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AN APPROACH TO THE PROBLEMS AND PROSPECTS OF VEGETABLE PRODUCTION IN TRINIDAD AND TOBAGO

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ABSTRACT

Trinidad and Tobago depended heavily on imported food crops over the past decade due to the availability of foreign reserves generated by oil revenue. However, the international glut brought about an unexpected downturn in the economy of the country. Under these circumstances a critical analysis of the problems and prospects of the local food production system is of utmost importance. Over the past two years an abundance of vegetable crops has been produced locally causing an apparent over-production problem. Nevertheless, the major problems facing vegetable production in Trinidad and Tobago at present include: Land tenure, Irrigation, Wet season production, Financing, Standard varieties, Pest and diseases control, Post-harvest (transportation, storage), Marketing, Processing and Export. These problems and their prospects are discussed and possible solutions are suggested.

RESUMEN

Durante los ultimos diez años, Trinidad & Tobago dependió mayormente de las importaciones de productos alimenticios y esto fue debido a las reservas de divisas creadas por la producción del petroleo. Sin embargo la "saturación" internacional del mismo, ocasionó un desbalance en la economia del pais. Debido a estas circunstancias, un análisis crítico de los problemas y del sistema de las prespectivas de la producción local de cultivos alimenticios, es de gran importancia. En los últimos dos años la producción local sobreproducción. Ahora sin embargo, los mayores problemas aparente de que se enfrenta la producción de hortalizas en Trinidad & Tobago son: tenencia de tierras, irrigación, producción durante la estación de lluvias, financiamineto, variedades fijas, control de plagas y de enfermedades, post-cosecha (transporte, almacenamiento) mercadeo, procesamiento y exportación. En este estudio, discutimos estos problemas y sus prespectivas y sugerimos soluciones posibles a los mismos.

During the past decade and consequent upon the significant increase in revenue generated by Trinidad and Tobago petroleum industry, critical emphasis was placed on the diversification of the economy particularly as this relates to the energy-based and financial sectors. During this period, too, there seems to have been a steady decline in agricultural production in the country and in consequence Trinidad and Tobago became increasingly dependent on imported food material including vegetables and food crops.

Important socio-economic manifestations in that period included the abandonment of agricultural jobs by significant numbers of workers formerly employed in the agricultural sector and an enhanced rural-urban population drift.

The resultant reduction of available labour exacerbated by the "Special Works Programme" severely affected if not crippled the major earners of foreign currency in the agricultural sector e.g. the Citrus, Cocoa, Coffee and Coconut industries.

This paper attempts to appraise the existing problems associated with vegetable production in Trinidad and Tobago and to assess the prospects for that subsector in the forseeable future.

The present status

During the past two years vegetable production has risen beyond the consumer demands as more and more people turn to agriculture. Factors contributing were, increased availability of labour consequent upon wide-spread retrenchment, an increase in the number of training programmes, an improved technology among the farming community and the increased popularity of backyard gardening.

Certain vegetables, however, tend to attract more profit than others resulting in definite commodity preferences which are reflected in the trend of production of selected vegetable crops as shown in Figure 1. It appears from the figure that tomatoes dominated the market. Cabbage ranks second in production, despite a sharp decline during 1982–84 seasons, which decline was apparently related to the high infestation levels of cabbage bud-worm *(Hellula* sp.) observed recently in this country. Cucumber and melongene maintained the same level of production showing a minor increase during 1983–84 seasons.

The average wholesale price (Figure 2) also indicates that tomatoes were the best selling vegetable attaining a peak wholesale price of $TT 8 kg^{-1} in 1982, declining to $TT 6.8 kg^{-1} and $TT 5.4 kg^{-1} during 1983, 1984 respectively.

Present trends of vegetable production which resulted in the banning of tomatoes and cabbage importation indicates that local vegetable production in Trinidad and Tobago can provide most of the consumer needs year-round. This of course is conditioned with resolving the major problems which include: Land tenure, Irrigation, Wet season production, Financing, Standard varieties, Pest and disease control, Post-harvest (transportation, storage), Marketing, Processing and Export.

