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SMALL SCALE FARMING IN BARBADOS¹

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ABSTRACT

This paper points out that small-scale farming in Barbados originated with the granting of land to slaves by plantation owners after emancipation in order to retain their services as labourers.

Attention is then drawn to the existence of a dichotomy within the agricultural sector, namely the plantation sub-sector and the small-farm sub-sector. Within the small-farm sub-sector it is shown qualitatively, that numerous 'farm types' exist.

The constraints facing small farmers are discussed, including size of holdings, low rainfall, low soil fertility, fragmentation, inadequate agricultural credit, marketing uncertainty, shortage of hired labour, the low social status of farming and high investment costs.

Given these constraints, the author outlines the crucial problems which a separate development policy must consider for the small farm sub-sector. These problems are: what crops should be recommended; what should be done about non-economic sized holdings; the role of the part-time farmer; ways of attracting young men into farming; and ways of getting unused lands back into cultivation.

HISTORICAL DEVELOPMENT OF SMALL-SCALE FARMING

Small-scale or peasant farming in Barbados originated in the cultivation by slaves of provision grounds on the plantations in the early seventeenth century. These grounds were generally on the poorest land of the plantation. After emancipation, in order to prevent the former slaves from moving off the plantation and leaving the labour force, the "located labour" system was introduced.²

¹The views expressed in this paper are those of the author alone and do not necessarily represent those of the Ministry of Agriculture in Barbados.

²The author wishes to express his thanks to all those who have assisted him with their useful suggestions as to the content of this paper. In particular he is especially indebted to Mr. Kenneth Ingersent, FAO Farm Management Adviser, and Dr. Lionel Smith, Soil Physicist for their invaluable assistance and guidance rendered in the preparation of this paper.

²The "Located Labour" system was abolished in 1937

Under this system, the plantation allotted the labourer a small piece of land, one-eighth to half an acre in extent, rent free or for a nominal rent, on condition that he continued to work for the plantation.

The former slaves were not encouraged to become peasant farmers. On the contrary, Shephard points out that "the policy of the British Government was to make it difficult for labourers to acquire small holdings in order that they would be compelled to work regularly for wages and thereby assist to maintain the staple industry, sugar".¹

It was not until 1897 that there was a major policy change. The Royal Commission of that year reported that "no reform affords so good a prospect for the permanent welfare in the future of the West Indies as the settlement of the labouring population on the land as small peasant proprietors; and in many places this is the only means by which the population can in future be supported".² The Commission went on to point out that; "it is not impossible for the two systems of large plantations and peasant holdings to exist side by side with mutual advantage", and they further indicated that "the existence of a mass of peasant proprietors among the population is a source of both economic and political strength".³

THE STRUCTURE OF THE AGRICULTURAL SECTOR
IN BARBADOS

There is a dichotomy within the agricultural sector in Barbados, between the plantation sub-sector on the one hand and the small-farming sub-sector on the other.

Plantation Sub-Sector

The definition of a plantation adopted for this paper is the one embodied in the Local Food Production (Defence) Control Order 1942. A plantation is a unit with ten or more acres of arable land. The plantation sub-sector consisting of about 210 predominantly large 'farms' (average size approximately 290 acres) controls over 80 per cent

¹Shepard, C.Y., *Peasant Agriculture in the Leeward and Windward Islands*, (Publishers not specified). 1945, p. 2.

²Report of the Royal Commission on the West Indies, London 1898, p. 116. H.M.S.O., Cmd. 8655.

³*Ibid.*, p. 117.

of the agricultural land (Tables 1 & 2). Ownership within the sub-sector is highly concentrated and management policy appears to be largely determined by an elite group of owners and plantation attorneys.

On plantations, sugar cane is by far the dominant crop with food crops occupying only 12 per cent of the arable acreage. Some livestock are reared on plantations. This sub-sector provides employment for the majority of the agricultural labour force of about 14,000 persons. Table 2 gives a summary of the labour force situation on plantations.

Small Holding Sub-Sector

By definition a small holding is an agricultural unit of less than 10 acres. This sub-sector consisting of at least 27,000 holdings occupies the remainder of the agricultural land not owned by the plantations (Table 1).

Management decisions on these small holdings are made by one of several persons depending on the type of ownership. Such persons could be either owner-operator, tenants, power of attorney or hired help.

Similarly, sugar cane is the dominant crop on small holdings. However, there is a greater diversification of crops and livestock on small farms. This sub-sector provides mainly part-time employment for a large number of persons including many who are also employed as plantation workers, especially during the cane harvest season (Table 3).

Table 3 shows that in 1961, some 16,733 or 60 per cent of the small holders indicated that their main occupation was non-agricultural. This could be used as an indicator of the minimum number of part-time farmers in this sub-sector.

A Further Classification of Farms

The author has attempted a qualitative classification of farm types found within the agricultural sector in Barbados (Figure 1). The 'farm type' depends on where the producer puts his emphasis. The 'farm types' defined below are not necessarily mutually exclusive. For example, a family farm may be run on commercial lines; a hobby farm may be marginal. The farm types are as follows:

1. A commercial farm - emphasis is on the production of farm products at a profit;
2. an experimental farm - emphasis is on new knowledge;
3. a demonstration farm - emphasis is on teaching and demonstration;

4. a family farm - emphasis is on 'status' and inheritance;
5. a subsistence farm - emphasis is on production for home use;
6. a retirement farm - emphasis is on an old age employment;
7. a hobby farm - emphasis is on psychic income rather than money;
8. a residential farm - emphasis is on a place to live;
9. a marginal farm - emphasis is on breaking-even;
10. a tenantry farm - emphasis is on job security;
11. a part-time farm - emphasis is on supplementary income.

