



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**PROCEEDINGS
OF THE
CARIBBEAN FOOD CROPS SOCIETY**



**TENTH ANNUAL MEETING
PUERTO RICO**

1972

VOLUME X

PRODUCTION AND MARKETING OF FRESH VEGETABLES AND FRUITS IN THE U.S.
VIRGIN ISLANDS

Darshan S. Padda
Project Coordinator
Federal-State Marketing Improvement Program
Department of Agriculture, St. Croix, V. I.

There is great concern as to whether the U.S. Virgin Islands will be able to produce enough fresh vegetables and fruits for its increasing population. This is one of the most complex problems facing Virgin Islands Administration. A wide variety of factors that affect crop production, consumption, and trade must be dealt with simultaneously. These include the natural resources of the islands, the availability and application of modern agricultural technology of making resources more productive, a wide range of economic and political factors; and finally, a coordination of production and marketing of agricultural products to demonstrate the economic feasibility of the enterprise.

A NATURAL RESOURCES

Land and Topography

The U.S. Virgin Islands are composed of three major islands. The total area of the three islands is less than 140 square miles. St. Croix has an area of 84 square miles. St. Thomas, the second largest of U.S. Virgin Islands has an area of 28 square miles. With an area of 20 square miles, St. John is the smallest of the three islands. The Virgin Islands National Park covers two-thirds of St. John. Only about half of the land is arable. Rough topography makes production difficult. The islands have a wide variety of soils ranging from heavy clay to sandy coastal soils. St. Thomas and St. John have an extremely irregular coast line and are very hilly with practically no flat land. Most of the peaks rise above 1,000 feet. St. Croix has somewhat different topography from the other two islands. It has a broad expanse of low relatively flat land running along the southern two-third of the island. A range of hills, ranging in elevation from about 500 feet to more than 1,000 feet runs along the northern coast. Of the total of 53,760 acres of land in St. Croix, 95 percent is under private ownership. The remaining 5 percent is owned by the Government.

Water

The islands have no permanent rivers and no large storage reservoirs. Rainfall, while above 40 inches annually over most of the areas, is insufficient. This is due partially to a high evaporation rate and the period run off from the steep slopes. Open pan measurements taken in St. Croix indicate the evaporation rates (62.78 inches/year) that exceed the average annual rainfall (44.57 inches). The greatest problem confronting farmers on the islands is that of retaining sufficient soil moisture to produce crops that are otherwise suited to the soils and the climate. Periods of deficient rainfall occur almost every year in some parts of the Virgin Islands. Droughts are most prevalent late in Fall, in Winter, and early in Spring. The severity of drought on the islands has been computed by the Palmer Index, developed by the Environmental Data Service. This computation is based on the difference between the amount of rainfall received and the amount needed to maintain an average for the area. It indicates that mild to extreme droughts can be expected about half the time, severe to extreme droughts about 15 percent of the time, and mild to moderate droughts about a third of the time. These facts about land and water resources indicate that we have problems. But as Mr. Shulterbrandt, our Commissioner of Agriculture in his message to the Agricultural and Food Fair said, "Our problems are not too different from our neighbors. Agriculturist around the world are challenged by adverse weather, adverse soil conditions, crop pests and forces of economics. All these challenges are met and solved." Let me now bring to your attention the factors which are favorable for crop production on our islands.

Climate

The climate is maritime tropical. One of the most equitable in the world. It is characterized by generally fair weather, steady winds, and slight but regular annual, seasonal, and diurnal ranges of temperature (annual average max. 89° and min. 69°F.)

According to Knott (1971) there are five aspects of environment that have an important bearing on vegetable production in the tropics. These are the occurrence of tropical storms, patterns of rainfall, temperature, relative humidity and length of day. Variations in temperature between the coolest and the warmest months are 5 to 7 degrees at the most. This fair weather permit raising of crops throughout the year. The relative humidity is conducive to soil and foliar diseases and insect pests, but with a regular spray schedule this problem can be easily overcome. The latitude of the islands is from 17 to 18°N and; therefore, the length of day changes in different seasons is not very significant. The crops that are neutral today length and the ones with vegetative parts as an economic product produce bumper harvests.