Problems and prospects

1. Land tenure

Most vegetable farmers operate on marginal lands. Table 1 shows that the arable land under tomatoes is 0.5% of the total arable land in the country (82,402 ha), whereas cabbage and other vegetable crops occupy 3.62%. The Table also shows that the average hectareage/holding ranges between 0.29 – 0.45 ha. Farms of this size are uneconomical to be utilized under full-time farming. In some areas farmers are operating under a system of land tenure on State-owned land on a monthly basis. In other areas there are 3434 holdings, of average size 2 ha., occupied by squatters on state and private lands totalling 6,599 ha. Uneven distribution of state lands shows that 8% of farmers own 40% of total farm land comprising 80 ha. On the other hand 45% of farmers own only 7%

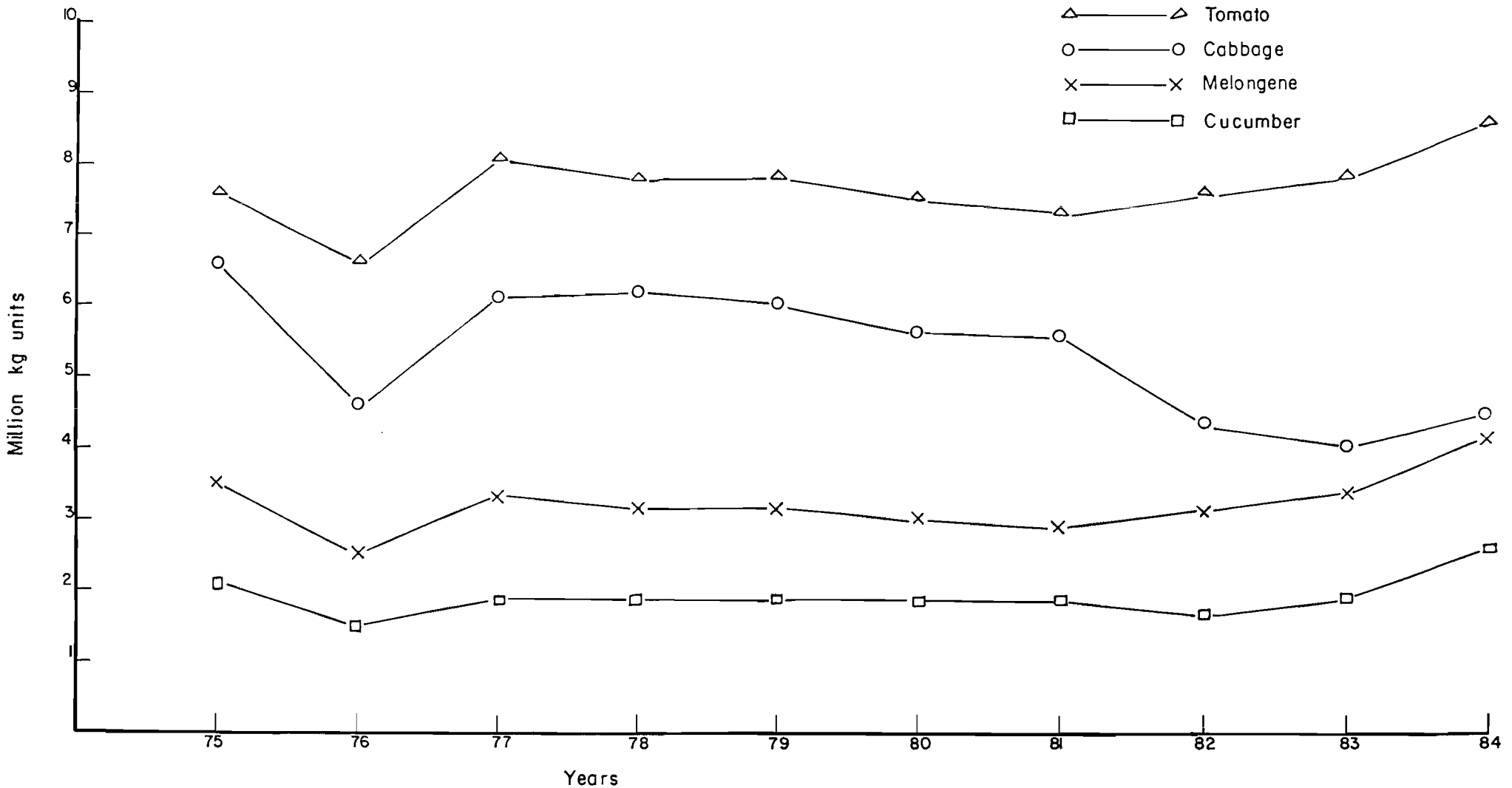

Figure I: Estimated local production of selected vegetable crops in million kg. units (1975-1984) in Trinidad and Tobago.

(Source C.S.O.)

