more important to the discussion is the item "other vegetables". This figure we see has been rising rapidly over the last decade (see Table 12).

Grenada, as stated earlier, has a high population density, which places strains on her land resources to feed her population. Further, Grenada lacks a large industrial sector to provide job opportunities for its relatively large population. These two factors point towards intensive agriculture with a high labour requirement, as much as they point towards processing of agricultural produce to provide labour opportunities, more value added for Grenada and the beginnings of an industrial sector.

Minor Spices

Grenada is renowned for her production of spices. Cinnamon and cloves are grown as shade or fences throughout the cocoa and nutmeg belts. These crops, like the major tree crops, do not require much maintenance. However, to date little effort has been made to plant these crops in 'pure-stand' on a commercial basis. The problem appears to be that farmers do not see an assured market for these products, even though they are included in the negative list of the Carifta Agricultural Marketing Protocol. Yet it is clear that these two crops will be a welcome increase in the range of crops produced for export.

Exotic Fruits

Several fruits are grown in a semi-wild condition, or as shade and fences throughout the island, e.g. sapodillas, mangoes, sugar-apples. Many of these fruits would lend themselves to commercial production either for export as fresh fruit both in Carifta and the metropolitan markets of Europe and North America, or for processing for export. There seem to be wide scope for the development of fruit production, particularly select varieties with good market value.

Market Prospects for Domestic Agriculture

The major problem facing the marketing of the products of our domestic agriculture is the lack of suitable machinery for handling marketing. As early as 1949 a Marketing Organisation was set up to handle food crops. However, there was not sufficient enthusiasm about the exercise and it soon faded away. At present two officers, one from the Ministry of Agriculture and the other from the Farmers' Club Council perform the functions of marketing our domestic agriculture with functions limited to putting the farmer into contact with prospective buyers.

Recently Government has taken a step towards setting up machinery for marketing domestic agricultural products. A UN expert has been studying the local situation for some time and has put a proposal before Government for its consideration.

Briefly, the proposal is that a division of the Ministry of Agriculture should be created to handle marketing. This division will work along with the farmers' clubs and will put the farmer into contact with prospective buyers. Such an organisation can effectively service export trade institutions, hotels, guest houses and food shops, but is unlikely to be of service to the majority of housewives.

However, whatever the machinery accepted it is clear that there is need for some marketing organisation which can provide reasonably sure markets and stable prices. Further, it would be even more satisfactory to have a body that can perform the functions of buying and selling.

With regard to the availability of the markets for domestic agriculture, there seem to be good prospects. The Inter-Church Council bought cloves over the last two years for export. This was a pilot project operated along the same lines as the Grenada Cooperative Nutmeg Association and the Cocoa Board. They were able to sell all the cloves they could purchase to the Carifta market. It is estimated that cinnamon will have the same response in Carifta. Further, the existing trade in fresh fruit to Trinidad indicates that Carifta will provide a market for our fruit, while the experience of tropical fruit on the

European and North American markets is evident that a potential market exists there.

The Agricultural Protocol of the Carifta Agreement provides for preference to Carifta produced agricultural products on the Carifta market. Attached to the Protocol is a negative list of items that will not be imported by Carifta territories except they cannot be obtained in the region. Any member territory could apply to Council to have other items added to the list. The list as it stands is:-

Negative list

1. Carrots
2. Peanuts
3. Tomato
4. Red kidney beans
5. Black pepper
6. Sweet pepper
7. Garlic
8. Onion
9. Potatoes (not sweet)
10. Sweet potatoes
11. String beans
12. Cinnamon
13. Cloves
14. Cabbages
15. Plantains
16. Pork & Pork products
17. Poultry meat (whole chicken only)
18. Table eggs
19. Okra
20. Oranges
21. Pineapples
22. Pigeon peas.

Further, like fruit, vegetables do have some good prospects on the European market. These markets are available, but there is need to be able to ensure proper standards, not only when they leave Grenada, but when they arrive at their destination. This means grading, packing and possibly chilling facilities. The salient point is that there is scope for expansion of domestic agriculture, first to satisfy local demand and then for export.

