CROP PRODUCTION FOR FOOD IN ANTIGUA

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In Antigua, as in nearly every country of the world, much rhetoric is directed at emphasizing the importance of local production of food. It is realized at the same time that, regardless of the amount of effort in this connection, the total food needs of the state cannot be supplied without recourse to bringing in some items from outside. The reasons are not difficult to understand when cognisance is taken of the multiplicity of food components essential for satisfactory nutrition. In addition, because of considerable seasonal variation in weather and other conditions of environment, the level of production on the domestic scene fluctuates with time of year to a greater extent than does the basic demand with consequent alternation between periods of abundance, even glut, and periods of scarcity in relation to the consuming population; importation of food provides one solution to this problem. As well, in well-intentioned endeavour to cater to the tastes and preferences (real in instances but also imagined to an appreciable extent) of visitors and tourists, resort is made to importation of exotic food items in substantial quantities.

The Food Trade

Although imports predominate in Antigua's food trade, it is encouraging to note that there are exports also; Tables 1 and 2 compiled from data supplied by the Department of Statistics give relevant figures for the year 1974 and January to June, 1975. It may reasonably be presumed that increasing production of the items listed in Table 2 should aid in reducing the colossal adverse trade balance by increasing the volume of exports; possibly other items which are not at present in amounts exceeding domestic demand may profitably be added to the list in time. Comparison of the food exports in 1974 and 1975 shows widening of the range within a year and further expansion in 1976 was evident from figures supplied by the Central Marketing Commission and presented in Table 3. There is also reason to believe that desirable 'import substitution', so much talked about in many quarters these days, will play a part in providing a fillip to domestic food crop production. Factors which influence growing the relevant crops, therefore, merit careful consideration at this time preparatory to intensifying economic exploitation of the potential they show.

Factors Influencing Crop Production

It is generally accepted that crop production anywhere may be subject to constraints under the following heads - physical, biological and politico-economic. Antigua provides no exception; in both selection and management of the crops produced the effects of these are clearly noticeable. Improvements in existing production practices may bring both quantitative and qualitative advantages.

Table 1. Food Imports

Item	Jan. - Dec. 1974		Jan. - June 1975	
	Quantity (lb.)	Value (EC$)	Quantity (lb.)	Value (EC$)
Live animals	29,515	22,467	9,575	15,201
Meat and meat preparations	2,712,534	4,173,589	823,330	1,379,979
Dairy products and honey	2,703,256	1,983,598	809,668	937,892
Eggs (doz.)	(304,272)	553,318	(32,550)	88,768
Fish and fish preparations	1,181,412	1,626,963	631,060	982,004
Cereal preparations	3,024,545	5,276,178	3,915,893	1,787,868
Fruit and fruit preparations	1,245,021	769,783	403,635	413,487
Nuts	150,197	223,115	20,647	50,166
Vegetable and vegetable preparations	3,113,243	1,296,869	950,775	451,524
Sugar and sugar preparations	8,796,207	2,675,503	1,496,524	1,667,045
Coffee, Cocoa and Tea preparations	316,017	687,859	143,636	326,381
Spices	46,995	83,582	19,599	42,854
Livestock feed	3,229,166	900,123	36,075	132,753
Edible oils and fats	657,333	661,359	332,344	374,418
Other food preparations		889,901		408,232
Non-alcholic beverages (gal.)	(58,575)	225,917	(22,786)	127,837
Alcholic beverages (")	(254,597)	2,626,889	(117,450)	1,365,267
Total		23,677,013		10,551,676

Table 2. Food Exports

Item	Jan. - Dec. 1974		Jan. - June 1975	
	Quantity (lb.)	Value (EC$)	Quantity (lb.)	Value (EC$)
Pineapple	75	38	754	685
Fresh fruit			270	63
Onion	n.a.	167	11,500	4,600
Pumpkin	3,000	775	8,900	2,235
Tomato	-	-	920	552
Sweet potato	61,780	21,824	31,086	10,438
Cucumber			320	100
Other vegetables	n.a.	1,578	4,060	1,637
Food preparations	-	-		103
Alcholic beverages (gal.)	(93,730)	772,378	(52,406)	480,877
Live animals	35,160	34,207		
Eggs (doz.)	(70)	200		
Fish & Fish preparations	125,092	125,932		
Total		957,099		501,290

Note: ( ) Quality referred to is in a measure other than pounds.

Table 3. Food Exports in 1976

Item	Quantity (lb.)	Value (EC$)
Sweet potato	85,350	42,640.40
Yam	1,390	649.50
Carrot	6,510	2,836.25
Tomato	23,910	14,097.50
Cucurbits	28,395	8,602.20
Onion	1,350	675.00
Other vegetables	17,735	8,323.92
Pineapple	8,925	4,372.20
Soursop	280	233.70
Mango	280	154.80
Other fruits	8,435	1,817.10
Total	182,560	84,382.67

Physical

The factors of climate and soil, falling under this head, largely determine the crops which it may be possible to grow. Although temperatures throughout the year may be favourable for plant growth, natural soil moisture is usually limiting for the greater part; supplementation with irrigation is normally required for continuous cropping.