The classification also provides for Government-owned and-operated farms. There are six Agricultural Experimental Farms operating approximately 80 acres. In addition there are some Government Schools where school gardens are in operation (Table 4). It should also be noted that during 1969 the Barbados Agricultural Development Corporation operated 8 plantations with some 2,000 arable acres.

Some Problems Facing Small Farmers in Barbados

The Barbadian small farmer during the past 100 years has made a significant contribution to national agricultural production. Today he is finding his efforts are yielding lower returns because of certain physical, economic and social constraints which he can no longer overcome. The author will attempt to indicate some of the constraints which now threaten small-scale farming in this competitive age.

Agricultural Constraints

1. Size of holding:

The average size of small holdings is less than 1 acre (Table 5). Many of these holdings especially those of less than 1 acre, have now become too small to generate adequate income for the full-time farmer and his family.

2. Soils:

It has been the misfortune of a majority of small-scale farmers to occupy lands on poor soils. As a result small farmers have been obtaining yields far below those of the plantations which are on better soils. Table 6 shows that the majority of farmers are on black soils and that the predominating soil texture is loam.

3. Rainfall:

Small farmers have not only inherited low performing soils, but are also concentrated in the low rainfall zone. From Table 7 it can be seen that the majority of plantations are found in the zone of high rainfall while almost two-thirds of the small holdings are situated in the low rainfall zone.

4. Fragmentation:

Besides having too small a farm unit, many small holdings are fragmented into more than one parcel of land. Such fragmentation contributes to management inefficiency. Table 8 shows the degree of fragmentation amongst these small holdings.

5. Agricultural credit:

(i) Commercial banks - The commercial banks make but few loans to farmers for carrying on the cultivation of small holdings or for making investments on their properties, or for buying agricultural equipment. The main features of the lending activities of commercial banks as far as agriculture is concerned are the restriction of credit (a) to short term loans (b) to some plantations and factories and (c) to the production and processing of sugar cane only. Their current rate of interest is 8 per cent per annum.

(ii) Sugar Industry Agricultural Bank - This was created by an Act of Parliament in 1904. The Bank was authorised to make loans for cultivation or management of sugar plantations and the management of sugar factories. Its purpose is clearly limited to sugar production. Nothing in the act prevents the Bank from lending money to small-scale farmers. However, in practice the Bank has made loans only to plantations. The current rate of interest is 6 per cent per annum.

(iii) The Agricultural Credit Bank - (formerly known as the Peasants Loan Bank) was established in 1936. Under the Agricultural Credit Bank Act 1961-15, the Bank can only lend to borrowers cultivating up to 25 acres of land. Loans are made to applicants:

- (a) for the purpose of carrying on the cultivation of sugar cane and grasslands;
- (b) to enable the owner of a holding to pay the balance of any money owing in respect to the purchase of his holding;
- (c) for the irrigation of holdings;
- (d) for the purchase and housing of livestock;
- (e) for acquiring a good and marketable title to a holding;

- (f) for such other purposes as are considered reasonably and necessary for increasing the productivity of holdings.

In practice, loans are not made for the cultivation of vegetables or root crops because of the difficulty of ensuring repayment of loans secured on these crops. The current rate of interest charged by the Agricultural Credit Bank is 3 per cent, except on Mortgage loans in which case it is 6 per cent per annum.

Table 9 gives the average size of loans made by the Agricultural Credit Bank. It can be seen that the number of loans made has decreased steadily from 768 in 1965-66 to 390 in 1968-69.

Table 10 gives the statistics of loans made according to purposes. The majority of loans made, some 97 per cent, are for cultivation of holdings, that is, sugar cane cultivation. Only 2 per cent of all loans were for livestock production or housing.

Table 11 gives the frequency of loans according to the size of holdings. The number of loan applications has decreased from 846 in 1965-66 to 538 in 1968-69. About 80 per cent of the loans made are to holders of land of less than 2 acres.

(iv) The Barbados Development Bank - This was established in April 1969. Its policy has been to lend to any development enterprise which is approved as technically and financially sound. In addition the undertaking should make a positive contribution to the economic well-being of Barbados by way of improving the Island's balance of payments position. This is accomplished through saving and/or earning foreign exchange, reducing unemployment, providing training for the labour force and utilization of domestic products e.g. processing of fruit, vegetables, poultry and fish or other raw materials. It should promote and encourage a local entrepreneurial and managerial class while reinvesting some of the profits locally. Thus we see that the Development Bank will make loans to the Agricultural Sector, provided that the enterprise can be shown to be on a large scale taking as much capital as an industrial project. During the 9 months of the Bank's operation in 1969, it made one loan totalling \$60,000 for an agricultural enterprise. The current rate of interest is 8 per cent per annum.

(v) Individuals and corporations extending credit to farmers - The individuals and corporations who extend credit to farmers are numerous and constitute an important source of credit to small farmers. Credit from this source is not usually for production, but rather for consumption. Most of these lenders either sell goods on credit to the farmer or seek to secure supplies by advancing credit for the population of crops or livestock. The principal lenders in this category are:- sugar

factories, plantation owners, dealers in agricultural products, supplies and equipment, landlords, relatives, friends and shopkeepers. Considerable reliance has been placed on this source of credit by many small farmers in the past. However, these loans are short term and can be recalled without notice. This source of credit need not be a constraint, rather it functions to prevent further deterioration of some small farms.