Special Crops

I have elected to deal with coconut and sugar cane separately because they do have some aspects in common. Both these crops were once important exports but at present the entire crop is consumed locally. Further, they are both processed locally and the finished products sold on the domestic market.

Coconuts was one of the early tree-crops which was planted in cultivation along with other tree crops. Recently a large number of the trees have died from the Red Ring disease and little replanting is done. What is left is processed locally at the only copra factory on the island.

The factory produces cooking oil, laundry soap and meal which is used for animal feed.

At the present time with the Carifta region in deficit of copra and with regional prices for copra and refined oil high, copra products should be expected to expand. However, farmers in Grenada do not have confidence in copra. In any event the high cost of labour, and the extensive nature of coconut production makes it unlikely that the coconut production will be expanded although the fact that all the copra

produced locally is purchased by the local processing mill, and in fact the supply is just able to satisfy the factory demand, makes the future of coconut sound provided production is not increased.

Sugar cane is the oldest commercial crop in Grenada. It started its decline very early to give way to cocoa, nutmeg and other tree crops, and its recent history is still a story of continuing decline as both acreage and production figures show (see Tables 14 and 15).

However, Government has sought to revive the Sugar Industry and had set up a Commission under the Chairmanship of Mr. Persaud to examine the Industry and make recommendations. At present, the Government subsidises the Industry. This action is based on Government's consideration of the Industry's contribution to employment in the southeast of the Island where tree crop cultivation is not a practical proposition and in addition, the import substitution effect of sugar and rum production is of importance to the Island's balance of payments position.

Importance of Livestock

Livestock production in Grenada is high cost owing to the steep nature of the topography and the lack of locally produced feeds. However, this must be weighed against the import substitution effect in assessing whether or not serious efforts should be made to increase the production of meat and milk.

The figures indicate that Grenada's import bill for fresh meat and milk has been on the increase, as the data for 1966-1968 indicate in Table 16. It is also significant to realise that the stocks of some livestock have been on the decline in recent years. Cattle and sheep have been declining. This is probably because they are the animals that are affected most by topographical conditions. Other livestock, with the added exception of goats which can live under fairly rugged conditions, are more often kept in pens in Grenada. However, the production of pigs and poultry has been on the increase, this is largely the effect of capital made available through the Grenada Agriculture Bank which was set up in 1965 and partly because they are easily locked away in pens near to the farmers dwelling as a precaution against praedial larceny. Further, the Government has been encouraging the rearing of pigs and poultry particularly because of the relatively low investment costs and the small area of land required for such farming.

This does not mean that there is no recognition of the need for other livestock and in particular cattle for fresh milk. For several years Government has operated a Revolving Herd Scheme and an artificial insemination scheme in an effort to promote and improve cattle rearing in Grenada. Under the Revolving Herd Scheme the Government provides the farmer with a heifer which he would attend until he obtains a young heifer from the Government provided cow. Once he obtains a heifer he returns the Government's cow that it might be passed on to another farmer.

Under the Artificial Insemination Scheme the Government rears bulls of suitable breeds for the production of semen for use in insemination. The farmer can have his cow inseminated free of cost from the semen of these bulls. In this way Government hopes to improve the breed of cattle kept by farmers.

Any efforts to encourage cattle and sheep rearing will take a long while to show results because of the extensive areas of land necessary for cattle and sheep rearing and the high costs involved in establishing and fencing good pastures particularly under conditions of rugged terrain as obtains in Grenada.

With regards to the market for meat and milk the import figures clearly show there is still much room on the domestic market to allow for wide expansion in our production even though it is recognised that owing to high cost of production Grenada is not likely to be able to export meat or milk now or in the near future.

Fishing

When discussing Agriculture in Grenada some mention should be made of the fishing industry because of its close relationship to agriculture in Grenada. Many of our fishermen are also farmers and because of

our low stocks of livestock there is heavy emphasis on fish to provide the island's protein needs.

This industry has been growing steadily over recent years while imports of fish have reduced, Tables 18 to 20 illustrate this point. Although figures are not available for 1969 and 1970 the evidence suggests that the decrease that began in 1968 has continued. It is further projected that by 1982 the total annual landings will average 12,000,000 pounds. In order to achieve this objective it is hoped to increase and improve the fishing fleet and to improve storage and marketing facilities.

