

AN ASSESSMENT OF THE PRODUCTION AND MARKETING OF ONIONS IN BARBADOS

IICA
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SIMON BOLIVAR FUND

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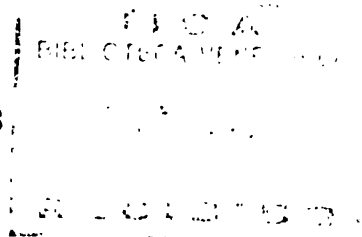
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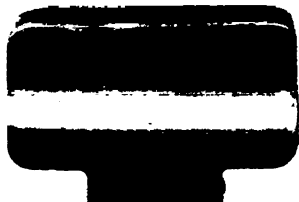
AN ASSESSMENT OF THE
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BRIDGETOWN, BARBADOS

JUNE, 1981

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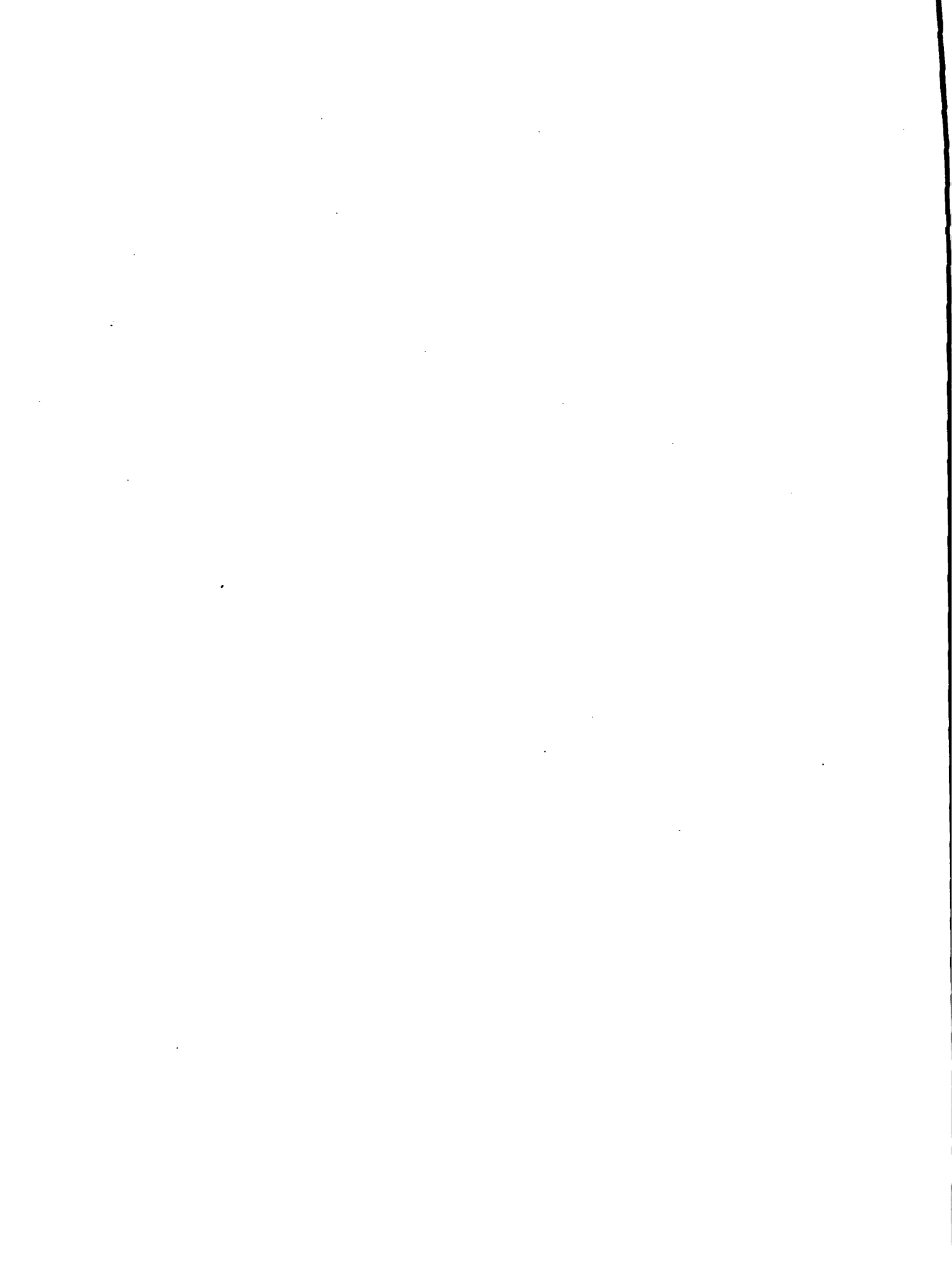


PREFACE

In 1979, an agreement was signed between the Ministry of Agriculture Food and Consumer Affairs and the Inter-American Institute for Cooperation on Agriculture (IICA) for technical assistance in the field of agricultural marketing. The project is financed by funds from the Simon Bolivar Fund. The overall objective of the agreement is to improve the performance and efficiency of the marketing system in Barbados for non-sugar crops by strengthening the capabilities and marketing services of the Barbados Marketing Corporation (BMC) and other organizations involved in this field.

Among the crops which have been assessed as part of the project, particular emphasis has been given to onions. Onions represent a substantial part of the total imports of vegetables entering Barbados and increased production will result in the saving of valuable foreign exchange. In addition the onion crop has been grown successfully in Barbados since the early 1970's and a considerable amount of expertise and technical knowledge is available to expand production.

In this study, an investigation is made of the present state of onion production and marketing together with the problems encountered in recent years. Against the background of this assessment, a number of initiatives are suggested which could be introduced to increase domestic self-sufficiency as well as increasing exports within the Caribbean region.