6. High Investment Costs

A small farmer in Barbados who is currently a sugar producer and who wishes to change from sugar cane, to say, poultry, pig or vegetable production is deterred by the high capital cost of these alternative enterprises.

(i) Poultry - A survey of the poultry industry in Barbados¹ in 1968 reveals that the average capital invested on 14 commercial poultry farms was some \$37,000 per farm excluding land (Table 12). These farms were for the most part producers of layers and broilers. The average size of the laying flock was 3,590 birds and the average number of broilers produced was approximately 39,000. The same survey showed that the average capital invested in 2 hatcheries was \$68,771 per farm excluding land (Table 13).

(ii) Pigs - It is estimated² that if a small farmer wished to become a commercial pig producer, he would need to invest about \$10,300 excluding land (Table 14).

(iii) Vegetables (with irrigation) - It is estimated³ that if a small farmer wished to produce 4 acres of vegetables under irrigation by overhead sprinkler system, he would need to invest approximately \$5,950 excluding land (Table 15).

7. Marketing:

Small farmers who only grow sugar cane have no marketing problems, because sugar factories purchase all the canes produced. However, vegetable, root crop and livestock producers experience marketing difficulties. Very few small farmers have any contractual arrangement for the disposal of their produce. All market garden produce is sold on the open market. Producers invariably use more than one outlet for their produce. Among the outlets used are:- the hawkers, supermarkets, hotels, Barbados Marketing Corporation and the other wholesalers or direct to the retail customer.

¹Brathwaite, A.H., *The Poultry Industry in Barbados, An Economic Survey*. Ministry of Agriculture, Science and Technology, Barbados, 1969.

²Estimates made by Jeffers J.P.W., Agricultural Engineer and Nurse J.O.J., Agricultural Economist. Ministry of Agriculture, Science and Technology, Barbados, 1969.

³Estimates made by Jeffers J.P.W., Nurse J.O.J., *Op cit*.

The hawker is by far the most popular market outlet used by the small farmer. These hawkers (mainly women) travel to the fields and make their purchases at the farm gate. In some cases the hawker does the actual harvesting or picking of the crop. There is no standard grading system in use. Root crops are sold by the 'hole'¹ or by weight; vegetables are sold either by the pound or by the 'piece'² e.g. okras 1 cent a 'piece', or by the 'head' e.g. lettuce 5 cents a 'head'. Fruit is generally sold by the 'piece' e.g. mangoes 3 cents a 'piece' or by the 'number' e.g. ginip 6 for 1 cent. Live-stock are sold by weight or by 'sight'. When sold by 'sight', the animal is not weighed, rather the buyer (butcher) looks at the animal and estimates its value. The hawkers play a useful role in the marketing structure of Barbados and although they pay cash for all transactions, they do not normally enter into any contractual arrangements with the producer. However, the commercial small farmer needs marketing institutions which will offer guaranteed minimum prices,³ which will contract to purchase the bulk of their produce, and arrange for the regular collection of fresh produce. These institutions must be adequately equipped with cold storage or refrigerated facilities.

Commercial small farmers can no longer depend on the uncertainties of marketing their produce on the open market. Table 16 gives the number of licenced hawkers from 1965-69.

8. Labour availability:

Many small farms in Barbados are less than fully cultivated. A survey of 54 small producers of vegetables revealed that the average cropping index (total crop area dividend by total arable area and multiplied by 100) on these farms was 90.⁴ The main reason for this undercultivation is the unavailability of hired help. It has been estimated that only about 14 per cent⁵ of Barbadian small-scale farmers work full-time on their farms. The remaining 86 per cent are part-time farmers who work in other occupations. Consequently many small-scale farmers need hired labour. The seasonal peaks in labour on the small holdings coincide with those of the plantations due to the dominance of sugar cane production on both. Hence most small farmers must compete for this labour with plantation owners who can usually offer more work over a longer period as well as a bonus at the end of the year. Henshall reports that "the

¹With 5' x 5' spacing of crops there are 1,742 such 'holes' per acre.

²A piece means per item.

³See Appendix 1.

⁴One may note that an index of 90 would not be regarded as under cultivation in other territories (eds. note).

⁵Henshall, Janet O., *The Spatial Structure of Barbadian Peasant Agriculture*, Unpublished M.Sc. Thesis, McGill Univ., 1964.

difficulty of obtaining labour and its high cost were given as major reasons for the failure to increase vegetable production on small holdings".¹

9. Attitudes to Farming:

Agriculture in Barbados is no longer attracting young people into its labour force. The average age of the small-scale farmer is 58² and if he is asked whether one of his children is interested in carrying on with farming when he retires, the answer is almost invariably in the negative. In fact, the farmer himself admits that he would not like to see his son follow in his footsteps and be a 'slave to the land'. Thus to the youth of today, small farming is not the occupation of choice, but only a last resort.

The present Prime Minister of Barbados has said, with regard to attitudes of the Barbadian workers, that there is a "voluntary displacement of people who would prefer perhaps not to starve but not to work at all, rather than undertake the arduous job of cutting sugar cane".³

Such attitudes are due in part to alternative types of work which rank higher in "social status". For example, many of the young people prefer to work in hotels, restaurants, construction or driving taxis. The story is told of a young skilful gardener at a large hotel who was offered the job of head gardener, but refused it in preference to a job as bell-boy (for lower wages) at the same hotel. This is an example of the attitude towards farm work by young Barbadians.

