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PRODUCTION OF NON-SUGAR AGRICULTURAL PRODUCTS - A STRATEGY FOR THE DEVELOPMENT OF THE AGRICULTURAL SECTOR IN ST. KITTS/NEVIS

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Historical Background

Aware of the historical short-comings of the sugar plantation system and faced with declining sugar production, growing financial problems, rising unemployment and the social tensions and anxieties which flow from those problems, the Government of St. Kitts/Nevis/Anguilla has since 1972 shown its serious intention to resuscitate and transform the agricultural sector by the following:

1. 1972 - The mounting of the Sugar Industry Rescue Operation (SIRO) whereby the management of all sugar estates was taken over and an attempt made at meaningful implementation of the 1957 Food Production Ordinance.
2. 1973 - Passage of the Agricultural Development Act No. 18 of 1973.
3. 1973 - Passage of the Central Marketing Corporation Act No. 19 of 1973.
4. 1975 - Passage of the Sugar Estates and Land Acquisition Act No. 2 of 1975.
5. 1975 - Passage of the National Agricultural Corporation Act No. 27 of 1975.

Arising from the various legislative enactments has been an increase in food production not by the traditional producers, the small farmers, but by the National Agricultural Corporation. Indeed, Nevis, which by many was considered the food basket of St. Kitts/Nevis/Anguilla, is now relying heavily on food importation.

Perhaps the major constraints encountered by the small farmers are climatic factors and distribution of their produce. In St. Kitts potential evapotranspiration exceeds rainfall for seven (7) months of the year and with the unavailability of irrigation water at the production sites all year food crop production is severely restricted. It is said that very limited facilities are available for the export of vegetable produce to neighbouring islands, but it is my observation that the ferry boat between St. Kitts and Nevis ... ("M.V. Liamuiga") is underutilised. This potential could usefully be investigated.

Introduction

It is well-known that the two most important natural resources of St. Kitts/Nevis are its people and its good physical and fertile soil, the result being an economy based almost entirely on agriculture. However, agriculture basically means sugar which makes the largest contribution to the Gross Domestic Product (Table 1).

Table 1. Gross Domestic Product (Current Market Prices), 1972 - 1976.

Year	Total	Agriculture	Sugar	Manufacturing	% Agriculture
	(..... EC\$000)				
1972	43,000	n.a.	7,143	n.a.	n.a.
1973	48,626	5,467	5,873	1,422	11.2
1974	57,200	n.a.	12,564	n.a.	n.a.
1975	74,146	7,832	27,527	1,668	10.6
1976	75,501	12,696	14,043	9,926	16.8

Source: Planning Unit.

The foreign exchange earned from sugar is used in purchasing imported food and other goods and services required for keeping the economy. St. Kitts/Nevis with a population of approximately 49,000 people and being part of the CARICOM Region - yet in close proximity to the American Virgin Islands and St. Marteen - is strategically located to exploit the agricultural commodity markets of the Caribbean complex (Latin American and non-British Caribbean islands); CARICOM and Metropolitan States (North America, Europe etc.).

This paper attempts to highlight the production, consumption and structure of non-sugar products in St. Kitts/Nevis and present a strategy for increased non-sugar agricultural production. The objectives being:

1. A more desirable balance of payments.
2. More employment opportunities.
3. All year abundant food supplies.
4. A more efficient use of the available lands.
5. To raise and stabilize the incomes of persons engaged in the agricultural industry.
6. To develop a viable self-perpetuating non-sugar agricultural industry.

Consumption Patterns and Financial Status

As with many other Caribbean islands, the bulk of the foodstuffs consumed in St. Kitts/Nevis is imported. It appears that there is a preference for flour and rice over yam, sweet potatoes or cassava. This is not surprising, yet unfortunate, for with such a consumption pattern it is clear that St. Kitts/Nevis is in no position to produce all the food consumed. Government has made attempts to restrict the importation of certain commodities (peas, beans, white potatoes, onions, canned soups and canned vegetables). It is felt that a greater effort should be made at locally producing more of the calories and proteins necessary for the well being of the population.

Of the non-meat foods imported in 1975, cereals and cereal preparations was the most important item (Table 2). Large quantities of flour, rice, fruits and vegetables were imported.

Table 2. Quantities and Value of Selected Food Imports; St. Kitts/Nevis (1977).

Item	Weight ('000 lb.)	Value (EC\$'000)
Flour wheaten	6,584	2,690
Corn and corn meal	503	190
Rice	2,584	1,506
Other cereals	103	129
Fruits and vegetables ^a	n.a.	1,009 ^a
Other food preparations	n.a.	1,461 ^b
Coffee	7	118
Cocoa and cocoa preparations	56	199

Notes: a Included Onion 116,842

b Figures for 1975

Source: Planning Unit and Customs Department.