In St. George's a new fish market was set up recently in addition to the old market that has been in operation for several years. It is also proposed to build a new market with chilling facilities in Grenville while a chilling unit will be constructed in the fishing town of Gouyave. In order to allow boats to stay out longer and to have fish landed in better condition a 7 ton flake ice plant will be constructed soon.

The Caribbean Fishing Development Project has been assisting Grenada in research in her waters. It is hoped that their further assistance could be had for training of fishermen in navigation and the handling of larger more efficient craft. It is also hoped to use their expertise in guiding the marketing programme.

If the goals set by the Fisheries Division of the Ministry of Agriculture and Fisheries are obtained Grenada should be self-sufficient in fish by 1982.

Recent Measures to Improve Agriculture

1971 was declared Agricultural Year in Grenada. An Agricultural Year Committee was set up and charged with the job to study this very important sector of the economy and to make recommendations aimed at giving Agriculture "a shot in the arm". In April 1972 a National Exhibition will be held which is expected to demonstrate the effect of the work done by the Committee.

In recent years Government have set up model farms which are operated by selected farmers under the guidance of the Ministry of Agriculture. The objective is to encourage some diversification towards food crops.

A Farm Training School has been recently set up. It began operations but was soon found to be inadequate in size. Operations ceased for the school to be expanded and it will re-open this year. The objectives of this training programme are to prepare youngsters for further training at Eastern Caribbean Farm Institute and possibly to go on to first Degree work at UWI to train primary school teachers concerned with teaching agriculture in primary schools, to train personnel for middle management positions on estates, and to train farmers in modern farming technology.

There will be two types of courses. The younger trainees will attend full-time courses over a six-month or one year period. On the other hand week-end courses, with emphasis on applied agriculture, will be conducted for the benefit of farmers and primary school teachers.

Government has decided to continue the fertilizer subsidy scheme. This gives a subsidy of 33 per cent to small farmers, and 20 per cent to larger farmers for the purchase of fertilizer. Further, the large farmers can benefit only on total purchases up to 10 tons in any one year.

Of very great importance in recent changes is Government's decision to place Agriculture and Fisheries in a separate Ministry. This is a clear indication that Government has recognised the role that Agriculture has to play in Grenada's economy.

Diversification

The facts indicate that Grenada needs to reduce her import bill for foods, and at the same time she needs to concentrate more on intensive farming than she has been doing. Further, because of the uncertainty of obtaining favourable markets for her major export crops she needs to seek to increase her

range of exports.

These objectives can be possibly achieved by diversifying her agricultural production. As shown earlier in this paper there are some 11,000 acres of cultivable land that has remained uncultivated for several years. More land for diversification might become available if increasing yields of tree crop production can be increased without increasing acreage leaving more land available for other agriculture particularly if land made vacant from the cutting away of old fields of the tree crops are diverted to other agriculture.

Food crop production can provide Grenada with the intensive agriculture that she needs to feed her population and at the same time serve to reduce her imports of vegetables.

The commercial production of fruit crops and minor spices then can provide the diversification with regard to export crops. As was shown earlier there is potential both for the production and the marketing of fruit crops and minor spices.

Grenada also needs to reduce her imports of meat and milk. The "Mona Report" estimated that 2,000 acres would be an adequate addition to the area already under cattle, to carry a large enough stock of cattle to supply our local demand for beef and milk. With regard to sheep, a first step will be a ban on the export of sheep. Since there are no figures on the number of sheep exported from Carriacou it is difficult to estimate how many more sheep are needed to add to the stock to satisfy local demand, but it should not be nearly as large an increase as is required for cattle.

Pigs and chickens are pen-fed and as such do not occupy much land area. However, most of the feed has to be imported. As an interim measure the price of animal feeds should be controlled. Then local feed production should be encouraged, allowing only the concentrates and proteins to be imported. Our agriculture can produce the carbohydrates base although it would require the encouragement of suitable crops and in particular maize.