THE CONTRIBUTION OF SMALL FARMERS

There is a dire shortage of production information on small farming in Barbados. This shortage is due to the fact that (i) very few small farmers kept records of any sort, and (ii) there is no machinery set up to collect any information as it becomes available. The system of food crop inspection which takes place on plantations does not apply to small holdings. Plantations are required by law to plant and cultivate food crops in a total of not less than 12 per cent of their total arable acreage. To ensure that the law is adhered to, there are 3 Food Crop Inspectors report on the actual acreage planted in food crops annually.

However, the Ministry of Agriculture through its extension officers, commodity survey and

¹Ibid.

²Ingersent, K.A., Brathwaite, A.H., & Nurse, J.O.J., *Vegetable Production in Barbados: An Economic Survey*. Ministry of Agriculture, Science & Technology, Barbados, 1969.

³Barrow E.W., "A Role for Canada in the West Indies". An article slightly revised of an address at a conference on the W.I. in Fredericton, N.B., October 1963. *International Journal Canadian Institute of International Affairs*, Toronto, Vol. XIX, No. 2, Spring 1964, p. 179

agricultural censuses has been able to make estimates of production in the small farm sub-sector. The author with the aid of the very limited information available will try to show how much small-scale farmers have been contributing to total agricultural production.

Arable cropping by size of holding for selected crops, is shown in Table 17. It can be seen that in 1961, small-scale farmers planted 51 per cent of the total acreage of maize and 40 per cent of the acreage under pigeon peas. Plantations dominate the acreages of sugar cane i.e. 85 per cent; sweet potatoes 77 per cent; yams 89 per cent and eddoes 78 per cent.

Table 18 shows that in 1961 the number of livestock on small holdings, in all categories except pigs exceeded the number on plantations.

Table 19 shows the total sugar cane delivered to factories, 1960-69. It is clear that small farmers contribute a meagre 16 per cent of the total production of canes.

The estimated production of vegetables is given in Table 20. The figures clearly show the significant contribution of the small-scale farmer to vegetable production. With the exception of tomatoes which is produced mainly by the plantations, small-scale producers account for over 70 per cent of all vegetables. Carrot, string bean and cabbage appear to be the favourite crops on small holdings.

Future Planning for Small Farming Development in Barbados

Having looked at the structure of the agricultural sector and the problems facing the small farming sub-sector, it is now appropriate to consider future agricultural development policies which will be required to stimulate small-scale agriculture more successfully than in the past.

The decision must be made whether there should be one development plan for the agricultural sector, embracing both sub-sectors, or whether there should be separate plans for each sub-sector.

Past Policies

In the past, the policy in Barbados has been to have one agricultural development plan embracing both sub-sectors. This approach has not been markedly successful because it has failed at the implementation stage. One defect in past agricultural development plans is that they were formulated without adequate reference to the environment within which farmers (and, in particular, small-scale farmers) make their management decisions. This paper has highlighted the constraints of the environment under which small-scale farmers make their management decisions. The

author firmly believes that the time has come to formulate separate agricultural development plans which recognize the environmental problems of the farmers within each sub-sector.

Disadvantage of Separate Policies

(i) One of the arguments which might be put forward against having separate policies for large and small-scale farms is that this would tend to perpetuate the dichotomy between the different systems and hence slow down the evolution towards the optimum farming system. Although this is a real possibility, one must first define the objectives of introducing separate policies.

The author suggests that (in the case of Barbados) the short-run objective is not to remove the dichotomy, but rather to make the present small farming sub-sector more viable and efficient. An attempt to remove the dichotomy can result in the creation of a third sub-sector consisting of intermediate size farms. These intermediate size farms (of about 40-80 acres) should be a long-run objective rather than a short-run aim, because much more research is needed on the optimum size of holdings for Barbados.

Furthermore, because of the desire to retain economic, social and political stability in Barbados, it is essential that the probable consequences of removing the existing dichotomy within the agricultural sector, in the short-run, be examined thoroughly.

(ii) The introduction of separate policies may result in an increased cost to Government in the form of extra extension staff, increase in agricultural credit, increase in incentive schemes and an increase in administrative cost. However, if such cost is regarded as part of the cost paid for agricultural development, it is justifiable.

Priorities

The classification of small farms (Figure 1) indicates that farmers are actuated by varying objectives. Given the limited resources at the disposal of the Ministry of Agriculture, a decision will have to be taken regarding which 'farm type' should be given the priority of the Extension Service. In the past an attempt has been made to accommodate the interest of all farms when policies are formulated. It would be advisable for planners to concentrate on the 'commercial' farms, but whenever possible the non-commercial farmers should be encouraged through incentives to become 'commercial' operators.

OTHER AREAS FOR IMPROVEMENT

Agricultural Credit:

In the past the Agricultural Bank has made loans almost exclusively for the production of sugar

cane. Few loans have been made to food crop producers or to vegetable growers contrary to the requirements of the Government's agricultural diversification policy. The dominant characteristic of loans made was that emphasis was mainly on the value of collateral offered by the applicant. The emphasis should be shifted away from the value of security offered because the ability of a borrower to farm efficiently and, therefore, repay his loan is generally independent of the collateral he has to offer. Something other than the usual criterion of the existence and value of the collateral offered has to be considered, for example, the general creditworthiness of the borrower based on his productive potential.