Livestock products imported accounted for more than EC\$4.5 million in 1975 (Table 3).

Table 3. Quantities and Value of Selected Livestock Product; St. Kitts/Nevis (Imports 1975).

Item	Weight ('000 lb.)	Value (EC\$'000)
Meat and meat preparations	n.a.	1,932
Live animals for food	n.a.	25
Milk	n.a.	1,071
Eggs	3	5
Poultry	1,718	1,074
Animal feeds	n.a.	358

Source: Planning Unit.

Domestic exports for 1975 (Table 4) show that sugar (61 per cent) and electric machinery (34 per cent) were the major items. It is to be noted though that electric machinery export is concentrated in a "screw driver" type industry in which the major part of the export value is returned for the importation of the single pre-assembled units.

Table 4. Quantities and Value of Selected Export Commodities in St. Kitts/Nevis; 1970 - 1975.

Year	Sugar		Molasses		Cotton		% Sugar of Total Domestic Export (EC\$)
	Quantity (tons)	Value (EC\$'000)	Quantity ('000 gal.)	Value (EC\$'000)	Quantity ('000 lb.)	Value (EC\$'000)	
1970	22,000	5,672	1,992	462	66	82	73.6
1971	19,000	4,878	1,594	357	20	19	64.1
1972	24,000	7,143	990	238	20	30	62.6
1973	20,000	5,873	1,291	705	16	30	41.0
1974	23,000	12,564	238	272	24	44	57.2
1975	22,000	27,527	1,644	1,143	32	101	61.1
1976	34,781	n.a.	n.a.	n.a.	49	n.a.	n.a.

Source: Planning Unit.

In both 1976 and 1977 the Recurrent Budget was in deficit (Table 5). With a National Debt of some EC\$30 million the State faces serious financial problems. It would appear that bearing in mind the imported inflation from the large importation of foodstuffs and the supreme position of sugar to the economy, a positive and immediate attempt should be made at making agro-industry a major sector in a new economic profile.

Table 5. Government Revenue and Expenditure, St. Kitts/Nevis; 1972 - 1976.

Year	Revenue (EC\$'000)	Expenditure (EC\$'000)	Surplus (+) Deficit (-)
1972	12,608	14,043	- 1,435
1973	15,514	15,507	+ 7
1974	19,960	18,419	+ 1,541
1975	22,065	21,944	+ 121
1976	29,374	30,373	- 999

Source: Planning Unit.

Land Patterns

St. Kitts and Nevis have a total gentle sloping agricultural land area of 22,000 acres and 15,000 acres, respectively (Table 6).

Table 6. Land Use, St. Kitts/Nevis.

Item	St. Kitts	Nevis
	(Acres)	
Forest and scrub	10,000	5,000
Gentle sloping	22,000	15,000
Settlements and subdivisions	2,600	1,000
Derelict land, rocks, salt ponds, etc.	2,000	2,040
Total	41,600	23,040

Source: Planning Unit.

In 1977 about 55 per cent of the agricultural land was cultivated with sugar cane. The steeper slopes above the sugarlands, ghuts, had mixed uses - food crops, tree crops and livestock grazing. The South Eastern peninsula was unutilized for both agricultural purposes and tourism. Considering rainfall, erosion risk, slopes and soil types the land capability of St. Kitts/Nevis has been classified into four (4) groups (Table 7).

Table 7. Land Capability, St. Kitts/Nevis; 1966.

Classification	St. Kitts	Nevis
	(Acres)	
Good agricultural soil	14,610	2,146
Fair agricultural soil	14,250	15,000
Soil not suitable for agricultural crops except poor forest in some areas	7,000	2,800
Settlements and subdivisions	2,600	1,000
Derelict land, unclassified and not surveyed	3,140	2,094
Total	41,600	23,040

Source: Lang, D.M. and Carroll, D.M. (1966). Soil and Land-Use Surveys, No.16. The Regional Research Centre, University of the West Indies, St. Augustine, Trinidad.

In 1975 out of a total of 30,000 acres, 24,000 acres were used (Table 8) leaving approximately 6,000 acres available for expansion in tree crops, vegetable crops and livestock grazing. By 1977 approximately another 2,800 acres had been brought under sugar cane.

Table 8. Land Utilization in St. Kitts/Nevis, 1975.