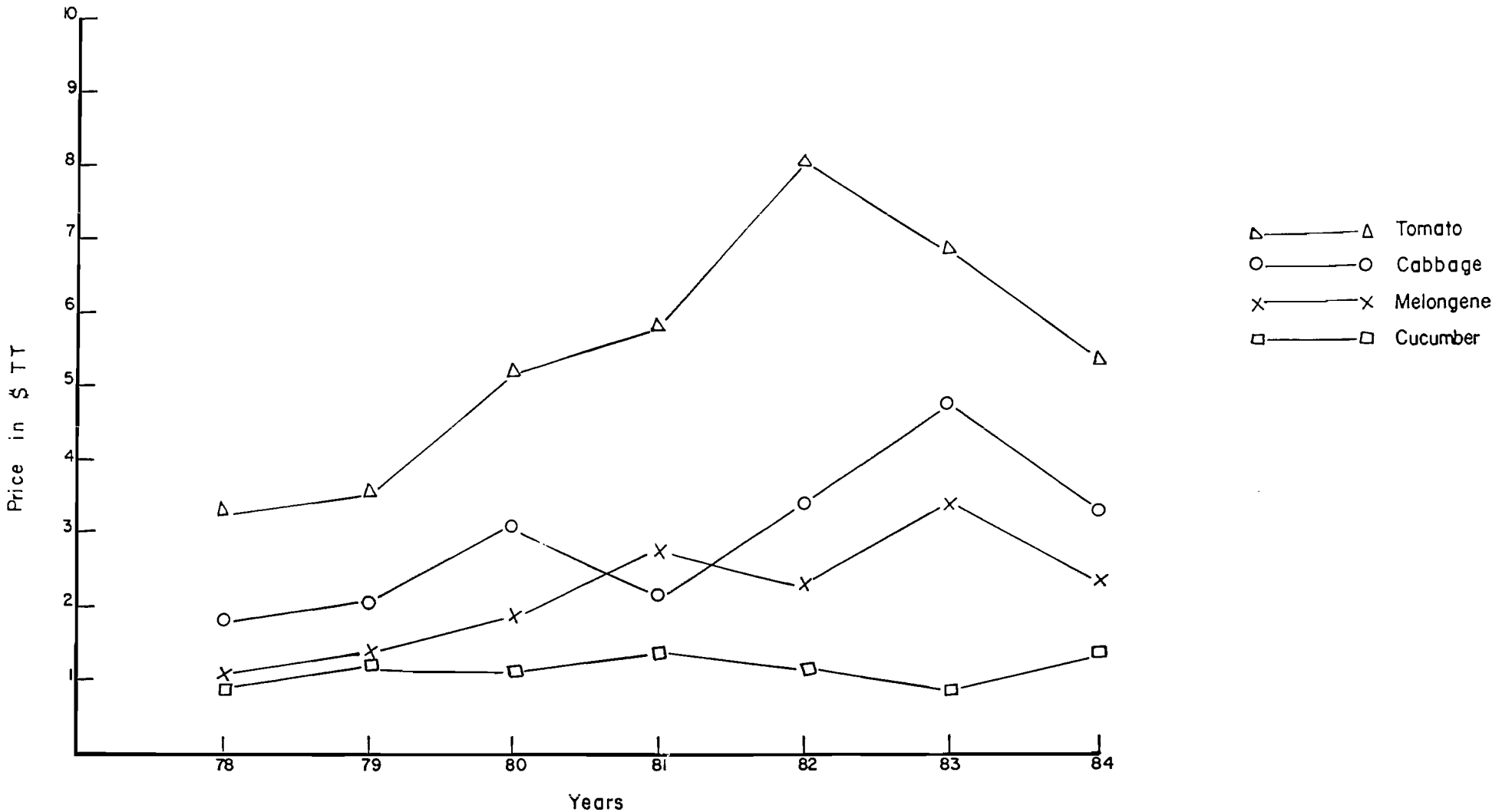

Figure 2 : Average wholesale price per kg. of selected vegetable crops (1978 - 1983) in Trinidad and Tobago.

(Source C.S.O.)

Table 1. Hectarage and location as at May 1982 of sole and mixed vegetable crops in Trinidad and Tobago

Crop/ Location	Cabbage	Tomato	Other vegetable crops	Mixed food crops
St. George	148	195	741	46
Caroni	10	63	730	46
Nariva/Mayaro	2	6	74	21
St. Andrew/St. David	7	10	173	17
Victoria	11	98	537	41
St. Patrick	13	25	447	21
Tobago	5	14	84	9
Total hectareage	196	411	2786	201
Total no. of holdings	615	1415	6179	501
Avg. hec. per holding	0.319	0.290	0.450	0.390
% of total to arable	0.24	0.50	3.38	5.77

Total arable land in Trinidad and Tobago = 82,402 ha.
Source: Central Statistical Office

of farm land on farms of less than 2 ha. This pattern of land distribution indicates the overfragmentation of land. Allowing for the small size of Trinidad and Tobago, and the high population density, limited scale farming would appear uneconomic except for farms in fertile soil of close market proximity. Additional problems are lack of surveyors which tend to prolong the process of acquiring agricultural land to a great extent. Housing schemes which have expanded recently due to the need for building new homes are closely associated with land tenure problems. Most vegetable producing areas are poorly supplied with the required infrastructure especially access roads and marketing facilities. The provision of security of land tenure is the key-word for sound vegetable production.

2. Irrigation