Loans for Food Crops:

There is no foolproof method of safe-guarding loans advanced for production of food crops and vegetables, given the present system of marketing in Barbados. To introduce such loans implies having:

(i) A mechanism to control the marketing of the borrowers' produce. The author believes such control would be feasible if all recipients of loans for food crops and vegetable production were obliged to market all their produce through the Barbados Marketing Corporation or similar marketing institution. Of course, this implies a reciprocal obligation. The Marketing Corporation would be obliged to accept all produce sent in by borrowers as long as it met the minimum grade standard. The very fact that the Agricultural Credit Bank and the Barbados Marketing Corporation are parastatal bodies would make it easier for the Chief Agricultural Planning Officer to formulate a workable mechanism.

(ii) An adequate staff of 'supervisors', that is to say, extension service officers to process loans and advise farmers from the technical standpoint on the formulation of their farm plan. The Agricultural Credit Bank and Marketing Corporation already have a small field staff. These along with the Ministry of Agriculture's established extension staff could operate a scheme of supervised credit.

Farmer 'Representation':

Farmers within the plantation sub-sector with technical problems may consult one of two sources, the Barbados Sugar Producers' Association or the Extension Services of the Ministry of Agriculture. The Sugar Producers' Association membership covers 90 per cent of the plantation owners and 100 per cent of the sugar factories. It maintains its Agronomy Research Unit and more recently has added a Crop Diversification Unit. The staff of these units maintain a close liaison with their opposite members at the Ministry of Agriculture.

The small-scale farmer with a technical problem may consult the Extension Services of the

Ministry of Agriculture. The Ministry, with minor exceptions, has been concerned with advising small-scale producers only; it being assumed in the past that sugar plantations did not need the advice of extension officers. Hence the degrees of 'representation' given to small farmers, with technical problems, is directly related to the strength and adequacy of the Ministry's Extension staff. Past policy, not only in Barbados but in most other under-developed countries, was such that the least trained officers were in the Extension Services.

Outline of a Separate Development Policy for Small Farmers

The author advocates the formulation of a separate set of policies if the small sub-sector is to become more efficient and viable. Such a policy will have to consider the following problems.

(i) What crops should be recommended to small-scale farmers - It has been found that vegetables give a higher gross margin per arable acre than sugar cane amongst small-scale producers.¹ Hence, small-scale farmers should be encouraged to grow more vegetables. Furthermore, because of their small acreages, small-scale farmers are able to apply more efficiently the micro-management techniques required for vegetable production.

Vegetables not only give higher gross margins, but the variable cost of production associated with them are also higher. Many of them are more perishable than sugar cane and hence are high risk commodities to market. It is imperative, therefore, that the policy provides for more credit and better marketing facilities for vegetable growers. In addition, an adequate extension service must be provided to keep the small-scale farmers acquainted with modern management techniques.

Livestock is also an important enterprise amongst small-scale farmers and policies designed to increase livestock in this sub-sector deserve careful consideration.

(ii) What should be done about the non-economic sized holdings within the sub-sector?

Serious thought must be given to the feasibility of amalgamating the smallest holdings. Also, on farms which are too small to generate adequate incomes for full-time farmers, ways of encouraging such farmers to take part-time jobs must be considered.

Besides formulating an economic policy for viable farms, consideration must be given to formulating a social policy for the occupiers of non-viable holdings where these cannot be amalgamated into economic-sized units.

(iii) The role of the part-time farmer versus the full-time farmer - Farmers should be judged on their production rather than on the amount of time spent on the farm. Planners might find that it is worthwhile to give more serious consideration than in the past to the scope for encouraging part-time farmers to increase their production. However, where possible, the policy should provide incentives for farmers on viable sized holdings to become full-time operators.

(iv) Ways and means of attracting young men into farming - During the past 5 to 8 years many plantations sold part of their lands and in some cases entire plantations were fragmented and sold in small units. The Government should consider purchasing all plantations which are for sale and segment them into small economic size units and make these new farmers available, with incentives, to young men willing to enter farming or to those who have recently started farming, but are handicapped by lack of capital.

In addition, if grants or special incentives were offered to young men who entered farming and stayed in production for say 2 consecutive years, more young farmers might enter agriculture. Not only must the policy attract young men, but it must provide them with adequate extension advice, more small farm demonstration units and better credit facilities.

(v) How to get unused agricultural lands back into production - The objective of some farmers is not to cultivate land, but rather to hold it for speculative reasons. There should be a special tax on unutilised agricultural land. The owners of such lands should also be required to state why such lands are not under cultivation. If the owner satisfies the Government that every effort has been made to cultivate the land, and that there still exists certain constraints which cannot be solved in the short-run, then the Government should be empowered to waive the tax.

(vi) Research programmes which take into consideration the restraints and limitations of the small farmer.

More research is needed to determine the best combination of farm enterprises suited to the small units now operated. More consideration must be given to 'on the farm demonstrations' among small-scale producers. If we accept the fact that for social reasons, these small units must remain in production, then researchers must find out how best to utilize the limited resources available in the small farm sub-sector.

Finally, to those who maintain that small farmers in Barbados are an anachronism, and that since they contribute so little to aggregate agricultural production, the Ministry of Agriculture

¹Ingersent, K.A., Brathwaite, A.H., & Nurse, J.O.J., *Op. cit.*

should concentrate its limited resources on larger farmers (i.e. the plantations), the author of this paper contends that small-scale farmers in the past have failed to contribute much more because there was no policy to induce them to produce more. As a result the small farm sub-sector is characterised by low investment, low production, low consumption and low income. In short, the small farm sub-sector has been a neglected economic group.