Agro-Industry

Although there are great possibilities for the development of agro-industries in Grenada, very little has been done in this direction, and what has been done was approached half-heartedly. For example, as early as 1965 the Nutmeg Association made contributions to the U.W.I. and McGill University for research into nutmeg preserves, jams and jellies. But apart from obtaining quotations for a small processing plant no further work has been done on this project.

More recently, a project for the setting up of cocoa fermentaries have got under way, work is almost completed on one cooperative fermentary at Belle Vue in St. David's and there are plans to set up enough fermentary capacity to cope with the entire crop. When completed the total capacity of fermentaries, it is hoped, will be 16 million pounds of wet cocoa.

In the field of nutmeg processing a pilot plant to determine the feasibility of extracting nutmeg oil was operated by the Ministry of Overseas Development. This could well have been expanded to lime and cotton. However, the project seems to have come to a halt.

Sugar cane has advanced from the stage whereby only sugar and molasses were produced. Today the Woodlands Sugar Company produces both white and red rum. In addition there are the La Sagesse, River Antoine and Dunfermline distilleries all producing white rum.

There is one animal feeds plant. This is a small plant which has to depend mainly on imported inputs. The project would be more feasible if at least the carbohydrate base could be had from local agricultural surplus. In any event the majority of our animal feeds are imported.

A Trinidad and Tobago firm has recently set up a food processing plant. However, it is too early to assess the success of this venture.

The only other agro-industries which are involved is the home industry where housewives and children labour at producing various straws and preserves.

There is a great need for research into the possibilities of commercial processing of some of our agricultural produce and to diversify production and include in the production range more crops that have industrial potential. What is more we should endeavour to have such industries locally owned, although this need not be mandatory.

The three major problems facing the development of agro-industries are credit facilities, local entrepreneurship and research facilities. It would be difficult to establish research facilities in view of the high cost. However, it might be possible to set up a small unit for the carrying out of preliminary work. After the local unit has been possible in a project the regional research institutions might be requested to develop the project further. In addition the local unit might perform the duty of ensuring continued high standard of products.

Local entrepreneurship can be provided by way of a training programme, both by sending trainees abroad and by inviting suitable trainers to train people locally and to guide trainees returning from abroad in their early months of working, so that they might inculcate the right experiences.

The local commercial banks provide capital but at a rate of interest that is not attractive enough to encourage local participation in setting up of agro-processing.

Furthermore, if Grenada is to benefit fully from her agriculture more of the value added in agriculture must remain in Grenada. Consequently more products must be exported in a semi-processed or processed state.

It might then be said that for a start towards the development of agro-industry in Grenada the following foundations should be laid:

1. Research should be done on crops that can be produced in Grenada which have commercial value for processing, e.g. hot peppers, black pepper, sponodilla, sugar-apple etc.
2. Research should be done on crops already produced in Grenada to determine their commercial value for processing of any part of the product which at present go to waste, e.g. nutmeg pods.
3. A training programme should be set up to train persons in the managerial and technical skills involved in agro-processing.
4. A financial organisation should be set up to finance agro-industry. This organisation should be in a position to lend at lower than the current bank rate. It might be as well to expand the existing Grenada Agricultural Bank and make it an Agricultural and Agro-Industrial Development Bank, rather than set up a completely new organisation.
5. Set up an Agricultural Marketing Organisation which in addition to handling the marketing of farm produce, will handle the marketing of the products of agro-industry.

Agricultural Credit in Grenada

Agricultural credit is young in Grenada. The Grenada Agricultural Bank (GAB) was set up in 1965 to provide soft loans to farmers and fishermen. The Bank was financed by way of a loan raised from the local

commercial banks at a special rate of interest and easy terms of repayment. In addition government subsidises loans by 1½ per cent per annum and carry the cost of operating the bank.

Loans are made to farmers at the low rate of interest of 5 per cent, and as an additional incentive to the development of cooperatives among farmers loans are made to registered cooperatives at 4½ per cent interest per annum. There are three categories of loans, short term up to 18 months, medium term up to 5 years and long term up to 10 years. A further incentive is the moratorium on principal that is offered to farmers. The length of the moratorium is set in accordance with the gestation period of the crop being planted or the period of the time lag of the project before it begins to show profits.