Item	St. Kitts	Nevis
	(Acres)	
Permanent crops	730	1,699
Sugar cane	9,237	-
Other crop lands	7,100	5,140
Grass (cultivated)	543	1,000
Grass (uncultivated)	1,158	6,464
Forest and woodlands	4,128	3,109
All other lands in holdings	1,086	519
Total	23,982	17,931

Source: Census of Agriculture, 1975
British Development Division in the Caribbean, Bridgetown, Barbados,
Feb. 1977.

The 1975 Agricultural Census indicated land distribution as follows:

Table 9. Land Distribution in St. Kitts/Nevis; 1975.

Size of Holdings	St. Kitts			Nevis		
	Number	Acres	Average per acre	Number	Acres	Average per acre
Less than 1 acre	1,083	310	.29	953	393	.41
1 - < 5 acres	524	1,229	2.34	698	1,618	2.32
5 - < 50 acres	38	229	6.03	123	1,196	9.72
50 acres and over	39	22,219	569.72	67	14,720	219.70

Source: 1975 Agricultural Census.

Of the 800 acres taken up by urban Basseterre it is estimated that approximately 50 to 60 acres of house allotments are unoccupied, lying fallow. The land can be categorised as good agricultural soil.

Agricultural Production

Statistics on crop production and livestock in St. Kitts and Nevis are generally suspect. There are many reasons, but perhaps the more important items are the extensive multiple cropping, the small size of the holdings, the varied methods of marketing the produce and large numbers (999 in 1975) of landless farmers (owners of livestock with no lands).

Information from the National Agricultural Corporation (NACO)

indicated that from September 1976 to July 1977 the Corporation sold fruits and vegetables of thirty-three (33) different crops (Table 10).

Table 10. Sale of Selected Food Crops by NACO, Sept 1976 - July 1977.

Type of Food Crop	Quantity Sold (lb.)
White potatoes	157,457
Peanuts	150,015
Bananas	46,614
Sweet potatoes	40,481
Onions	32,864
Peas and beans	23,551
Pumpkins	19,358
Corn	12,325
Cantaloupes	7,857
Pineapples	5,061

Source: NACO.

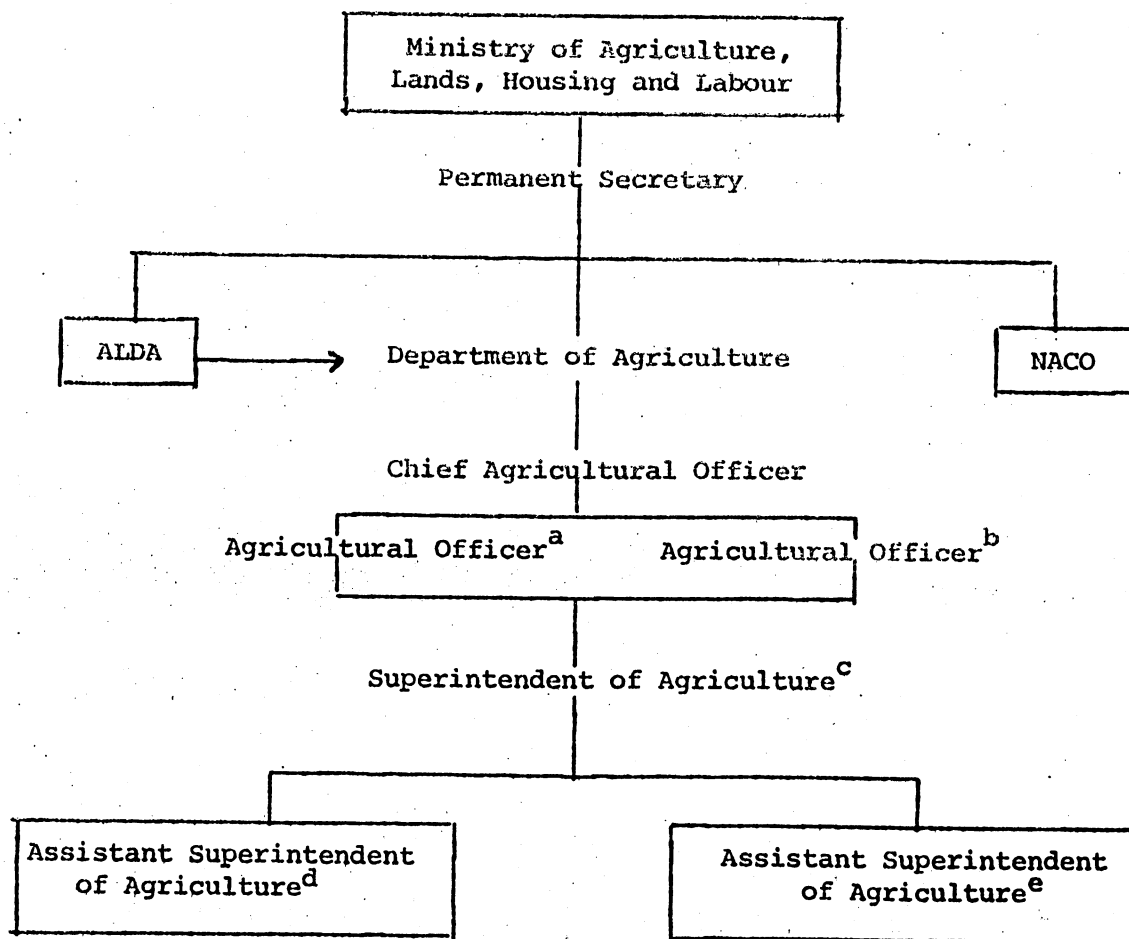
It is interesting to note that in 1976 the Central Marketing Corporation exported 142,810 pounds of peanuts valued at EC\$195,713. Most of the peanuts were produced by NACO. Apart from the NACO effort, organized production of vegetable crops, fruits and tree crops is lacking in St. Kitts. Part-time farmers do produce a wide range of root crops, pigeon peas and chives (herbs) under rainfed conditions. The Caribbean Agricultural Research and Development Institute (CARDI) has since 1977 been supplying the population with regular quantities of tomatoes, cabbages and cauliflower. In Nevis a wide variety of vegetables are produced and there are a few orchards.