In order to stimulate development within the small farm sub-sector there must be definite economic policies for viable small holdings in Barbados.

In formulating separate policies it is necessary to have trained planners and the administrative machinery to implement the plans.

(vii) Planners - To improve the quality of Agricultural Planning in Barbados and in particular, to ensure that agricultural development plans are

capable of being implemented (especially in the small-farm sector) it is imperative that an appointment be made of a Chief Agricultural Planning Officer. This officer who should have the appropriate technical qualifications, would advise on all aspects of agricultural policy and development and co-ordinate all agricultural planning activities regardless of whether they were initiated by the Ministry of Agriculture, another government department or by one of the parastatal bodies.

(viii) Administrative machinery - Because of the uncertainties of agricultural production, the decision-making process at all levels must be (a) flexible and (b) capable of enabling decisions to be reached speedily. The present administrative system usually does not allow for speedy decision-making. The Chief Agricultural Planning Officer should be provided with appropriate authority to make certain decisions which would normally be delayed if passed through the ordinary administrative channels.

FIGURE 1. THE STRUCTURE OF THE AGRICULTURAL SECTOR IN BARBADOS

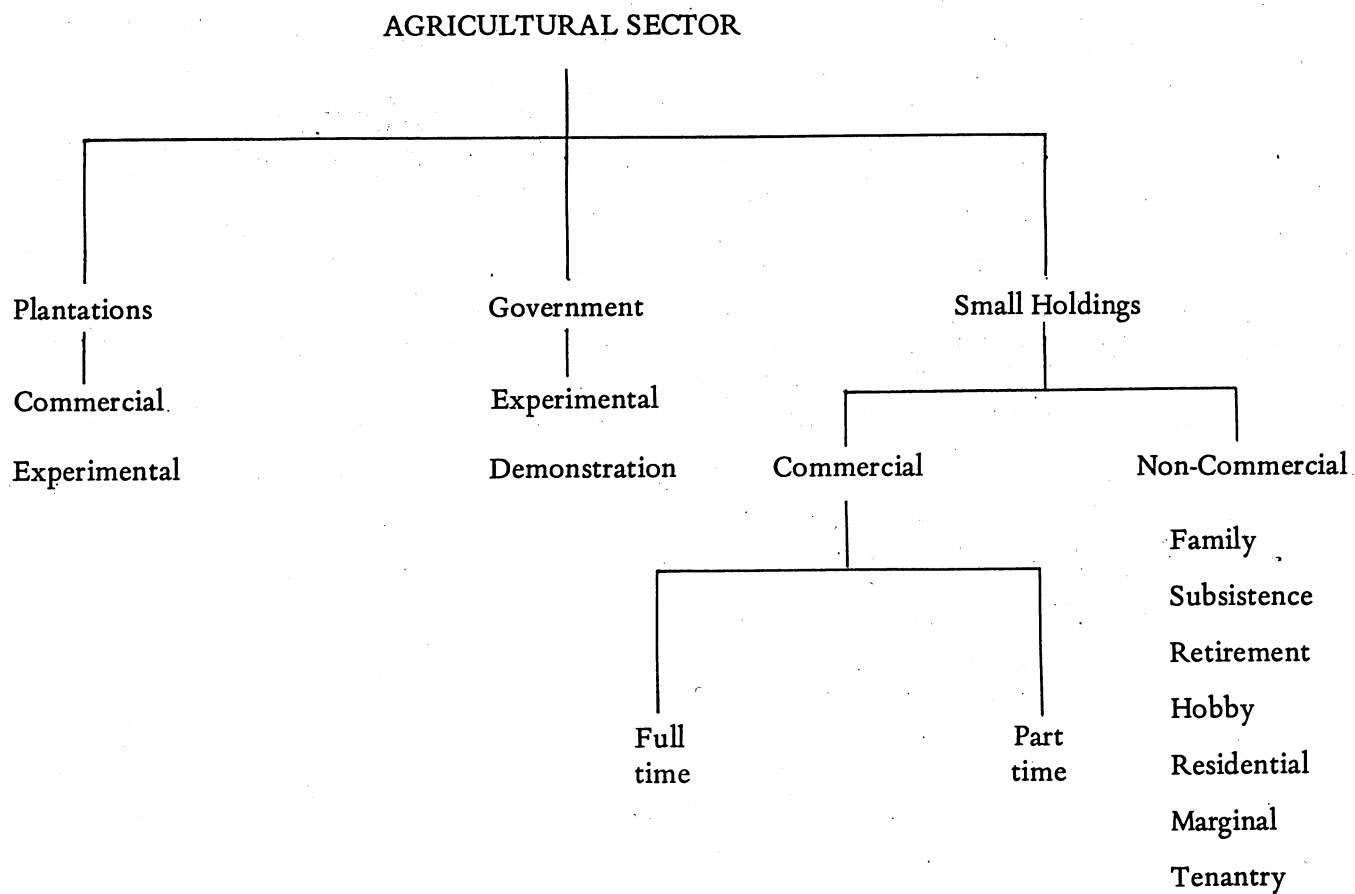


TABLE 1. NUMBER AND AREA OF HOLDINGS — 1961

Holding Size	Number	Area (acs.)	Percentage
Less than 10 acres	27,626	12,548	15
10 acres and over	286	71,910	85
TOTALS	27,912	84,458	100

Source: West Indies Census of Agriculture — 1961.