Between 1965 and 1971 the bank has made loans to farmers and fishermen totalling 3.9 million dollars. Table 21 shows the annual loan performance of the bank. It is accepted that there is need for further agricultural credit. Since early 1971 the Government has been in the process of arranging a loan of one-half a million dollars (EC) to further finance the lending of the GAB since the monies raised to finance this institution were used up by the end of 1970. Some minor problems have delayed the receipt of that loan although the Loan Agreement has already been signed. Once this loan is in receipt of the Bank the rate of lending will be resumed. Further, when this money is used up further loans will be available from the same source to extend the lending facilities provided by the GAB.

Conclusion

It is clear that the principal goal for the continued development of the agricultural sector is to make more efficient use of the available land to reduce imports of food items and increase the level of exports and the range of items exported. The question is what possible measures are best to adopt in attempting to achieve these objectives?

Government's policy of redistributing land needs to be expanded and rationalised to avoid over fragmentation of the land. This measure should lead to more production, more emphasis on intensive agriculture and at the same time spread farm income more widely among the population.

The efforts towards increasing the yields of the traditional export crops should be pursued vigorously. This would allow for maintaining the level of production without increasing acreages, or even with some cutting back on acreages under these crops, thus making more land available for diversifying agricultural production. It would also have the effect of reducing costs of production, or to be more accurate increasing the revenue of farmers.

The large and increasing importation of vegetables indicates a need to expand the production of these crops, which diversification in crop production will also provide for more intensive agriculture and as such a more efficient use of the Island's scarce land. This is not advocating however, that tree crops should be replaced by food crops since the tree crops provide the majority of exports of the island which is of paramount importance to the economy.

In an effort to increase the export performance of the economy the production of minor spices: "minor crops" and fruit crops should be encouraged. This would entail considerable research with the objective of selecting the most suitable varieties and determining the best cultural methods to adopt for their propagation and cultivation. Here I refer to such crops as cinnamon, cloves, limes, avocados, mangoes, sapodillas etc. The work already started on this should be intensified.

Livestock with the exception of chickens, has been on the decline. Efforts should be made to increase numbers and improve strains so that the import bill for meat and milk might be reduced. A planned programme should be devised to ensure continuity in the work in the field of livestock. For too long the future of the livestock industry has been dogged by the rapid change in the expertise at the head of this division, which condition has led to instability in the development of livestock production.

Although the topography dictates against heavy mechanisation of agriculture in Grenada, thought should be given to limited mechanisation, perhaps through a pool of agricultural machinery which would be

made available to the farmer on a rental basis. This need arises out of the movement of labour away from the land.

The output of 20 graduates per annum from the training school is low. This number is adequate for the provision of material for the regional schools of agriculture, and for the training of primary school teachers who teach agriculture, but it is low for the widespread education of farmers in Grenada. The programme should carry a large number of courses for farmers and in particular for younger farmers who have benefitted under Government's "land for the landless" policy.

There is an undoubted need for marketing machinery for other agriculture. The experience of the marketing officers in Grenada show great difficulties in operating the liaison method of marketing, i.e. the marketing officer informs the farmer of available markets. Although a marketing board is a costly affair that will require government subsidy, it appears to be the required machinery. In the first place it will tend to stabilise prices, the farmer will have ready money for his crops and it will be better placed to organise export of surpluses and the minor crops that will be grown for export. In particular it will be able to export products more efficiently under the Carifta Agricultural Marketing Protocol.

In an effort to increase the value accruing to agriculture, to reduce imports and increase exports and to increase job opportunities agro-industry should be encouraged. In addition to the normal fiscal incentives that are available to new industries soft loans should be made available to projects to set up agro-industries. Soft loans should also be made available to farmers and fishermen.

Further agricultural credit should be at two levels and should be operated as separate entities. At the first level there should be a Farm Improvement Fund from which loans should be made only to well programmed feasible projects. While at the second level there should be a fund for the purchase of fertiliser, purchase of land and maintenance of existing fields.

If the Fisheries Department's projections of 1,000 sloops must be achieved, this alone will cost approximately 1.8 million dollars (EC). It is unlikely that this money will be raised anywhere else but the Grenada Agricultural Bank.

