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THE SCOPE FOR PEANUT PRODUCTION AND PROCESSING IN ST. VINCENT

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Introduction

Historically, St. Vincent has been a major producer and exporter of unshelled peanuts (*Arachis hypogea* L). An examination of the export figures for the last 25 years reveal that, at one time, St. Vincent exported close to three million pounds (341,000 kg) of unshelled nuts (Figure 1). Production in 1974 was estimated at 200,000 pounds (90,909 kg) from 150 acres (60 ha).

Fluctuating exports during the period could be attributed mainly to the more or less haphazard market arrangements that existed prior to 1968 with local traffickers handling the bulk of the export trade. The marked decline in export and total production after 1954 was as a result of:

- many peanut lands being converted to bananas during the late 1950's;
- large estates in the north-east of the island going out of production primarily due to a high incidence of false nuts;
- the relative increasing cost of production *vis-a-vis* price obtained for the crop by farmers.

In 1972 the market for shelled and unshelled peanuts within the Caricom region was reported to be in excess of 25 million pounds (11.3 million kg).¹ Since the identification of this market no serious effort was made by any of the LDC's to expand their production with a view to meeting this demand.

This paper examines the suitability and feasibility of expanded peanut production in St. Vincent. The constraints to increased production are identified and fair prospects for peanut processing are recognized.

Suitability for Production

Soil Type and Topography

Most of the soils of St. Vincent are of deep, sandy to sandy loam type. They are fairly free draining and are well suited for peanut production.

A great proportion of the land on the eastern coast of the island where the bulk of peanuts is presently produced, is relatively flat or has gentle to moderate slopes. This feature facilitates mechanical cultivation which is essential for large scale production.

Rainfall

Average rainfall data for the eastern coast over the last 25 years

¹ Report on CCRS Study on identification of products produced in the LDC's to be guaranteed markets in the MDC's. CC 11/72, 2nd June, 1972.

indicate a marked dry period between January and May and a less severe dry spell in September. Total annual rainfall for this area ranges from 75 to 100 inches.

Advantage is taken of the pattern of rainfall distribution by planting a substantial proportion of the crop so that it matures during the dry periods. This makes harvesting a lot easier because of the drier soils. In addition, it reduces the danger of infection by *Aspergillus flavus* and other fungi (Bampton, 1963).

Time for Planting

The peanut plant, being day-neutral for all practical purposes, can be successfully cultivated at any time during the year. Some farmers may grow as many as three crops per year but the majority is satisfied with two crops annually.

Social and Technical

An important factor which makes St. Vincent suitable for expanded production is the fact that *farmers in this territory have been used to growing peanuts for decades.*

Certain constraints to agricultural development arise when a new crop is introduced to an area. Farmers, not being familiar with the techniques of production, are often reluctant to cultivate large areas. The technicians who advise the farmers are in many instances not fully acquainted with the agronomy, physiology and limiting factors to production. Efforts are usually of a trial and error nature, often resulting in dismal failures. As far as peanut cultivation in St. Vincent is concerned, these problems do not arise.

Area Available for Production

According to the latest St. Vincent Census of Agriculture (1972), land utilization was as set out in Table 1.

Table 1. Land Utilization, St. Vincent, 1972

Land Use	Area	ha.
Total land held	33,355	13,903
Permanent crops	9,623	3,893
Other crop land*	11,926	4,825
Grassland (improved)	734	297
Grassland (unimproved)	4,009	1,622
Forest and woodland	6,200	2,509
Built on and service area	526	213
Other land including ruinate	1,337	541

* This category comprises all land under arable crops of which 150 acres (60 ha) were cultivated to peanuts.

It is envisaged that, within the present concentrated area of production, another 50 ha could be brought under peanut cultivation by small farmers. This would entail the conversion of some lands presently devoted to sweet potatoes and other food crops. It would also involve utilizing lands that are now idle for one reason or another.

An additional 20 ha of ideal peanut land is available on a newly acquired government estate located within this peanut belt.

Outside of the belt, on the north-eastern coast, about 20 ha could be made available for peanut. These lands are comprised both of small farmers and estate holdings. The main crops being replaced here are bananas which are not doing very well and arrowroot which is being rotated or may be doubted altogether due to manufacturing difficulties.

On the western coast of the island it is projected that 20 ha consisting of government estates, private estates, and small farmers could be harnessed as well. It appears then, that 110 more ha (272 acres) of land could be brought under peanut cultivation without seriously impinging on the production of other crops.

Limiting Factors to Increased Production

Scale of Production

Presently the entire peanut crop is produced almost exclusively by small farmers, very few of whom operate more than 5 acres (2 ha) at any one time. These farmers have to depend on manual labour for most of their operations which results in a relatively high cost of production.