A severe constraint of successful vegetable production is caused by limited irrigation facilities during the dry season. Watering is largely manual which can be inefficient and counter-productive. A cost appraisal of staked tomato by the Central Statistical Office (1983) shows that irrigation cost per hectare amounts to TT $4,450.00. This cost is substantial and does affect the final unit cost.

A resolution of the problem surrounding irrigation resides in the adoption of simple and acceptable technological improvements e.g. overhead sprinklers. Admittedly the cost may be beyond many vegetable farmers, however, farmers co-operatives can seek the technical expertise of the Field Engineering Division of the Ministry of Agriculture, Lands and Food Production (MALFP) in implementing such systems.

3. Wet season production

In the humid tropics (Trinidad and Tobago) high rainfall leads to soil erosion, leaching of soil nutrients, waterlogging and a rapid growth of weeds. Simultaneously the thick dense cloud cover functions as a solar barrier thus preventing an adequate amount of sunshine from reaching the crop canopy. The low level of solar energy (300 – 350 cl cm^{-2} day^{-1}) experienced during the rainy season adversely affects vegetable production in the tropics. In temperate regions vegetable crops grown in the summer obtain twice the amount of solar energy available in the humid tropics.

For yield maximization in the wet season an alternative to outdoor vegetable production is needed. The undercover production systems e.g. hydroponics which have recently been employed by some of the more innovative farmers are ideally suitable to fill the gap which had persisted for a long time. This objective is so far awaiting fulfillment. Taking a close look at hydroponics production of some vegetables during 1984 season one can observe a positive result with respect to tomatoes and lettuce (Table 2).