The GAB should be expanded to an Agricultural and Agro-Industrial Development Bank and a fund provided for lending to develop agro-industry. Applications can be made directly to the Caribbean Development Bank for loans to set up industry, but the rate of interest for such loans is 7 per cent. What agro-industry needs is loans at low rates of interest and over long periods of time with a short moratorium in the early stages.

Finally, Grenada needs a small research unit to keep research projects constantly in progress. Such a unit should be small because of the cost consideration, but should be able to do the ground work on research projects and pass on the projects to one of the regional research centres for detailed analysis. Further, the unit can assist the regional research centre by way of running tests and making observations for the centre.

The efforts to encourage farmers cooperatives should be continued and a more vigorous central office should be set to work on training the farmers to run their cooperatives.

TABLE 1 DISTRIBUTION OF HOLDINGS ACCORDING TO SIZE GROUPS: GRENADA, 1961

Size Group	No. of Holdings	Acreage	% of Total Acreage
(acres)	(no.)	(acres)	(per cent)
< 1	6,458	2,476	4.1
1 - < 5	6,052	11,907	19.8
5 - < 10	934	5,998	10.0
10 - < 25	418	5,867	9.8
25 - < 50	100	3,367	5.6
50 - < 100	42	2,814	4.7
100 - < 200	28	3,618	6.0
200 - < 500	52	15,098	25.0
500+	12	9,052	15.0
Total	14,096	60,197	100.0

Source: National Census 1961, Grenada.

TABLE 2. PROPORTION OF LAND CULTIVATED: GRENADA, 1961

Size Group	Acreage	Cultivated	Proportion Cultivated
(acres)	(acres)	(acres)	(per cent)
< 1	2,467	2,349	95.2
1 - < 5	11,907	10,551	88.6
5 - < 10	5,998	4,776	79.5
10 - < 25	5,867	4,149	70.7
25 - < 50	3,367	2,425	72.0
50 - < 100	2,814	1,720	61.1
100 - < 200	3,618	2,456	67.9
200 - < 500	15,098	9,280	61.5
500+	9,052	4,219	46.6
Total	60,188	41,915	69.6

Source: National Census 1961, Grenada.

TABLE 3. REDISTRIBUTION OF LOTS UNDER TWO ACRES

Settlement	Location	Area (acres)	Average Size of Lot (acres)
Black Bay	St. John's	103	1
Annandale	St. George's	101	1
Morne Delice	St. David's	202	1
Mt. Horne	St. Andrew's	335	$\frac{3}{4}$
Paradise	St. Andrew's	335	2

TABLE 4. MONTHLY WAGES AND SALARIES BY SECTORS: GRENADA, 1971

Sector	Labour	Clerical	Middle Management	Top Management	Semi- Skilled	Skilled
(EC\$ Monthly)						
Agriculture	78 - 130	90 - 150	-	200 - 450	-	571 - 1000
Fishing	-	-	-	-	-	300 - 500
Tourism	-	300 - 450	-	1000 - 1400	132 - 385	700
Industry	120 - 250	80 - 150	200 - 450	700 - 1100	n.a.	n.a.
Construction	60 - 90	-	-	Fees	160 - 250	600 - 900
Distribution	80 - 120	200 - 380	400 - 650	900 - 1600	-	-
Public Services	80 - 170	214 - 342	236 - 650	n.a.	n.a.	n.a.
Civil Service		212 - 422	407 - 719	800 - 1100	407 - 719	800 - 1100

Note: n.a. - Not Available

Source: Material collected personally from The Salaries Revision Commission, Grenada, 1970.