The large estates, cultivating in excess of 10 acres (4 ha) will have to be brought back into the picture. They are in control of most of the land that permit mechanized operations with a resulting lower cost of production.

Table 2 shows comparative costs of production using largely mechanized operations versus manual operations. Figures are based on conditions which obtained in 1974.

Small farmers would be well advised to form themselves into farming cooperatives. The benefits of cooperatives need not be expounded here but suffice it to state that the major objectives would include expanded production concomitant with reduced cost of production. No serious development in peanut production can be expected to take place if production remains confined to small farmers operating on individual bases.

Pests and Diseases

The most common insect pest of peanut in St. Vincent are leafhoppers (*Empoasca* spp.) and leaf-eating caterpillars (*Spodoptera*, *frugiperda* and *Hiliothis zea*). The damage they cause is serious enough to warrant systematic and regular control. In fact, it has now become impossible to produce a crop of peanuts without an attack by leafhoppers and leaf-eating insects. Baynes (1972) recommends spraying with a general insecticide once every 3 to 4 weeks as a satisfactory means of control.

Table 2. Synthesized Cost of Production for Peanuts

Operation	Mechanized	Manual
	(EC\$ per acre)	
Land preparation	70	180
Seed	60	60
Planting	15	40
Fertilizer	100	100
Weed control	150	240
Pest and disease control	75	75
Harvesting	60	60
Drying, grading, bagging	30	30
Transportation	20	20
Management and sundries*	120	135
Total Cost	700	940

Note: *This item includes charges for rental or taxes plus 10 per cent of the total cost of the the other inputs.

Rust (*Puccinia arachidis* Speg.) and cercospora leafspots (*Cercospora* spp.) are the major diseases of peanuts in St. Vincent. According to Feakin (1973) rust is reputed to be the major limiting factor to commercial peanut production in the West Indies. Adequate control of these diseases may be obtained by regular applications of a suitable fungicide, e.g. Cupravit. For convenience the fungicide may be applied together with the insecticide spraying.

False Nut

False nuts or 'pops' as they are often called is a condition wherein peanut pods develop without any kernel. This problem is by no means uncommon to St. Vincent and on the recent volcanic ash soils in the north of the island farmers have reported as much as 50 per cent pops.

In all the physiological work that has been carried out on peanuts no one has yet been able to identify beyond doubt the real cause of false nuts. Most workers believe it to be a physiological problem aggravated by insufficient supply of specific nutrients. Baynes (1972) suggests that a well balanced soil fertility which includes adequate quantities of available calcium, sulphur, and phosphate would alleviate the problem.

Because of the very free-draining nature of the volcanic ash soils, added to their inherent low availability of nutrients, particularly nitrogen (Watson et al, 1958) much higher rates of fertilizer application may be necessary on these soils. For maize production Baynes and Walmsley (1973)

recommended three times as much nitrogen as required on other soils.

Plant Density

A common practice of "chip and plant", resulting in plant spacing of approximately 60 cm x 60 cm is observed in St. Vincent. Results from experiments (Baynes, 1973) clearly indicate that yield could be tripled using a spacing of 30 cm x 30 cm.

This particular component of yield in peanuts has, in practice not been sufficiently exploited. Immediate benefits can be derived by adopting closer plant spacings.

Supporting services

In any development programme such as this the supporting services of research and extension cannot be omitted. Sustained research will be required in the following areas:

- selection of high yielding varieties suitable for mechanical harvesting;
- pest and disease control;
- weed control; and
- further elucidation of the false nut problem.

A considerable amount of varietal evaluation trials have been carried out in St. Vincent. No statistically significant yield advantage has been found for any foreign variety over the St. Vincent 'Local Runner' (McConnie, 1955; Spence, 1973). It must be pointed out here that these trials were conducted using small plots and that it was always possible to harvest all the nuts produced. Conditions on a field scale would be different, especially when harvesting varieties of the runner type. The fruiting habit of runner varieties is such that, unless scrupulous harvesting techniques are employed, from 20 to 40 per cent of the nuts may be left in the field.

In view of this, it might well be worth the effort to have another look at the bunch varieties. While these varieties might not be superior to the Local Runner in total yield, they are likely to result in a significantly greater harvested yield using traditional harvesting methods. Moreover, the bunch types are much better suited for mechanical harvesting.

The continued evaluation of the effectiveness of new chemicals to control pests and diseases can be expected to pay high dividends. The availability and use of the wide range of chemicals that will do the job effectively would ensure against the build up of resistance to the chemicals.