The helpful collaboration of the BMC, the Ministry of Agriculture and the staff of the Barbados Agricultural Society in the provision of data and assistance is gratefully acknowledged.

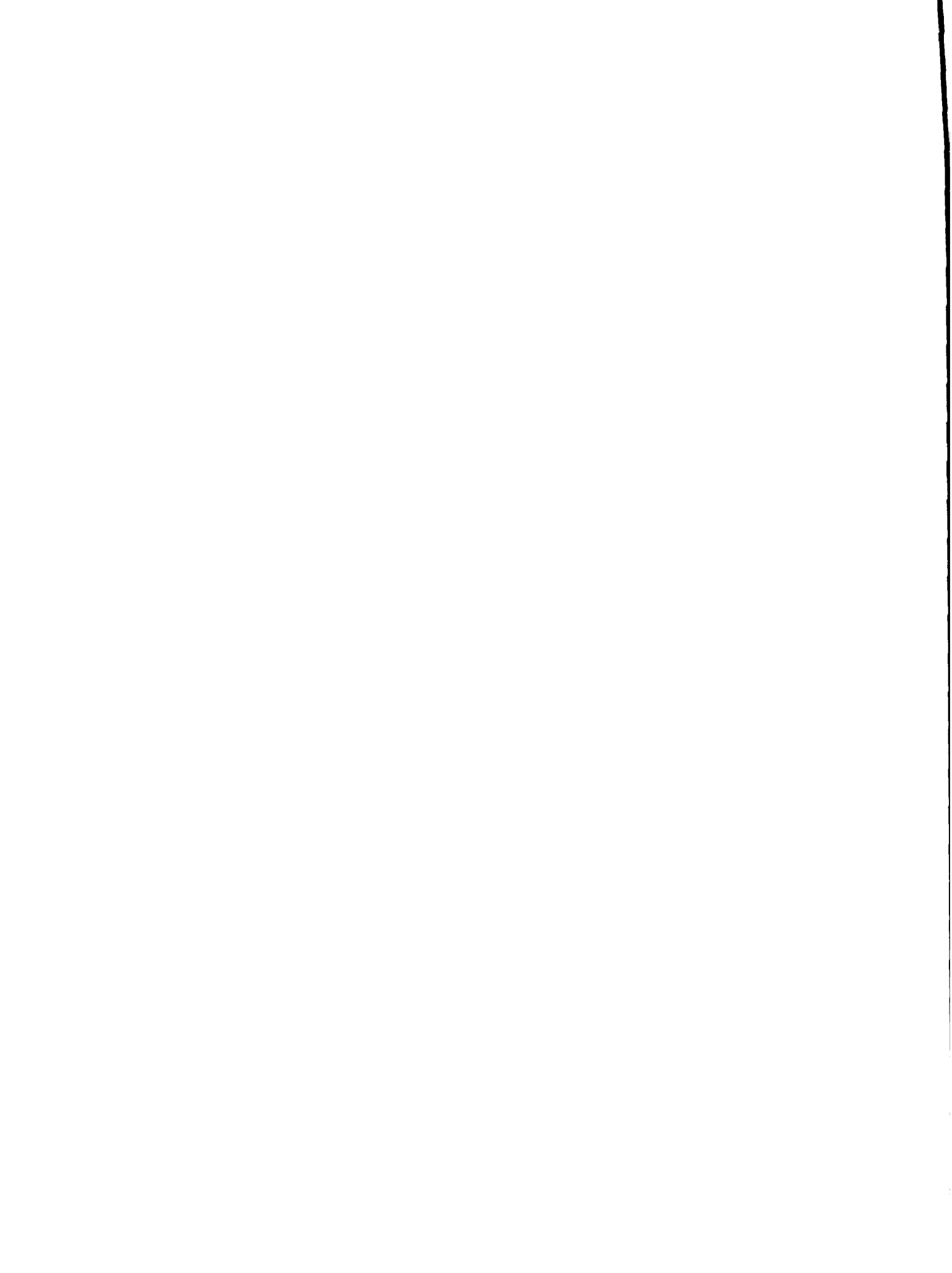


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ONION PRODUCTION AND MARKETING IN BARBADOS ^{1/}

1 INTRODUCTION

As part of the IICA Project to improve the agricultural marketing system in Barbados, a firm of agricultural consultants, Broadwith, Hughes & Associates, was commissioned to assess the position and problems associated with the production and marketing of onions in the domestic and export markets. A preliminary investigation of the production and marketing infrastructure was undertaken in September 1980, and a subsequent examination of the system was carried out during the peak harvesting period in March 1981.

The investigation comprised a series of field investigations and interviews with key members of the production and marketing chain, viz. growers, wholesalers, hucksters, importers, retailers and officials of the Ministry of Agriculture, the Barbados Marketing Corporation, and representatives of the Barbados Agricultural Society. (See Appendix I). Reference was also made to publish research reports and statistics relating to onion production and marketing. (See Appendix II).

This report provides a synopsis of the current state of onion production and marketing in Barbados, the problems associated with each activity and delineates initiatives that could be implemented for increasing domestic self-sufficiency and redeveloping the intra-regional export market for onions.

^{1/} Undertaken as part of the IICA Project: Improvement of the Agricultural Marketing System in Barbados, financed through the Simon Bolivar Fund.



II. CURRENT SITUATION

The onion sector in Barbados is currently at an extremely critical stage in its development. The crop has been grown in the country since 1969 with some success. The situation with respect to production, imports, export, consumption and the degree of self-sufficiency are shown in Table 11.1. Domestic production has accounted for a relatively stable share of domestic requirements (approximately 23 per cent) over the last six years. Additionally, significant quantities of onions have been exported intra-regionally to neighbouring Caribbean countries under the Caricom Agricultural Marketing Protocol (AMP). (See APPENDIX 111 for Trade in AMP Commodities in 1978/79).