The amount of mean annual rainfall is variable and the stated average of approximately 44 inches is not highly meaningful in itself as a maximum of 71.54 and a minimum of 25.51 are on record; in 1976 the amount was 36.78 inches, and two years previously 52.33 inches. The distribution pattern appears consistent with a rainy season of four months from August to November, when nearly 50 per cent of the total precipitation occurs, and a pronounced dry season from January to April when there is less than 20 per cent of the total. It is understandable, then, that the main growing season should be in the last four months of the year and farmers' preference should be for those crops which can complete the planting/harvesting cycle in that period; crops remaining in the ground for longer must be capable of withstanding drought if they are to be grown under natural rainfall. Prevailing winds blow continuously from the eastern quarter and heighten the effects of lack of rain during January to May; to combat these it is essential to provide windbreaks and shelterbelts in most locations.

The soils of Antigua can conveniently be divided into:-

(a) calcareous clays of the limestone district, occurring in the north-east section of the island; and

(b) siliceous clays of the central plain and south-western volcanic district.

They nearly all possess poor internal drainage but with appropriate cultural practices can be made to give reasonable yields of rootcrops, vegetables and fruits where depth of soil is adequate in the valleys and leeward slopes. Limits to crop selection are imposed by soil reaction which is alkaline in the limestone area and neutral to slightly acid in the others.

Biological

There does not occur in Antigua to the same extent as in the wetter islands of the Caribbean the abundance of diseases and insect pests which attack crops. The various species are probably fewer in number and, more important, large build-ups of population are infrequent because of scarcity of food at certain times as a consequence of seasonal production of short-term crops; in one important non-food crop, cotton, a closed season is enforced with this aim in view. Low atmospheric humidity is unfavourable to the development of several pathogenic fungi and bacteria but encourage harmful activities of scales and aphids against which specific control measures are usually necessary in vegetable and fruit growing.

Politico-Economic

According to one estimate, about 75 per cent of the agricultural land is under direct government control and crop production is almost entirely in the hands of small farmers, the majority of whom are tenants of government. There is one estate operated by the government and a number of settlement schemes for vegetable growing; to date incentive for growing of long term crops has been limited but recent interest in revival of the sugar industry and development of fruit crops is effecting a change.

Assistance in orderly marketing of produce is made available to farmers by the Central Marketing Corporation which offers guaranteed prices for a large number of items. Both local and export outlets are organized and a special Planning Committee for Agricultural Production and Marketing was recently appointed with its objective defined

> "to ensure that a constant supply of fruits and vegetables are (sic) available to satisfy the domestic and export markets with minimum constraints on the small farmers."

The Extension Division of the Ministry of Agriculture supplies advice to farmers and liaison with government sources of cultivation and other services. Its officers aid in the planning and execution of all farm operations as well as arrangement of tenancies and credit. Loans for agricultural purposes are offered by the Antigua and Barbuda Development Bank from funds specifically provided by the Caribbean Development Bank and their application supervised by a CDB Farm Improvement Officer.

At this particular period of time circumstances favour crop production projects in Antigua; care must be exercised in devising strategy and tactics in each instance but difficulties in this connection are not insurmountable with the assistance currently available at every stage.

Recommendations

There is a large number of categories of crops that are grown for direct consumption as food; nearly all of these are represented in Antigua's agriculture but the individual crops vary in merit for consideration as worthy of expansion. The main criteria to be applied relate to (i) the ability of the environment to meet their requirements, preferences and tolerances for satisfactory growth; (ii) their potential for replacing an imported item of food, and (iii) the existence of a profitable market for their produce. The greatest economic

benefit can be derived if the procedures adopted for crop production are compatible with the application of appropriate technology which need not be synonymous with the latest developed techniques; for instance bulldozers are not to be regarded as indispensable for land clearing. The practice of multiple cropping is strongly advocated to make optimum use of the available land during the relatively short growing season each year. Following is a selection of crops, production of which is recommended for easing the food supply situation and also earning cash to be utilized for importation of other food items:

Cereals	-	corn, sorghum
Legumes	-	pigeon pea, beans, soya
Roots and Tubers	-	sweet potato, yam
Vegetables	-	tomato, carrot, onion
Oilseeds	-	coconut, soya, sunflower
Fruits	-	pineapple, avocado, papaya, mango, soursop
Nuts	-	peanut, cashew.

Some of these are already grown in the State on a commercial scale and knowledge of what is required for successful production of all of them already exists in the Department of Agriculture.