Livestock - In 1975 the livestock population of the State was estimated at about 4,760 cattle, 10,728 sheep, 8,189 goats, 23,907 chickens and 3,698 pigs. St. Kitts is almost self-sufficient in eggs but imports large quantities of poultry (Table 3). Government has a small mixed dairy herd at Bayfords and plans are afoot at upgrading the dairy activities.

Agricultural Organization

In St. Kitts/Nevis Agriculture falls under the portfolio of the Ministry of Agriculture, Lands, Housing and Labour. The agricultural sector can be divided into two institutions namely: Department of Agriculture and NACO. Diagram 1 indicates the relationships of the different sections.

Diagram 1.

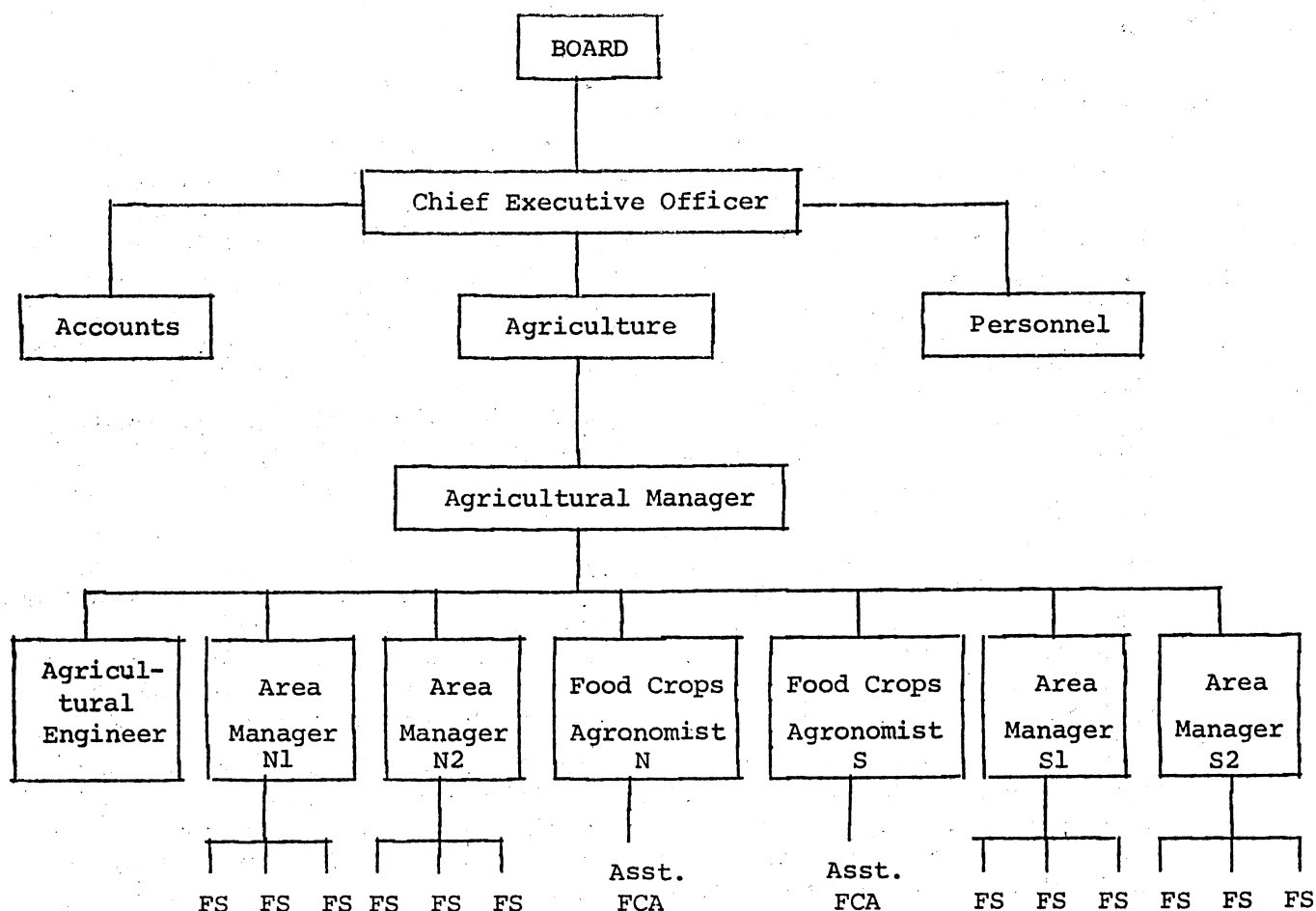


ALDA Agricultural Land Development Authority now part of the Department of Agriculture. Functional only in Nevis.

- a Away on study leave
- b Seconded to NACO
- c Head of Agriculture Department in Nevis
- d Acting Assistant Secretary
- e Functional in Nevis

The management structure of NACO is exhibited in Diagram 2. Here emphasis is put on the sector related to general agriculture production including sugar cane. NACO divides its sugar lands into four (4) areas of approximately 3,500 acres each. Each area is under the direction of an Area Manager. Supporting each Area Manager are three (3) Field Superintendents responsible for the day-to-day management of approximately 1,135 acres.