However, the acreage planted with onions and, hence, production, has been declining since 1972 (See Table 11.2) and the significant intra-regional export trade has been declining. Meanwhile, the overall level of imports has been increasing although consumption per head has remained relatively constant.

Farmer enthusiasm for onion production has been waning for several reasons. Onion production is realistically regarded by producers as a high risk crop relative to other vegetable crops such as carrots and cabbage. Input costs and management inputs are high (see Table 11.3) and have been increasing rapidly. Yield levels have been extremely variable with the potential for yield loss from the interplay of a thriving array of pests, variable weather



conditions, blast disease and post harvest drying losses. High rainfall, for example, is reported to have washed away an acre of onions on one St. Philip farm in late April this year (The Nation - April 30, 1981). Field inspections of harvested crops in March 1981 revealed losses of up to 50 percent from neck rot on some farms. In addition to the production problems, the marketing infra-structure for onions, notably the infra-structure for the export market, have not met producer expectations. Producers were particularly critical of the responsiveness and capability of the Barbados Marketing Corporation (BMC) in fulfilling its mandate and past contractual undertakings for the marketing of onions domestically and in the export market.

Farmers were not alone in this regard as other constituent clients of BMC, viz. retailers, consumers, importers and traders appear to have a growing level of disenchantment with the products and services offered by the BMC. However, the problems and frustrations of marketing onions are not exclusively those of producers, consumers and traders. The BMC faces several difficulties and constraints, particularly in developing an intra-regional export trade.

- 1) The onion varieties grown in Barbados are typically of high moisture content and extremely perishable and subject to rapid weight loss at all stages of the marketing chain;

TABLE II.1 PRODUCTION, IMPORTS, EXPORTS, CONSUMPTION, PER CAPITA CONSUMPTION, AND SELF-SUFFICIENCY
FOR ONIONS, BARRADOS 1968 - 1980

YEAR	PRODUCTION	IMPORTS	EXPORTS	CONSUMPTION	PER CAPITA		SELF SUFFICIENCY	
					IMPORTS	EXPORTS	CONSUMPTION	DOMESTIC
		TONNES			Kg/person		---	---
1968	136.5	1720.4	1.7	1854.7	7.6	7.2	7.3	
1969	181.4	1586.6	26.8	1741.3	6.9	8.9	10.4	
1970	543.3	1500.6	81.2	1962.8	8.2	23.5	27.6	
1971	907.0	1412.6	53.9	1812.1	7.5	20.3	50.0	
1972	1133.8	1292.3	734.0	1692.1	6.9	23.6	67.0	
1973	816.3	1304.4	498.6	1622.1	6.6	19.6	50.3	
1974	822.68	1163.3	182.8	1803.0	7.3	35.5	45.6	
1975	816.3	1244.3	465.3	1595.4	6.4	22.0	51.2	
1976	680.3	1648.5	296.8	2032.0	8.1	18.9	33.5	
1977	693.0	1312.5	293.4	1712.0	6.8	23.3	40.5	
1978	742.9	1711.0	195.0	2258.8	8.9	24.2	32.9	
1979	539.7	1510.6	70.6	1979.7	7.8	23.6	27.3	
1980	N/A	1831.4	29.9	N/A	N/A	N/A	N/A	N/A

SOURCE: Ministry of Agriculture

TABLE J.2 ESTIMATED ACREAGE OF CROPS HARVESTED IN BARBADOS: 1969 - 1978

CROP	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Yams	2,166	3,036	2,825	2,371	1,529	1,004	1,301	1,138	1,161	1,679
Sweet Potatoes	1,211	1,395	1,656	1,873	1,023	500	1,089	704	1,222	1,222
Cabbage	60	89	120	179	169	230	211	181	288	240
Carrot	262	237	312	272	300	262	328	310	325	500
Cucumber	27	55	64	103	130	197	183	149	327	352
Beet	35	35	40	60	50	62	59	54	58	63
String Bean	191	144	220	206	212	240	186	230	240	262
Tomato	175	172	201	215	271	241	245	247	212	400
Onion	44	133	222	278	200	202	200	167	170	182
Sugar Cane	50,479	49,777	48,735	48,735	43,906	46,316	41,439	39,799	39,265	38,957

SOURCE: Ministry of Agriculture

ESTIMATED COST OF PRODUCTION OF SPECIFIED CROPS IN HAWAIIAN
(SEPTEMBER, 1980)