TABLE 5. FARM INCOMES BY ACRES: GRENADA, 1971

Farm Size (acres)	Average Net Annual Income (\$ p.a.)	Monthly Equivalent (\$)
1	700	60
5	3,000	250
10	6,100	508

TABLE 6. GROSS DOMESTIC PRODUCT BY INDUSTRIAL ORIGIN: GRENADA, 1961-70

Sectors	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Agriculture *	11,162	11,031	10,260	10,200	13,668	12,390	13,170	13,186	13,524	13,745
Manufacture	620	651	1,454	1,140	1,122	1,140	1,195	1,245	1,300	1,370
Engineering										
Construction	2,820	2,961	2,082	2,930	3,070	2,850	3,222	3,500	3,240	3,250
Distribution										
Finance &	3,950	3,970	4,119	4,280	4,370	4,850	5,200	5,430	5,640	5,900
Insurance			1,362	1,416	1,473	1,532	1,593	1,657	1,723	1,792
Transport	800	824	1,063	1,116	1,172	1,230	1,292	1,357	1,425	1,496
Services &										
Hotels	2,010	2,111	2,347	2,405	2,740	3,195	3,443	3,683	4,351	4,564
Rent of										
Dwellings	2,107	2,170	2,355	2,449	2,547	2,674	2,807	2,948	3,096	3,251
Sub-total	23,479	23,718	25,042	25,936	29,904	29,861	31,922	33,006	34,299	35,368
Government	5,245	5,450	4,439	4,550	4,650	5,870	6,090	-	-	-
Total GDP	28,714	29,168	29,481	30,486	34,554	35,731	38,012	-	-	-

* Includes Fishing.

Source: Statistics Dept., Grenada.

TABLE 7. EMPLOYMENT BY SECTORS: GRENADA, 1970

Agriculture	6,588
Fishing	1,410
Tourism	525
Industry	2,460
Construction	3,313
Distribution	3,302
Public Service	2,165
Civil Service	2,492
Total	22,255

Source: Labour Dept., Grenada.

TABLE 8. PRINCIPAL EXPORTS: GRENADA, 1965-70

Commodity	1965	1966	1967	1968	1969	1970
	(EC\$'000)					
Cocoa	2,349.7	2,313.4	3,040.7	2,312.4	5,817.6	4,172.1
Nutmeg	4,599.2	4,092.8	1,215.7	2,548.6	4,307.5	3,159.1
Mace	1,142.5	4,092.8	1,215.7	2,548.6	4,307.5	3,159.1
Banana	2,275.6	2,590.0	3,535.1	3,864.1	3,252.5	2,504.5
Lime Oil	73.3	62.7	43.0	71.0	27.2	n.a.
Cotton	43.7	31.7	21.3	42.3	n.a.	n.a.
Total	10,605.0	9,789.3	8,285.3	9,560.1	14,445.0	10,471.6
Other	72.5	213.8	135.9	208.7	443.0	483.4
Total Domestic Exports	10,677.5	10,003.1	8,421.2	9,869.8	14,888.0	10,955.0

TABLE 9. ACREAGES OF EXPORT CROPS: GRENADA, SELECTED YEARS

Crop	Unit	1946	1961	1971
Cocoa	'000 acres	15.4	13.0	15.0
Nutmeg	"	7.3	5.7	5.8
Mace	"	n.a.	4.2	5.0
Cotton	"	1.1	0.9	0.6
Citrus	'000 trees	84.1	92.5	190.0

Source: 1. Ministry of Agriculture Records.
2. Agricultural Census - 1946 & 1961.

TABLE 10. QUANTITY OF PRINCIPAL EXPORT CROPS: GRENADA, 1965-71

Crop	1965	1966	1967	1968	1969	1970	1971
	('000 lbs.)						
Cocoa	6,610.4	4,962.5	5,444.0	3,931.0	9,017.1	6,007.9	6,438.1
Nutmeg	3,277.0	1,989.2	980.5	2,964.2	4,877.5	3,199.7	3,869.8
Mace	459.4	245.8	160.3	362.3	630.1	433.7	593.9
Banana	46,296.1	46,853.8	57,371.5	59,938.7	50,526.4	42,176.7	31,537.0
Lime Oil	5.6	4.7	2.8	4.6	1.7	n.a.	n.a.
Cotton	30.6	71.7	23.3	77.8	n.a.	n.a.	n.a.

Source: Annual Trade Reports,

TABLE 11. YIELDS OF MAJOR EXPORT CROPS: GRENADA
(pounds/acre)

Crop	Present Yield	Projected Yield 1975
Cocoa	400 - 600	700
Nutmeg	1,500 - 2,000	3,000
Banana	6,700 - 8,900	12,000

Source: Ministry of Agriculture Records.