Diagram 2. Management Chart NACO.



FS Field Superintendent
 FCA Assistant Food Crops Agronomist
 N North Area comprising N1 and N2
 S South Area comprising S1 and S2

Water Supply and Irrigation

St. Kitts has six (6) surface water sources located at Wingfield, Franklands, Stonefort, Lodge, Phillips and Cayon. The water is piped directly from the intake structures to the consumers without treatment, with the exception of Basseterre. There are eight (8) boreholes located at Basseterre (5), Harry Phipp's, Stonefort and Mansion. The existing water situation is in poor condition but overall supply to the island is favourable. With increased industrialization, expansion of the tourist industry and population growth there is an excess demand for water in the Basseterre Valley. It is hoped that the extensive catchment area arising from the construction of large buildings, the Airport buildings and surroundings will be utilized for either replenishing the aquifer or for irrigation purposes.

The south-eastern peninsula has no developed water source. Nevis has inadequate water supply due to salinity of many of the wells and boreholes. The distribution system is also inadequate. Government proposes to increase the reservoir and replace most of the pipelines and pumps.

Strategy

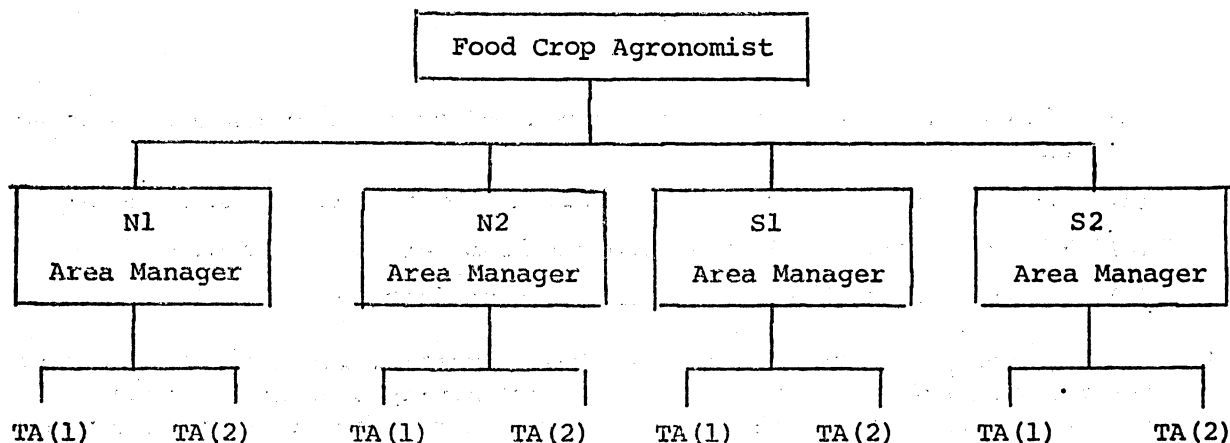
Within the broad objectives referred to earlier it is being suggested that the agricultural development strategies be:

1. *Land strategy* - Land availability is a major constraint on agricultural expansion. The strategy is to overcome the institutional constraints and stimulate production in designated area. Due regard should be given to soil capability, water resources, climate and crops adaptability.
2. *Farm development strategy* - St. Kitts and Nevis have a tradition of estates and holdings that constitute the primary production unit. The strategy is to provide supporting infrastructure and organization so that the estates and holdings become viable farms.
3. *Agro-industry strategy* - A viable, self-perpetuating progressive agricultural industry has as a basic component agro-processing. The basic strategy is to provide for the local raw material, the processing and marketing of the products.
4. *Human resource development strategy* - A labour and managerial population that is keen, energetic and inventive is essential for a self-perpetuating efficient non-sugar agricultural industry. The strategy for human resource development will be to provide training and managerial assistance to all sectors of the agricultural industry. Attempts will be made to motivate a population that will respond to the potentials of the industry.
5. *Marketing strategy* - Marketing is essential to an efficient agriculture. The strategy for marketing agricultural products (fresh and processed) is to improve all stages of the marketing channel especially transportation, storage, pricing and distribution. By expanding sales of agricultural products farm cash receipts will increase.
6. *Water resource development strategy* - Water is a necessary component of any agricultural production system. The strategy is to overcome the water constraint on crop production by utilizing run-off water, existing catchment areas (especially roof tops and paved areas) and developing others, together with construction of adequate storage facilities. This is especially relevant to Basseterre and the south-east section of St. Kitts, and Nevis.

Programmes

With the identification of the available resources and their allocation within the State, the following programmes are suggested:

1. *Institutional organization* - Such a programme should reorganize the National Agricultural Corporation making it responsible for the food and tree crop production of all Government lands. A possible organizational chart could be:



TA(1) Technical Assistant (Production)

TA(2) Technical Assistant (Survey)

The Field Superintendents and Field Assistants would be integrated into the Food and Tree Crops Programme. Technical Assistant (Survey) could monitor the fields for up-to-the-minute plant protection and erosion situation.

The Department of Agriculture should function as the extension and applied research, and advisory arms of the agricultural sector. It should be so structured that in both St. Kitts and Nevis a plant propagation unit, a plant protection service and applied research unit as well as a livestock unit are established. Nevis should be especially strong in the plant protection and livestock areas.

2. *Crop production* - This programme aims at halting the increase in imports of food while increasing production in certain crops to establish a continuous export market. Another activity is the raw material procurement base for a non-sugar agro-industry. The programme is directed to:
 - (a) increase in food production for local consumption by becoming self-sufficient in most vegetables, corn and cornmeal, peas and beans;
 - (b) increasing the production of export crops such as cotton, peanuts, onions, tomatoes (December to February) and tropical exotic fruits and vegetables;
 - (c) increasing the production of crops for agro-industry such as peanuts, cassava, sweet potato, cotton-seed, carrot and certain tree crops.
 - (d) establishing specified areas with tree crops and fruit trees; and
 - (e) establishing an afforestation programme using quick growing trees.
3. *Livestock* - Livestock programme is directed towards reducing the importation of meat and increasing livestock production. A successful livestock development programme must take into account nutritional problems associated with feeding and the incidence of internal and external parasites. The main thrust of the programme should be:
 - (a) controlled feeding;
 - (b) reliance on locally produced feed;

- (c) significant improvement in the control of the incidence of external and internal parasites;
 - (d) increase in dairy cattle for milk and beef from the dairy herd;
 - (e) self-sufficiency in sheep (mutton lamb) and pig production; and
 - (f) increase in rabbit and poultry meat production.
4. *Agro-industry* - In the State there is a potential for quite a number of by-product feeds that could be very successfully used in livestock feeding. Furthermore, the periodic glut of certain crops and the yield potentials of others constitute a favourable raw material source. The programme will aim at:
- (a) making of animal feed using cottonseed meal, peanuts, sweet potatoes, cassava and breadfruit as local components;
 - (b) processing of roasted and bagged peanuts; and
 - (c) processing of nectars, cordials, tropical jams and jellies and crystallized fruits.
5. *Marketing* - Agricultural marketing programme can best be expressed by the following quotation:

"Food marketing deals with the performance of all the business activities involved in getting foodstuffs from their origin of production to the consumers in adequate quantity, quality or form, appropriate time and place desired by them and the development aspects of the system for transfer, pricing and communication among participants within the marketing system."¹

The programme recognises the reorganization of the Central Marketing Corporation to fulfil the following:

- (a) off-farm storage facilities;
- (b) distribution and transportation of the final product to the identified consumer. Have an efficient wholesale division;
- (c) regulation of production and working knowledge of future markets - local, intra and extra regional.
- (d) identification of the consumers thus producing accordingly;
- (e) quality control in keeping with the nutritional status of the society and the desires of the identified consumers; and
- (f) pricing of the commodity.

Proposals and Prospects

As a general principle, large scale and specialized agricultural production is usually more efficient and productive than small farms. The requirements of such a system are that a minimum number of crops can be combined in a simple cropping sequence and can be produced at a profit. Thus, using the estates as the farm unit, it is suggested that NACO aim

¹Mc Intosh, C.E. Food Marketing Programmes in a Small Developing Economy. Twelfth West Indies Agricultural Economics Conference Proceedings, Dept. of Agric. Econ. & Farm Management, U.W.I., Trinidad, 1978

at having as its main consumers the agro-industry plants and the export markets. With this in mind, it is proposed that NACO should produce the following:

Peanuts	- processing plant (roasted and packaged) for export.
Onions	- import substitution and export to CARICOM.
Tomatoes	- harvesting in December and January for export to CARICOM as fresh fruits.
Exotic fruits and vegetables	- export; types depend on market demands.
Fruits	- processing plant.
Cassava	- animal feed plant.
Sweet potato	- animal feed plant.
Breadfruit	- animal feed plant.
Peas and beans	- dry commodity for local consumption.
Other fruits (tree crop)	- local market.

The many small farmers can be encouraged and are capable of producing most of the energy and protein requirements of the population.

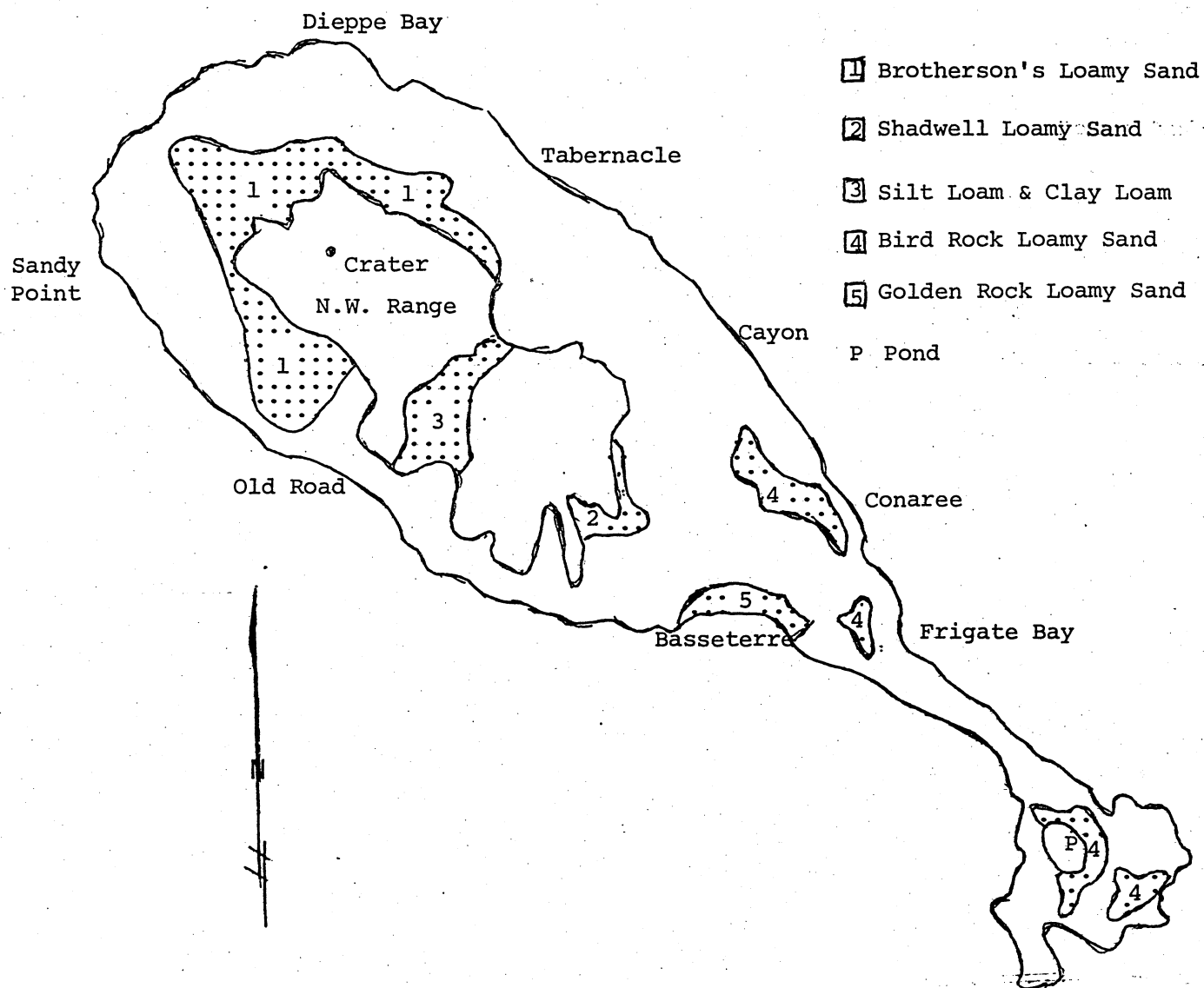
Production depends on the skilful utilization of available lands. Figure 1 attempts to locate the areas for agricultural expansion in St. Kitts. These can be classified into eight (8) groupings, namely:

1. Lands east of Brimstone Hill through Con Phipps' estate extending to Harry Phipps'.
2. In the Saddle through Wingfield up to Phillips' Level.
3. Fort Smith through to the South-eastern peninsula.
4. Along some of the 'guts'.
5. Tree crops in suitable sites located in the Evergreen and Semi-evergreen seasonal and Lower Montane Rain Forest zones.¹
6. Unutilized housing areas (privately owned) in Basseterre.
7. Annual fallow sugar lands, about 800 acres.
8. Inter-cropping peanuts, peas and beans in sugar cane especially in the northern region of St. Kitts.
9. Accessible and suitable areas of the South-east and North-west Ranges and some 'guts' for afforestation. Production of fast-growing trees such as the Blue Mahoe could be of financial advantage by supplying fencing materials and be of economic significance by improving the water environmental situation.

Livestock development will benefit by improved grazing pastures in the South-east peninsula and the upper slopes above the sugar lands in St. Kitts and on the southern and western parts of Nevis. However, it is strongly suggested that in both St. Kitts and Nevis community pastures be established under trained herdsmen with veterinary and other services and water provided. This method of controlled pasturing of animals will greatly enhance the establishment of tree crops, fruit trees and other crop production, and at the same time improve the animal care.

¹Cruickshank, A.M. Personal communication.

FIG.1: ST. KITTS AGRICULTURAL EXPANSION



Production of crops and livestock will be stimulated and be self-generating by the establishment of food canning and animal feed processing plants always bearing in mind that a small beginning involves minimum risks due to failure. It provides experience and training.

Constraints to Agricultural Diversification

The proposed programmes for production of non-sugar lands cannot ignore constraints that can affect the success of the venture. They are highlighted so as to give a better balanced overall picture.

1. *Shortage of technical skills* - Extension, specialist and managerial staff in NACO and the Department of Agriculture together with farmers would need to be upgraded in tree crop, vegetable and livestock production.
2. *Water for irrigation and animal drinks* - Inadequate and reliable water in the drier areas of the State will have to be increased to facilitate food crops production and livestock rearing.
3. *Crop damage* - The destruction being caused by the large population of monkeys is of much concern for food and tree crop production. Pest of food crops need to be investigated and varieties of fruit trees, e.g. mango chosen with due consideration to the regime of pests in the State. Roaming and tethered livestock cause much damage to all types of plant life. Control is necessary for agricultural diversification.
4. *Praedial larceny* - This problem appears to be on the rise. The appropriate Government authority needs to devise a workable and effective strategy.
5. *Lack of cropping information* - There needs to be applied research on packages of practices for the economic production of identified crops. CARDI has begun work in certain areas.

Conclusion

The St. Kitts and Nevis non-sugar agricultural sector is capable of producing a substantial portion of the food requirements for the State and contributing to the earning of foreign exchange. To achieve this goal there needs to be reallocation of resources by putting more agricultural soil under production, establishing food and animal feed processing, maximizing the use of rain water, improvement in the nutrition and management of livestock and the complete reorganization of the marketing systems.

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