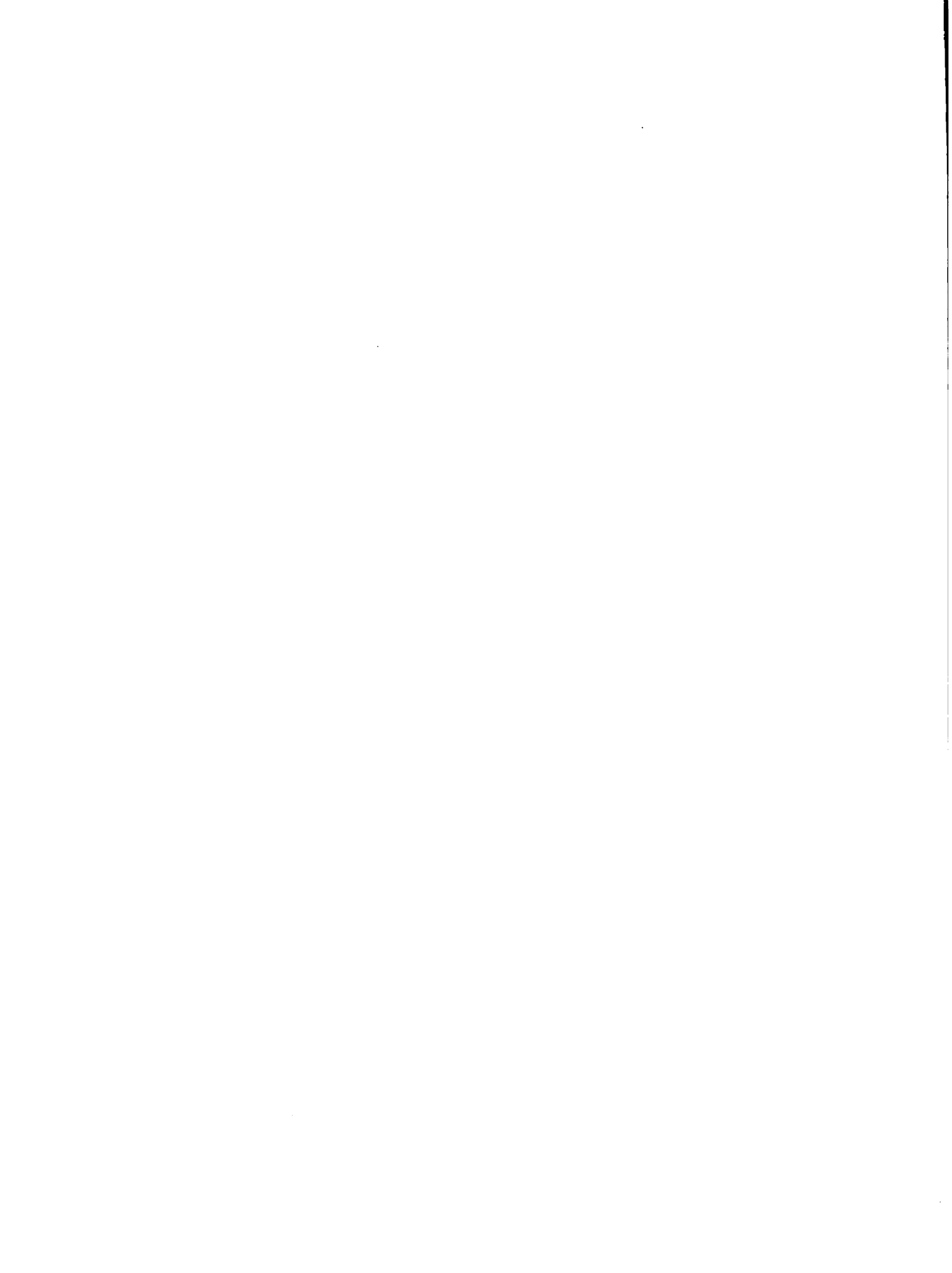
TABLE II.3

<u>OPERATIONS</u>	<u>CABBAGE</u>	<u>CARROTS</u>	<u>ONIONS</u>	<u>YAMS</u>
	----- \$ per acre -----			
VARIABLE COST:				
Land Preparation	116	116	116	74
Planting & propagation	209	71	352	393
Weed Control	150	247	290	136
Fertilizer	490	200	196	155
Pest & Disease Control	441	395	1151	345
Irrigation	301	195	226	—
Harvesting	180	560	557	490
Clearing/Grading	270	240	155	120
Packing/Packaging	330	296	414	384
Transport to Farm Gate	32	32	32	32
Interest on Working Capital	<u>25</u>	<u>25</u>	<u>54</u>	<u>32</u>
TOTAL VARIABLE COST:	<u>2544</u>	<u>2377</u>	<u>3543</u>	<u>2152</u>
FIXED COSTS:				
Land rent	100	100	100	200
Management	464	410	618	928
Depreciation	129	129	101	46
Interest on Fixed Investment	<u>21</u>	<u>17</u>	<u>33</u>	<u>39</u>
TOTAL FIXED COST:	<u>714</u>	<u>656</u>	<u>852</u>	<u>1213</u>
TOTAL COST	3257	3033	4395	3364
cost per lb.	0.36	0.38	0.35	0.28

ESTIMATED COST OF PRODUCTION OF SPECIFIED CROPS IN BARRADOS
(SEPTEMBER, 1980)

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2) The organization does not currently have adequate drying and buffer storage facilities for onions;

3) The availability of inter-island shipping is erratic and it is generally unsuited to the transportation of a sensitive vegetable crop such as onions. Delays in loading and unloading of ships, variable sailing schedules, and lack of environment control in this form of shipping has led to considerable shipping losses;

4) The agricultural marketing protocol (AMP) under which inter-regional trade in onions is arranged does not support the development of a consistent export trade. The inertia and relatively poor communications associated with trading with government agencies in importing countries does not enhance trade potential in perishable crops;

5) The export potential for Barbados produced onions has not been able to compete effectively with extra-regional importation of onions in terms of price and quality in the domestic and export markets.

6) The incentive for producers to participate in the export market via BMC only becomes effective when the supply of onions will not clear the local market at the fixed purchase price for onions on the export market. Consequently, the BMC has more recently less control in the marketing of onions.