Hand weeding peanuts is the largest single input in the cost of production analysis. No chemical has yet been found that, under local conditions, will give effective weed control beyond four weeks and without phytotoxic effects. All hope should not be given up and new chemicals ought to be screened.

The fact that incidence of false nut is higher on recent volcanic ash soils than on other soils, suggest that there might be some inherent characteristic in certain soils that promote this condition. The work done by Baynes (1973) was not conclusive. Any effort to elucidate this false nut problem would be well spent.

It appears that the Extension Service has not been passing on information to farmers on the merits of close planting or farmers may not have been convinced of these merits. A much bigger effort in extension is required here.

Prospects for Processing

Local entrepreneurs have recently expressed interest in setting up a factory for processing peanuts. Information on machinery and equipment for processing was obtained from various manufacturers in several countries. Basic items required include: decorticator, roaster, cooler, blancher, frier, packer. It is intended to limit processing to whole shelled nuts for the time being. The degree of roasting and/or frying will result in a product that could vary in texture according to consumer preference.

Price quotations for complete sets of machinery and equipment in the minimum sizes manufactured range from EC\$30,000 to \$100,000. Estimates on cost of equipment and the bringing into operation of a complete factory range from EC\$115,000 to \$255,000

The throughput capacities of the various units range from 136,000 to 408,000 kg (300,000 to 900,000 pounds) of unshelled nuts annually.

If a peanut processing plant were set up shortly, present local production would supply 91,000 hg. (200,000 pounds) of nuts. From 45,000 to 318,000 hg (100,000 to 700,000 pounds) unshelled nuts would have to be imported initially to keep the factory running at capacity during the first year.

A peanut planting drive could result in 40 more ha being planted during the first year and an additional 70 ha during the second year. This would bring the total area in peanuts up to 170 ha. With improved technology in production this acreage could comfortably supply the requirements of the factory and still have a surplus of unshelled nuts available for export.

Serious consideration ought to be given to the pricing structure for peanuts. The AMP f.o.b. price for unshelled peanuts rose from \$0.65 to \$1.20 during the last year. While the rise in price may be justified on the grounds of drastic increases in cost of production during recent times, caution must be exercised.

Increases in the price of the primary product (unprocessed nuts) has the effect of reducing the scope for processing. It also makes it lucrative for less efficient producers to come into operation; which is undesirable. On the other hand, too low a price for the primary produce would be a deterrent to the producer of unshelled nuts and processing may become uneconomic if adequate supplies cannot be obtained. Obviously, a balance has to be struck somewhere along the line.

Summary

St. Vincent has featured, historically, as a major producer and exporter of unshelled peanuts with the Caricom region. A ready market for unshelled as well as shelled nuts now exists within this region. This market is reported to be in excess of 25 million pounds annually.

Serious efforts ought to be made towards self-sufficiency in peanut production within the region.

This paper proposes that St. Vincent is physically well suited for expanded peanut production. Limiting factors such as scale of operation, pest and disease control, and planting density are identified and solutions offered. With increased production the prospects of setting up a small industry for processing peanuts appear to be quite good.

References

1. Anon (1972). "St. Vincent Census of Agriculture" (unpublished report).
2. Bampton, S.S. (1963). "Growth of *Aspergillus flavus* and Production of Aflatoxin in Groundnuts: Part I". *Tropical Science*. 5: 74-81.
3. Baynes, R.A. (1972). "Guidelines for Better Peanut Production in St. Vincent, W.I.". *R.F.E.P. Bulletin* #2. U.W.I. Faculty of Agriculture.
4. _____ (1973). "Annual Progress Report of the R.F.E.P. (W.I.) Activities in Barbados, Grenada, St. Vincent and St. Lucia, for Period August 1, 1972 to July 31, 1973". U.W.I. Faculty of Agriculture, Dept. of Soil Science.
5. Baynes, R.A. and Walmsley D. (1973). *Fertility Evaluation of Some Soils in the Eastern Caribbean*. U.W.I. Faculty of Agriculture, Dept. Report No 17.
6. Feakin, S.D. (1973). *Pest Control in Groundnuts*. Pans. Manual No. 2. Foreign and Commonwealth Office Overseas Development Administration, London. pp. 197.
7. McConnie, H.S. (1955). "Peanuts". Annual Report on the Department of Agriculture, St. Vincent.
8. Spence, J.A. (1973). "Grain Legume Programme (Eastern Caribbean)". Annual Report 1973. U.W.I. Faculty of Agriculture.
9. Watson, J.P. et al (1958). *Soil and Land-Use Surveys, No. 3, St. Vincent*. Regional Research Centre, U.W.I.