TABLE 2. NUMBER OF PLANTATIONS AND WORKERS EMPLOYED
IN APRIL (CROP-SEASON) AND OCTOBER (OUT-OF-CROP SEASON)

Year	Number of Plantations	Total Number of Workers	
		April	October
1960	211	20,052	14,743
1961	211	18,609	11,038
1962	210	17,998	11,910
1963	210	18,577	12,779
1964	210	17,032	9,360
1965	210	15,977	11,492
1966	210	15,956	10,854
1967	210	16,619	10,013
1968	208	15,426	10,139

Source: Annual Reports of Department of Labour, Barbados.

TABLE 3. NUMBER OF HOLDINGS BY OCCUPATION OF HOLDER — 1961

Occupation	Number of Holdings	Percentage of Total
Agricultural	10,893	40
Non-Agricultural	16,733	60
TOTALS	27,626	100

Source: West Indies Census of Agriculture — 1961.

TABLE 4. NUMBER AND SIZE OF SCHOOL GARDENS

	1968	1969
Number	35	33
Arable Area (acs.)	8.096	7.702
Average Area (acs.)	0.231	0.233

Source: Ministry of Agriculture, Science and Technology. Barbados.

TABLE 5. DISTRIBUTION OF HOLDINGS BY SIZE - 1961

Size Groups (acs.)	Number	Total Acres	Average Size
Holdings without land	9,109	—	—
Less than 1 acre	14,643	5,160	352
1 to less than 5 acs.	3,675	6,126	1.666
5 to less than 10 acs.	199	1,262	6,342
TOTALS	18,517	12,548	.677

Source: West Indies Census of Agriculture 1961.

TABLE 6. DISTRIBUTION OF 54 VEGETABLE SMALL HOLDINGS
BY SOIL, COLOUR AND TEXTURE

Soil Texture	Soil Colour			Number of holdings
	Red	Black	Other	Total
Sand	—	14	—	14
Loam	2	26	1	29
Clay	1	9	1	11
TOTALS	3	49	2	54

Source: Ingersent K.A. Braithwaite A.H. and Nurse J.O.J. *Vegetable Production In Barbados: An Economic Survey*. Ministry of Agriculture, Science and Technology. Barbados. 1969

TABLE 7. THE DISTRIBUTION OF PLANTATIONS AND SMALL HOLDINGS
IN BARBADOS WITH RELATION TO RAINFALL

Rainfall Zone	Percentage of Plantations	Percentage of Small Holdings
Low Rainfall 44" – 57"	19.53	60.34
Intermediate Rainfall 58" – 65"	33.58	22.41
High Rainfall 65" – 85"	42.48	17.44

Source: Henshell J.O. *The Spatial Structure of Barbadian Peasant Agriculture*, unpublished MSc. Thesis Mc. Gill University, 1964.

TABLE 8. DEGREE OF FRAGMENTATION ON SMALL HOLDINGS – 1961

Size of Holding	Number of Holdings	Number of Parcels	Average Number of Parcels
0 to less than 1	14,643	16,053	1.22
1 to less than 5	3,675	5,985	1.10
5 to less than 10	199	443	1.63
TOTALS	18,517	22,485	1.21

Source: West Indies Census of Agriculture 1961.

TABLE 9. AVERAGE SIZE OF LOANS MADE BY AGRICULTURAL CREDIT BANK

Year	Number	Amount \$	Average Amount \$
1965–66	768	106,344	138
1966–67	731	101,096	138
1967–68	571	84,902	148
1968–69	390	59,813	153

Source: Agricultural Credit Bank, Barbados.

TABLE 10. LOANS MADE BY THE AGRICULTURAL CREDIT BANK
CLASSIFIED ACCORDING TO TENURE, STATUS OF BORROWER AND PURPOSE OF LOAN

Year	OWNERS				TENANTS		Total
	Culti- vation	Livestock	Mortgages	Irrigation	Culti- vation	Livestock	
1965-66	392	16	1	5	388	4	806
1966-67	364	3	6	—	343	1	717
1967-68	325	10	10	2	255	8	610
1968-69	204	6	1	1	165	2	379

Source: Agricultural Credit Bank, Barbados.

TABLE 11. FREQUENCY OF LOANS MADE BY AGRICULTURAL CREDIT
BANK ACCORDING TO SIZE OF HOLDINGS

	1965-66	1966-67	1967-68	1968-69
Number of loan applications	838	747	573	538
Number of loans refused	78	16	19	158
Loan applications for:—				
Holdings under 1 acre	305	245	176	146
Holdings between 1 and 2 acres	384	348	255	260
Holdings between 3 and 5 acres	85	83	83	91
Holdings between 6 and 10 acres	32	44	37	28
Holdings between 11 and 25 acres	32	27	22	13

Source: Agricultural Credit Bank, Barbados.

TABLE 12. CAPITAL INVESTED IN LAND, BUILDINGS AND EQUIPMENT
AT ESTIMATED DEPRECIATED VALUE ON 14 POULTRY FARMS IN 1968

Items	E.C. \$ Investment
Land	421,650
Buildings	256,129
Equipment (including machinery)	259,792
Total (excluding land)	515,921
Total (including land)	937,571

Source: Braithwaite A.H. *The Poultry in Barbados. An Economic Survey.*
Ministry of Agriculture, Science and Technology. Barbados, 1969.

TABLE 13. CAPITAL INVESTED IN LAND, BUILDINGS AND EQUIPMENT
AT ESTIMATED DEPRECIATION VALUE ON 2 HATCHERIES IN 1968

Items	E.C. \$ Investment
Land	80,000
Buildings	82,276
Equipment (including machinery)	55,266
Total (excluding land)	137,542
Total (including land)	217,542

Source: As table 12.