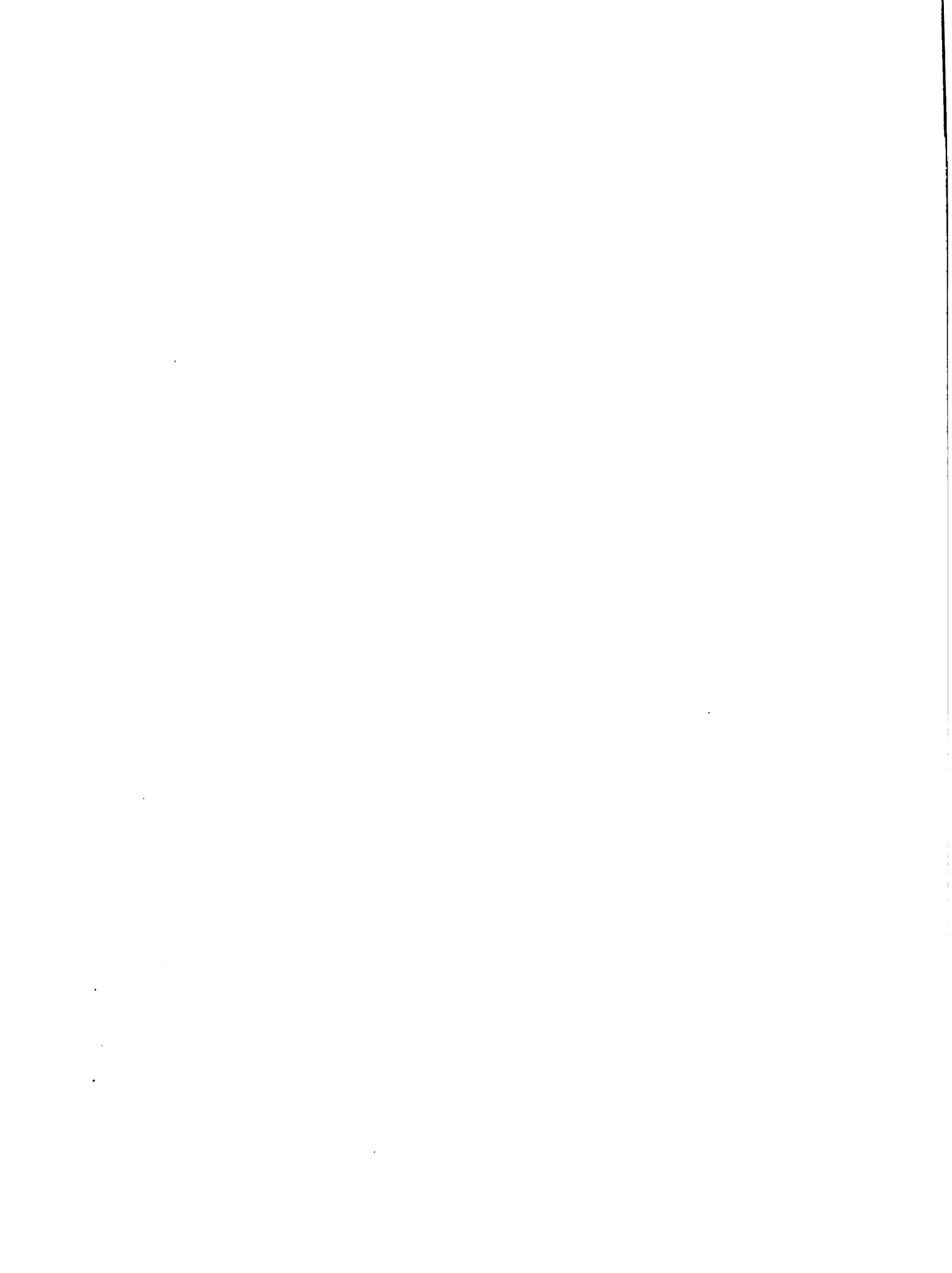
The overall lack of enthusiasm for onion production and export is of major significance given that onions are regarded as being among the front rank of crops which can be used to diversify from the sugar economy of the agricultural sector.



Quite apart from the immediate loss of regional export earnings and reduced capability for import substitution, the loss of acreage and producers will reduce the already narrow base of production expertise and the potential for investment and innovation in production. Additionally, the shift away from onions will undoubtedly create increasing pressure on the small scale vegetable producers as the large estates expand their acreage of other vegetable crops which have been traditionally produced by the smaller scale grower.

In the domestic market, the reduced acreage may well reduce the government's enthusiasm for supporting domestic production in the face of growing consumer antagonism to disruption of onion supply. Similarly, importing countries for Barbados onions under the AMP agreement may well have less enthusiasm and impetus for continuing or improving the agreement. Without this agreement, it is doubtful whether there could be any export trade in onions at all.

Consequently, some immediate visible sign of improvement in the marketing infrastructure and the development of an overall strategy for onion production and marketing appear mandatory to maintain a minimum level of interest in this sector. The areas where definitive steps could be taken are in the critical areas of domestic and export pricing policy, the installation of drying and storage facilities, shipping facilities, growers, the relationship between producers, Barbados Agricultural Society (BAS) and EMC.



111 DEVELOPMENT OF AN OVERALL STRATEGY FOR ONION PRODUCTION AND MARKETING

A fundamental issue to be considered with regard to development of an overall strategy for onions is to decide whether the emphasis of onion production is on developing an expanded and consistent export market or whether it is on import substitution in addition to price protection for producers and consumers. In the short term, it would seem impossible to contemplate the regeneration of an export market given producer attitudes towards this activity and the lack of suitable drying and storage and shipping facilities. A convenient milestone and planning horizon for the redevelopment of an export market would be the relocation and expansion of the BMC facilities. In the interim period, there are several initiatives that could be undertaken to help increase the level of import substitution and prepare for the redevelopment of an intra-regional export market, particularly in the area of policy.

1) PRICING POLICY

Pricing Policy is perhaps one of the more important instruments that can be used to initiate changes in the production and storage pattern for onions both for the domestic market and potentially for the export market.

A strong seasonal production pattern for onions prevails within the growing season as farmers balance the level of risk, available resources, the growing pattern of onions and the costs of production against the potential revenues from the sales of onions. Historically, the balance of these factors favours production of onions for harvest and sale in March in the absence of any price or production incentive to market at other periods within the growing



season. It is recognized that harvest is feasible for January to the end of May but that production typically carries a greater risk in the earlier part of the season and that later season production is more expensive and is more likely to conflict with other activities on the farm for some growers.

Consequently, a system of offering price incentives to growers to even out production must recognize these features while at the same time recognizing the legitimate interest of consumers, taxpayers, the retail and wholesale trade and BMC. An incentive package based on the following system may go some way towards meeting these needs (See Chart III.1.)