For hydroponics to be effective in Trinidad and Tobago, full understanding of the system by farmers is a necessary prerequisite to efficient vegetable production. In recognition of this fact the Crop Research Sub-division of the MALFP is in the process of initiating a research project in hydroponics to assist farmers in acquiring the necessary scientific knowledge. At present work in soilless culture is done with encouraging results.

4. Financing

Farm credit is operated by two financing agencies, Republic Bank Ltd. and the Agricultural Development Bank (ADB). However, both facilities are conditioned by proper land ownership or collateral arrangements. Most of the beneficiaries are plantation farmers. Vegetable farmers as discussed earlier lack a proper land tenure, hence they are not eligible for such credit. Moreover the size of holdings and the marginal land under vegetable crops is another impediment. This problem can be resolved by immediate regularization of land tenure in both private and state-owned land. A major contributor to ease this situation is the enhancement of the activities of co-operatives and credit unions and their commitment to agriculture.

Table 2. Total quantity of vegetable crops produced by the undercover system in Trinidad during January-December 1984

Type of crop	Unit of quantity	Total Jan. to Dec.	Quantity harvested Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Tomato	kg	228,262	9,067	5,165	6,556	12,977	6,089	4,311	10,711	36,745	40,917	30,138	33,721	31,873
Lettuce	heads	453,500	32,900	44,200	49,900	49,200	43,200	20,000	18,600	28,000	28,600	40,700	42,800	55,400
Patchoi	bundles	22,550	-	-	10,000	10,000	-	-	-	-	-	300	200	2,050
Cucumbers	kg	13,929	1,556	1,333	1,333	640	2,200	1,600	1,956	933	-	1,822	267	289
Sweetpepper	kg	3,291	1,333	44	44	22	-	-	-	325	219	188	227	289
Celery	bundles	2,000	-	-	-	2,000	-	-	-	-	-	-	-	-

Source: Central Statical Office, 1985.

5. Standard varieties

The varietal situation is very critical, farmers tend to obtain their own seeds either through the garden shop in their neighbourhood or via direct purchase of improved exotic varieties, in the absence of a dependable and continuous seed testing programme, particularly as this relates to seedborne diseases. Smuggling seeds into the country is a national crime committed by some farmers without realizing the serious implications behind it. The indiscriminate purchase of seed material gives way to the possible emergence of unrealiable seed sources. The vegetable seed improvement industry is very profiteering, hence a guard against adulterated seed material is very essential for vegetable farmers. Recently a high price tomato seed variety has been found to be the lowest yielder even during the dry season.

6. Pest and disease control

Pest and diseases commonly encountered in vegetable production are numerous. Farmers tend to depend heavily on chemical control which adds to the total cost of production. Pest control in cabbage amount to TT \$4,332.59 ha^{-1} (C.S.O. 1983). It is stated that chemicals are major pollutants of the environment and unless their effects are carefully monitored and their use properly managed they can result in serious damage to the environment and to the health of people. Misuse of pesticides can greatly increase their hazards.

Indiscriminate use of pesticides can cause the development of resistant strains of insects which might require new chemicals for their control. Mixed cocktails of pesticides are not unusual for farmers e.g. Malathion, Aldrin and Cupravit (Barrow 1982).

More effective and profitable vegetable production can be assured by the use of multiple resistant, high yielding cultivars and improvement of field sanitation together with a defined crop rotation.

7. Post-harvest

The system of vegetable production is geared for the fresh market consumer. This gives the farmers no alternative in cases of overproduction (as has happened in 1983–85 with respect to tomato and watermelon). Farmers have no storage facilities in their farm, they pack and deliver to the wholesale market centres in a very short space of time. The traditional methods of packaging, the long distances of transport, and the inappropriate manner in which vegetables and fruits are handled leads to a great deal of post-harvest losses. Barrow (1981) reported that the FAO (1979) estimated the post-harvest losses of perishable produce of Trinidad and Tobago was 116,000 metric tons including fruits, vegetables and root crops. He also reported that in 1979 the Central Marketing Agency (CMA) dumped approximately 31047kg of produce valued at TT\$213,502.34.