TABLE 14. CAPITAL INVESTMENT IN LAND, BUILDINGS AND EQUIPMENT
ESTIMATED AT PRESENT VALUES FOR A 20 — 40 HEAD PIG FARM. 1969.

Items	E.C. \$ Investment
Land	4,000
Buildings	7,000
Equipment	
(including machinery	3,300
Total (excluding land)	10,300
Total (including land)	14,300

Source: Estimates made by Jeffers J.P.W., Agricultural Engineer, and Nurse, J.O.J., Agricultural Economist, Ministry of Agriculture, Science and Technology. Barbados, 1969.

TABLE 15. CAPITAL INVESTMENT IN LAND AND EQUIPMENT
ESTIMATED AT PRESENT VALUES FOR A 4—ACRE VEGETABLE FARM. 1969

Items	E.C. \$ Investment
Land	16,000
Pump	3,000
Equipment	2,950
(including machinery)	
Total (excluding land)	5,950
Total (including land)	21,950

Source: As table 14.

TABLE 16. NUMBER OF LICENCED HAWKERS*

Year	Number
1965	4,326
1966	4,242
1967	4,286
1968	4,079
1969	3,589

Source: Barbados Government, Treasury Department, 1969.

TABLE 17. ARABLE CROPPING BY SIZE OF HOLDING — 1961

CROP	Less than 10 acs.		10 acres and more		Total acres planted	Small holding acreage as percentage of totals acs.
	No. of holdings	Total acres	No. of holdings	Total acres		
Sugar Cane	13,386	6,950	266	37,828	44,778	16
Maize	6,477	1,325	188	1,270	2,595	51
Pigeon Peas	6,528	169	199	261	430	40
Sweet Potatoes	4,918	867	219	2,914	3,781	23
Yams	2,636	281	222	2,266	2,547	11
Eddoes	1,576	123	154	423	546	22

Source: Extracted and prepared from 1961 W.I. Census of Agriculture.

TABLE 18. DISTRIBUTION OF LIVESTOCK BY SIZE OF HOLDING — 1961*

Livestock	Less than 10 acres			10 acres or more		
	Total	Males ¹	Females	Total	Males ¹	Females
Cattle	6,286	456	5,930	5,462	341	5,121
Pigs	9,780	5,352	4,428	9,962	9,442	520
Chicken (Poultry)	130,725	65,447	65,278 ²	92,942	41,212	51,730
Sheep	13,046	6,174	7,872	9,474	8,762	712
Goats	4,245	1,341	3,902	3,211	1,909	1,302

Source: Extracted and prepared from 1961 W.I. Census of Agriculture.

¹Males and all other animals excluding females.

²Hens and pullets.

TABLE 19. SUGAR CANE DELIVERED TO FACTORIES (000 TONS)

Year	Plantations	Small Holdings	Total	Small holdings as percentage of total
1960	1167.1	209.8	1,376.9	15.2
1961	1160.1	217.9	1,378.0	15.8
1962	1216.4	218.9	1,435.3	15.2
1963	1384.8	296.6	1,681.4	17.6
1964	1217.2	259.0	1,476.2	17.5
Average '60'–64	1229.1	240.4	1,469.5	16.3
1965	1435.9	295.4	1,731.1	17.0
1966	1296.4	263.0	1,559.4	16.8
1967	1519.4	306.5	1,825.9	16.7
1968	1151.4	217.2	1,368.6	15.8
1969	1079.9	184.1	1,264.0	14.6
Average '65'–69	1296.6	253.2	1,549.8	16.3

Source: Ministry of Agriculture, Science and Technology. Barbados.

TABLE 20. ESTIMATED PRODUCTION FROM VEGETABLES ON PLANTATIONS AND SMALL HOLDINGS 1968*

Crop	Estimated Acreage			Estimated Production (000) Lbs.			Production of S as percentage of T
	P	S	T	P	S	T	
Tomatoes	123	35	158	551	161	712	23
Cucumbers	33	89	122	148	404	552	73
Cabbage	30	206	236	134	936	1070	87
Irish Potatoes	24	—	24	161	—	161	—
String Beans	22	191	213	99	870	969	89
Carrots	21	231	252	94	1052	1146	91
Other Vegetables	47	748	795	211	3394	3605	94
TOTALS	300	1500	1800	1398	6817	8215	83

P = Plantation S = Small holder T = Total producers

*Sources: Ministry of Agriculture Survey of Vegetable Production 1967–68. Food Crop Inspectors Reports (unpublished). Current Estimates of Agriculture, Barbados, 1965–66. (British Development Division).

APPENDIX I

Minimum Guaranteed Prices for Contracted Produce

The Barbados Marketing Corporation is offering for contracted produce for the period February 1970 to April 1970, the following minimum guaranteed prices for grade I vegetables.

Vegetable	Minimum Guaranteed Price			
Bananas	5 cents per lb.			
Carrots	20	"	"	"
Beets	18	"	"	"
Cucumbers	8	"	"	"
Cabbage	20	"	"	"
Zuccuni Squash	20	"	"	"
Yam (local use)	6	"	"	"
Plantains	12	"	"	"
Tomatoes	30	"	"	"
Onions	8	"	"	"
Pumpkins	6	"	"	"
Beans	15	"	"	"
Cauliflower	20	"	"	"
Sweet Potatoes (local use)	6	"	"	"