The basic tenets of the approach are as follows:

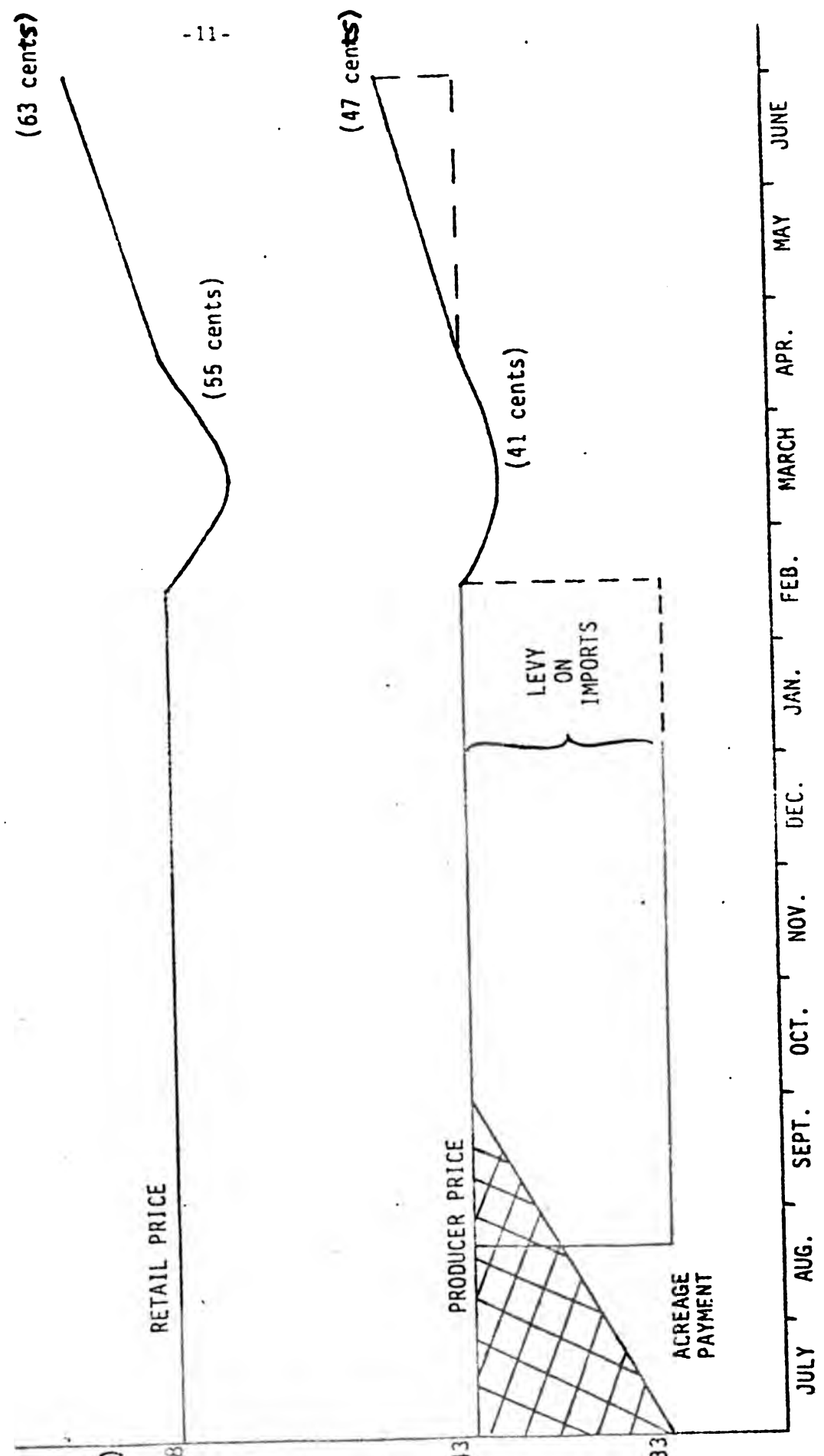
(1) In order to increase the production of onions in the early part of the season, producers who are prepared to plant earlier than usual would receive an acreage payment. It is anticipated that this acreage payment would operate on a sliding scale, that is, a higher incentive for very early plantings with a weekly decline in incentives to the point where plantings will coincide with the start of the peak planting period.

It is expected that the initial incentive would have to be in the order of the equivalent of four cents per pound or \$400 per acre assuming an average yield of 10,000 lbs/acre in order to be of interest to producers. This incentive would be selected to have a weekly maximum acreage and tailored to estimated requirements for the domestic market, and potential capability to meet export contracts. The incentive may also be associated with specific



CHART III.1.

SCHÉMATIC REPRESENTATION OF PROPOSED PRICING POLICY



varieties, hence, providing producers with some incentive and insurance to try new varieties which may be more suited to production and marketing conditions in Barbados. Administration of this exercise could be taken by the Ministry of Agriculture or the BMC. It is proposed the cost of this acreage payment be covered by the application of a levy on imported onions from September to the point when the domestic crop traditionally fulfills the domestic demands for onions, that is, January or February. Applying the levy at this time would have the advantage of being in effect when import prices are lowest and trade margins are highest (See Table III.1). Under current conditions, the incentive program may cost up to \$20,000 which would be recovered by the application of one cent per pound for the average volume of imports which normally take place during this time period.

(2) Over the peak production period, producers, as would normally be the case in a free market system, would be expected to receive a marginally lower price for onions. A lower producer price, say two cents per pound over a five-week period, would provide some disincentive to produce in this period. The lower producer prices at this item would provide greater incentive for undertaking drying, storage, and export activities during the period, the average retail price would be expected to fall, providing consumers with some advantage.