TABLE 12. MAJOR FOOD IMPORTS: GRENADA, SELECTED YEARS
(Annual Averages)

Item	1951-1953	1961-1963 (⁰ 000 lbs.)	1966-1968
Meat	375.0	689.0	807.0
Milk	376.0	1,310.0	1,901.0
Potatoes (white)	308.0	431.0	857.0
Other Vegetables	508.0	787.0	951.0

Source: Annual Trade Reports.

TABLE 13. COPRA AND COPRA PRODUCTS: GRENADA, 1965-71

Year	Copra Milled (tons)	Refined Oil (⁰ 000 gals)	Laundry Soap (⁰ 000 lbs.)	Coconut Meal (⁰ 000 lbs.)
1965	452	57.2	194.9	196.3
1966	548	59.4	178.6	276.1
1967	646	77.7	172.8	515.8
1968	187	24.4	39.5	104.6
1969	438	30.2	Nil	14.4
1970	575	90.8	25.3	200.3
1971	732	205.2	103.3	406.5

TABLE 14. ACREAGE OF SUGAR CANE: GRENADA, 1946-71

Crop	1946	1961	1971
Sugar cane	1,321	838	750

TABLE 15. PRODUCTION OF SUGAR CANE: GRENADA, 1965-71

Year	Cane (⁰ 000 tons)	Sugar (⁰ 000 tons)	Rum (⁰ 000 gals)
1965	12.3	1.4	85.2
1966	14.2	1.4	100.8
1967	15.8	1.7	94.8
1968	16.1	1.8	99.4
1969	10.0	1.4	98.6
1970	9.1	1.0	104.7
1971	7.7	0.8	n.a.

TABLE 16. IMPORTS OF FRESH MEAT AND MILK: GRENADA, 1966-68

Commodity	1966	1967	1968
	Quantity (⁰ 000 lbs.)	Quantity (⁰ 000 lbs.)	Quantity (⁰ 000 lbs.)
Beef	58.9	82.2	74.8
Pork	26.0	52.2	67.9
Lamb	21.8	33.5	28.9
Chicken	708.5	502.5	716.5
Total	815.2	668.3	928.1
Milk	1,516.6	2,212.2	1,974.1

TABLE 17. NUMBER OF LIVESTOCK: GRENADA, 1961-71

Stock	1961	1964	1971
Cattle	7,999	6,800	5,000
Pigs	830	11,049	15,000
Sheep	6,248	10,448	9,000
Goats	5,673	4,262	7,500
Poultry	106,361	121,977	250,000

Source: Ministry of Agriculture estimates for 1971

TABLE 18. LOCAL LANDINGS AND IMPORTS OF FRESH FISH: GRENADA, 1966-70

Year	Annual Landings (⁰ 000 lbs.)	Annual Imports (⁰ 000 lbs.)
1966	2,570.7	23.8
1967	2,684.2	56.0
1968	2,925.5	15.3
1969	3,071.8	n.a.
1970	3,324.2	n.a.

Source: Annual Trade Reports.

TABLE 19. NUMBER OF BOATS IN TYPES

Type of Boats	Present No.	Projection
Whaler (16' - 28')	325	400
Transum (8' - 12')	350	350
Canoe (10' - 16')	75	75
Perogue (16' - 28')	75	75
Sloops (38' - 48')	40	100
Total	818	1,000

Source: Ministry of Agriculture, Forestry & Fisheries, Grenada.

TABLE 20. NUMBER OF NETS AND POTS IN TYPES

Types of Nets	Present No.	Projection
Beach nets	48	48
Turtle nets	61	61
Balahoo nets	94	94
Gill nets	11	50
Z pots	nil	500
Pernimid	nil	500
Total	214	1,253

Source: Ministry of Agriculture, Forestry & Fisheries, Grenada

TABLE 21. TOTAL ANNUAL LOANS, GRENADA AGRICULTURAL BANK

Year	Total Annual Loans
	(\$m.)
1965 & 1966	1.1
1967	0.8
1968	0.4
1969	0.5
1970	0.8
1971	0.3
Total	3.9