The prospects of storage of vegetables are encouraging after the recent opening of a new \$TT8m cold storage facility plant by the CMA. This facility addresses itself to the needs of farmers who wish to store their produce in case of overproduction. It is also anticipated that the mobile refrigerated container storage facility shall be utilized in distributing perishable goods to other remote areas.

8. Marketing

The major problem associated with marketing fresh vegetables is the wholesale market. Due to its centralization farmers have to travel long distances to sell their produce. Transactions are made in a haphazard manner between farmers and venders or middle-men. The Central Market is congested in such a way that proper display of the produce is impossible. Other related problems include security, lighting etc. The marketing problem can be possibly solved by decentralization of marketing locations to make it possible for farmers to sell their produce with the minimum inconvenience. The improvement of infra-structure and the consultation of farmers organisation in matters associated with proper marketing strategy is of vital importance.

9. Processing

Trinidad and Tobago has a number of processing plants which operate on imported concentrates. Sammy (1972) reported that the fruit and vegetable segment of the food processing industry uses about 80% imported raw material.

Hope (1981) stated that the most dynamic of the food processing industries have been fruit and vegetables which have attracted a large number of small operators and provided a basis for a sound cottage industry. To expand on the existing cottage industry and building a steady processing one there is a need for diversification of production from fresh market produce to processing.

Processing plants require an adequate and reliable source of locally produced raw material at reasonable price. Farmers need to orient their thinking with respect to the long term benefits of a dependable contract market as provided by a processing industry.

10. Export

The cost of production is admittedly high in Trinidad and Tobago due to many factors in comparison with the other Caribbean Islands. However, instances of overproduction coupled with the anticipated cold storage facility, give certain vegetable crops an opportunity to compete in North American Market during the dry season.

For farmers to secure a place in the export market, cost of production has to be reduced significantly.

This is a real challenge which requires proper crop management and favourable conditions in marketing the commodity abroad. This cannot be achieved without investigating the different aspects of the particular market.

Prospects of vegetable production in the forseeable future

This can be summarized into the following:-

(1) A clear indication demonstrated by the government policy in reducing food import bill by $TT36m in the banning of cabbage and tomato imports.

(2) The formulation of a new policy designed to encourage domestic production of exotic vegetables e.g. onion, carrots and beetroot under guaranteed price.

(3) Land tenure regularization is possible in the near future with the establishment of Survey Department at the Unversity of the West Indies, St. Augustine.

(4) Improved level of technology in vegetable production available to farmers.

(5) Highly dedicated research scientists at the Central Experiment Station, Centeno, MALFP, currently engaged in applied vegetable production research.

(6) Active role played by the Extension Services Division in conducting intensive training programmes in all aspects of vegetable production.

(7) Positive response of the CMA to farmers organizations with respect to efficient marketing through decentralization of marketing outlets, cold storage facilities and even distribution of produce.

(8) The commitment of the private sector (Chamber of Industry and Commerce 1983) in supporting self-sufficiency food policy.

Conclusion

Beckles (1980) stated that Trinidad and Tobago economy, unlike that of the rest of the Commonwealth Caribbean is not based completely on agriculture, but is in fact fuelled by the Petroleum sector. As petroleum is a "wasting" asset there is need for diversification to ensure long-term viability of the economy. It is to be agro-industrial sub-sector, among others, that this country must look to increase its earning power.

The agricultural sector has declined in the last decade due to a number of factors. Hope (1981) stated that insufficient agricultural services, a widening urban-rural wage differential, rising production costs and a weak marketing system for domestic food crops have contributed to the general decline of the agricultural sector.

For vegetable production effectiveness in the economy and in the domestic food production systems, strong sound research at the national and regional levels is of vital importance. Extension services and domestic marketing facilities are the back-bone of successful vegetable production industry.

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