(3) Over the following eight week period, or however long domestically produced onions were available, the producer and retail price would be expected to increase at an agreed rate. Initially, an appropriate incentive may be $\frac{1}{2}$ a cent per week providing an incentive of 4 cents per pound at the end of the

growing period. It would also be important to ensure that the margin between retail and the producer price be changed on a constant percentage rather than a constant price to protect trade interests. This approach has a number of advantages:

- (i) There is a balance of gains and losses to producers and consumers.
- (ii) The producers and peak retail price coincide with the seasonally higher prices for imported onions and the traditional squeeze on marketing margins.
- (iii) The price increases will provide incentives to producers to: extend planting select varieties that will store better; take more care over the harvesting, drying and storage on onions; and, potentially attract on-farm investment in storage facilities.
- (iv) The wholesale trade and EMC will have an incentive for undertaking the storage function.
- (v) The extended season will make the proposed EMC facilities more effective.
- (vi) The early season planting incentives/insurance may induce smaller scale Barbados farmers to experiment with onion production.

Implementation of such a system could well take the level of domestic self sufficiency from the current average of 23 per cent to 33 per cent of total onion consumption. Certainly this would be a realistic target to aim for. If this was achieved it would mean an expansion of some 44 per cent of current onion acreage and a reduction in imports of 13 per cent. One additional feature of this system is that it might provide a focal point for



TABLE III.1 COST OF IMPORTS OF ONIONS, BARBADOS 1977 - 1980

MONTH:	C.I.F. COST PER KILOGRAM			
	1977	1978	1979	1980
January	.74	.44	.57	.75
February			.56	.75
March				
April				
May			.70	.88
June		.77	.76	
July	.82	.68	.79	
August	.72	.62	.82	
September	.61	.55	.72	
October	.38	.52	.67	
November	.36	.53	.69	
December		.55	.75	

SOURCE: Ministry of Agriculture.



improving the tenor of discussions and dialogue between producers, the industry and the BMC.

Two other features that the BMC might consider at the present time in light of the present state of the intra-regional export market, and the absence of suitable drying and storage facilities within the organization, is to permit, as an interim measure, the private sector an opportunity to establish trading links for onions in the Caricom region through an export licence arrangement. A feature which would greatly facilitate this activity would be to establish an import price ^{1/} for specific grades of onions in importing countries under the AMP agreement prior to the planting dates for onions.

2) DRYING AND STORAGE FACILITIES

The proposed BMC facility for onion drying and storage could enhance the potential for increasing domestic self-sufficiency in onions in addition to providing the necessary impetus for redeveloping an intra-regional export market.

There is some concern that the planned capacity for onions in this facility will not meet the potential requirements for export (see Proctor, 1980). This feature needs to be verified prior to construction of the plant. The efficiency of operation of the facility and the marketing of onions in Barbados would be considerably enhanced if a system of bulk handling of onions

^{1/} It would not be absolutely mandatory to have a fixed price prior to planting but perhaps a fixed price range based on some relation to extra-regional import prices for onions. Producers as always would be prepared to accept some risk prior to planting.



can be devised prior to operation of the plant.

3) SHIPPING FACILITIES

The erratic and undependable inter-island shipping provided by the schooner service has repeatedly frustrated the successful development of the export market in Trinidad. Against the experience of recent years, it can be concluded that the schooner service is not a viable means of exporting onions and that alternative shipping should be sought.

During interviews, several alternative means of transportation were suggested and considered. In the short term, there is one alternative which has practical merit and economic feasibility, viz.

--- a private charter service currently operates on a one-to-two week schedule from Canada to Trinidad which stops in Barbados to unload white potatoes all year round and onions (during May to December). The ship is refrigerated and is used as a regular supplier by importers of white potatoes and onions. Discussions with the operators of this service, H.B. Willis Inc., Prince Edward Island, Canada indicate a willingness to consider the establishment of regular transshipment of onions to Trinidad if the trade arrangement can be made.

In the longer term, a number of initiatives are currently being taken to improve the reliability of inter-island shipping. These include:

(a) experimental work by the Caribbean Food Corporation (CFC) to develop a refrigerated mini-container which could be carried on the existing schooners. The container would have its own fuel supply which would last up to 48 hours and could be handled by a forklift and/or shipboard hoist. The capacity would be between 2-3,000 lbs.



(b) The Grenada Marketing and National Importing Board are presently investigating methods of increasing the level of ventilation in the hatches of the schooners in order to reduce the excessive temperatures during transit.

(c) Part of the exports to Trinidad in 1980 were transported in a boat owned by the Government of Barbados. Few modifications to this former fishing boat had been made, and losses were substantial. Despite this, it may be possible to adapt such boats for the successful transportation of onions in the future.

It is recommended that the BMC and the Ministry of Agriculture monitor and support these initiatives where appropriate.

4) RELATIONSHIP BETWEEN GROWERS AND BMC

While the perceived failure in marketing services has been the main bone of contention with growers, an important factor contributing to the reduced interest in onion production has also been the reduction in the amount of advice and communications received from BMC and Ministry officials during recent onion growing seasons. Whereas in earlier years technical expertise was readily available for consultation on disease and pest problems as well as harvesting, this type of communication has been reduced in recent years. However, there appears to be excessive expectations among growers as to what BMC can be expected to achieve as the sole marketing agent for the crop. The essential role of quality and careful pre-harvest treatment and handling in relation to the marketing of perishable and seasonal commodities such as



vegetables is not always fully recognized. There is a strong need for:

(a) The presentation to growers of a detailed statement of the government and BMC's position and commitment to the onion crop and its place in the planned diversification.

(b) More frequent and regular contact should be maintained between BMC staff and the growers. A plan for marketing in the 1981/82 crop should be drawn up at an early date and discussed with the growers and regular contact should be maintained until the harvest is complete.

(c) In view of the importance of the onion storage and handling function it would seem apropos for producers, the Ministry of Agriculture and the BMC to seek support for experimentation with bulk handling systems, practical training of potential plant managers and, possibly, the assignment of outside technical assistance in onion/vegetable storage and handling during the onion harvesting season. It is expected that this activity would operate in conjunction with the existing extension and research services of the Ministry of Agriculture.