Cereals

Growing of a large acreage of corn each year is the subject of a contract between the government and a private corporation; sorghum production may easily be associated therewith. Small farmers should find it feasible to use these crops for interplanting with fruit trees. It can be seen that imports of cereal preparations and livestock feed together amounted to over $6.2 million in 1974; locally produced corn and sorghum can go some way toward replacing a part of the total.

Root Crops

Sweet potato and yam constitute important articles of diet and also figure in the export trade. Expertise for their production is already common property among the majority of the farmers and cultivars selected for quality as well as high yield occur widely; from time to time further improved strains may be released by the University of the West Indies or the Caribbean Agricultural Research and Development Institute.

Legumes

A possibility of helping to reduce the shortage of protein food exists in production of legumes. Imported meat, dairy, eggs and fish preparations are required in large quantities each year to meet the need for proteins; in 1974 the bill was of the order of $8.4 million. It is known that pigeon peas and bush type beans - both kidney and lima - crop successfully in many districts of the island; it is well worth extending the area grown and increasing the intensiveness of the production practices. Results of research conducted by UWI and CARDI are available for application.

Soya is not at present seen in cultivation by small farmers; it should be!

Vegetables

There has been much concentration of effort on vegetable growing at the government-operated estate, Diamonds, on settlement projects and by individual farmers. The regulation of production has not been altogether satisfactory as exemplified by the occurrence, periodically, of gluts of particular items - cucumbers at the beginning of the current year. Without lessening the number of different vegetable types grown, direction of the major thrust to the three - tomato, carrot, onion - for which the best export outlets exist, is recommended.

Oilseeds

Imports of edible fats in 1974 cost $661,359. There is a local factory which utilizes cotton seed and copra in the manufacture of cooking oil and related products for domestic consumption but it operates at less than full capacity: it has been reported to do so at a maximum of 50 per cent at any time, because of inadequate supplies of raw material. Expansion of coconut production should provide a solution to this problem in the long run; for the immediate future it is necessary to find suitable short term oil crops. Sunflower and soya suggest themselves; these may be used as inter-crops for young plantings of coconuts and fruit trees. It has been demonstrated that they can be grown without difficulty by following appropriate procedures with, if required, ready aid and guidance from UWI and CARDI.

Fruits

As in other territories of the Caribbean, there is in Antigua abundance of several tropical fruits in season. Most of these have up to the present come from backyard, semi-wild or wild trees with little attention to organized production on a significant scale. Increasing appreciation of the value of fruit as food and expanding demand for tropical fruits in the industrialized countries of the temperate regions have acted within the past few years to stimulate interest in controlled orcharding throughout the developing tropical countries and Antigua stands to benefit greatly from active participation in the movement. In 1974 imports of fruit and fruit preparations cost $769,783 while exports (all pineapple) were valued at $38. In the early half of the following year imports amounted to $413,487 and exports $748 inclusive of other fruits with pineapple; fruit exports brought $6,577.80 in 1976 when there were appreciable quantities of mango and soursop as well as pineapple.

Intensive fruit growing must be largely limited to the wetter areas of the central plain and valleys of the south-west in the absence of irrigation. Small areas of papaya and soursop can, however, be profitable in nearly any part of the island. The Antigua Black pineapple, a Queen selection, is justly renowned for high quality as a dessert fruit; its expansion for increased export is highly desirable. Mango is very well adapted to the volcanic areas and produces abundantly in the feral state; suitable commercial cultivars recently introduced into the island have shown remarkable promise as a valuable orchard crop. The scope for avocado growing is similar to that for mango though reduced in scale by narrower soil preferences and need for truly effective protection from prevailing winds; there is no doubt, however, of the demand for this fruit for local consumption which will require to be satisfied before substantial development of an export trade. Multiplication of mango

and avocado planting material forms part of the plan of the government for horticultural development for the immediate future.

Nuts

The nut trade has always been of importance in world commerce (Antigua imported $223,115 in 1974) and for one type - the cashew - there are no signs of the demand being satisfied for many years to come. Small quantities of peanut have been produced at different times in the island and it is possible to effect worthwhile expansion by interplanting the crop with fruit trees where the soil is suitable. Cashew will grow and produce in areas where several crops fail to survive; it can profitably be grown on sub-marginal lands in all parts of Antigua. Recent development of efficient decorticating machinery makes cashew processing an economic proposition where sufficient nuts can be gathered and use can be made of the apple and shell liquid as well as the decorticated kernels for commercial purposes. In addition, cashew flowers are a valued source of nectar for honey bees and will be of advantage to apiary-keeping as a lucrative adjunct to orcharding.

Conclusion

This has been an attempt to consider briefly the question of extending the production of food crops in Antigua. The subject has not been treated in depth and relatively few crops have been named; this does not necessarily mean that only those mentioned merit attention although it is believed that they possess potential beyond that of others which may actually be more widely grown at present.