5) PRODUCTION

Despite a number of production difficulties in recent years, there is considerable technical capability and confidence, particularly among larger growers, that onions can continue to be successfully grown in Barbados. The



introduction of varieties with a longer shelf life, mainly Golden, is continuing and it is estimated that approximately 80 per cent of the 1980/81 crop was planted with these varieties. There still remains an urgent need to find cultivars which can be stored more readily under the prevailing conditions in the Eastern Caribbean. A renewed and firm commitment by government to support the necessary research program and seek assistance from aid agencies for this purpose is required. Assistance in the selection and use of chemicals which can reduce storage losses would add measurably to producer confidence in the onion crop.

In the longer term,

(1) A research program should be initiated to develop cultivars specifically adapted to Barbados with particular emphasis on storage characteristics.

(2) The feasibility of promoting the consumption of varieties with different external characteristics, e.g. red skins, but which can be stored readily should be investigated. An example of where the red skinned onions could be sold at a premium (a necessary feature to compensate for lower yields) would be to hotels and restaurants for use in salads for the tourist trade.

IV APPENDIX

APPENDIX I
MEETINGS AND INTERVIEWS

Growers

Mr. Patrick Bethell, St. Michael
Mr. Fenty, Clifton Hall, St. John
Mr. Hutson, Mount, St. George
Mr. Kirton, Grove, St. Philip
Mr. Proverbs, St. Lucy
Mr. Skeete, Edgecumbe, St. Philip
Mr. Taylor, Bridge Farm, St. Philip

Barbados Agricultural Society

Ms. V. Munson, Food Crop Agent

Barbados Marketing Corporation

Mr. Edghill, Marketing Manager
Ms. Gibson, Farms Coordinator
Dr. Lucas, Food Technologist

Ministry of Agriculture

Dr. Graham, Head, Plant Pathology
Mr. Williams, Head, Agronomy
Dr. Alleyne, Head, Entomology
Mr. Oswald Parris, Planning Unit
Dr. G. Jones, Entomologist

Trade

Hawkers

Consumer at Supermarkets and BMC markets
R.S. French Ltd
Da Costa & Musson Limited
H.B. Willis Inc., P.E.I., Canada

Aid Agencies

Ms. Proctor, Fruit and Vegetable Technologist, Tropical Products
Institute

Dr. Robinson, Plant Pathologist, FAO

Consultants

Halcrow Caribbean Limited

APPENDIX II

BACKGROUND INFORMATION

1. Barbados Development Plan 1979 - 1983 by Government of Barbados. Ministry of Finance and Planning, Government Headquarters.
2. Barbados Marketing Corporation. Relocation and Expansion of Facilities Scheme Design Report. June 1977. by Halcrow Caribbean Ltd.
3. Planning Proposals for the Agricultural Sector 1978 - 1983. Draft Report, Ministry of Agriculture. 1978.
4. Report on Onion Harvesting, Drying and Storage of Onions in Barbados with reference to the 1976/77 crop season. Jamieson, FAO Agricultural Planning and Development for Food Production Project. September 1976.
5. Workshop on the Caribbean Food Corporation's Role in the Development of Caribbean Food Programs. December 1980.
6. Onion Harvesting, Drying and Storage in Barbados. Proctor, 1980.
7. A Restructured Horticultural Industry - Planned Growth for Exports by Peter Renwick, Horticultural Marketing Consultant. September 1980.
8. A survey of Small Scale Agricultural Marketing Enterprises in the Eastern Caribbean. Systems Ltd. 1980. for FAO.

APPENDIX III

TRADE IN AIR COMMODITIES - 1978

EXPORTS

IMPORTS

	Intra-regional		Total		Intra-regional		Total	
	Quantity(Kg)	Value \$	Quantity(Kg)	Value \$	Quantity(Kg)	Value \$	Quantity(Kg)	Value \$
1. Carrots	---	---	16,621	17,233	5,896	6,500	5,897	6,508
2. Peanuts	15,941	39,045	253,920	574,999	---	---	---	---
3. Tomatoes	3,070	9,266	158,960	432,139	---	---	14	42
4. Red Kidney Beans	---	---	14,249	32,285	---	---	---	---
5. Black Pepper	22,653	30,508	67,405	284,165	---	---	---	---
6. Sweet Pepper	249	335	3,370	9,354	---	---	---	---
7. Garlic	---	---	27,107	67,004	---	---	---	---
8. Onions	---	---	1,710,979	1,027,385	195,011	240,300	195,062	240,846
9. Potatoes, not sweet	12,472	6,847	8,486,277	3,693,986	---	---	---	---
10. Potatoes, sweet	3,039	1,890	3,039	1,890	---	---	23	18
11. Cinnamon	4,216	20,346	4,321	23,644	---	---	---	---
12. Cloves	2,031	33,390	4,354	75,847	---	---	---	---
13. Cabbages	---	---	36,200	49,020	2,358	4,160	2,494	4,400
14. Plantains	575,056	435,287	575,056	435,387	---	---	---	---
15. Pork	---	---	324,030	1,082,641	---	---	---	---
16. Poultry meat	---	---	---	---	---	---	---	---
(a) Whole	---	---	6,293	16,650	---	---	---	---
(b) Parts	---	---	2,035,084	3,052,845	---	---	---	---
17. Eggs	---	---	---	---	---	---	713	4,400
18. Fresh Oranges	7,446	735,098	7,446	735,098	---	---	---	---
19. Pine Apples	38,844	66,031	47,631	81,029	---	---	---	---
20. Pigeon Peas	---	---	355,409	445,955	---	---	---	---
21. Corn	092,260	401,543	21,974,105	7,469,512	---	---	---	---
		1,787,686		19,607,709		251,460		256,220

Source: Overseas Trade Reports.