CROPPING PATTERN

The crops commonly grown include yams, sweet potatoes, cabbages, carrots, okras, eggplants, pigeon peas, peppers, corn and tomatoes. The fruits that have done well are bananas, mangoes, papayas, citrus and avocados. The exact acreage under different crops is not known. However, the present trend indicates a strong interest in commercial production of tomatoes and papayas.

The food of Virgin Islanders contain reasonable amounts of meat and poultry which supply enough proteins. However, due to paucity of fresh vegetables and fruits, the food is deficient in vitamins.

The Virgin Islander consumes a considerable amount of root crops. The substitution of a crop such as sweet potato for casava and yams offers a good possibility for improving the diet for vitamin A. Mango, papaya, citrus and tomato are other fruits considerably high in vitamin contents. Therefore, the Virgin Islands Department of Agriculture is planning to vigorously promote the cultivation of sweet potatoes, tomatoes, carrots, mangoes, papayas and citrus.

MARKETING

We who are involved in agriculture know that the name of the game in this industry today is "marketing." Marketing is what makes it all happen. The prices of fresh vegetables and fruits are very high in the Virgin Islands. But, unfortunately, our farmers are not getting even 50 cents out of the consumer's dollar. We remember from our elementary economic course that demand and supply determine the price of commodity.

Demand

The demand for vegetables and fruits depend upon the population. The population of Virgin Islands falls under two categories: permanent residents and tourist. The permanent population of the Virgin Islands is presented in Table 1.

TABLE 1

Population and Land Area of Islands: 1960-1970

Island	Land Area in Sq. Miles	Population 1960	Population 1970	Density per Sq. Mile
St. Croix	80	14,973	31,779	397
St. John	20	925	1,729	86
St. Thomas	32	16,201	28,960	905
<u>Virgin Islands</u>	<u>132</u>	<u>32,099</u>	<u>62,468</u>	<u>473</u>

Source: V. I. Department of Commerce, Division of Trade and Industry

As we can see from the figures presented in Table 1, the density of population per square miles is five times more than that of the United States. (Density per square mile for U.S.A. is 84.9) The density per square mile for St. Thomas alone is second highest in the world.

The second category of population in the Virgin Islands is tourist and the number of consumers under this category is increasing every day. The number of people arriving in the Virgin Islands in 1970-71 was 910,881.

It is evident from these population figures that our demand for these crops is tremendous. No matter how hard we try in our crop efforts, we still have to depend on imports for the foreseeable future.

Supply

In the Virgin Islands, approximately 5,000 acres are being used for agricultural purposes and less than 20 percent is under crop production. All the produce from these acres does not enter the marketing channels because many people maintain home gardens and raise the crops to cater to the needs of their family kitchen. Our main sources of imports of vegetables and fruits include New York, California, Florida, Puerto Rico and the neighboring Caribbean Islands. Dominica is the most predominant foreign supplier of these commodities to the U.S. Virgin Islands. The quantities of various vegetables and fruits imported from Continental United States, Puerto Rico and foreign countries are presented in Table 2.

Although statistics relative to local production are not available, it is an accepted fact that we import more than 90% of our consumption needs. The percentage that is produced locally cannot find customers. The main marketing outlets on the islands include chain food stores, supermarkets, grocery stores and fruits and vegetable vending shops. The local producers being small in size cannot guarantee quantity nor continuous supply.

TABLE 2
Fresh Fruits & Vegetables Imported

Commodities	U.S.A.	P.R.	Foreign
Tomatoes	129,030 lbs.	442,853 lbs.	48,085 lbs.
Onions	43,140	978,025	--
Lettuce	36,400	406,591	--
Beans	--	17,486	--
Pepper	41,380	--	1,750
Watermelon	90,477	735,724	4,650
Potatoes	458,402	--	5,913
Cabbage	11,450	179,854	--
Carrot	--	247,317	--
Celery	--	16,540	--
Cucumber	--	406,591	--
Asparagus	1,050	--	--
Eggplant	--	--	2,770
Dasheen	--	--	89,214
Other vegetables fresh	53,460	4,913,038	146,765
Prunes, Plum	--	26,324	750
Orange	36,260	914,798	660
Apples	40,835	716,695	4,400
Lemons & Limes	--	155,306	400
Grapefruit	6,200	75,486	--
Banana, Plantains	--	24,800	310,580
Grapes	12,872	93,102	--
Pears	--	30,098	--
Avocados	--	--	60,310
Mangoes	--	--	65,680
Peaches	--	26,660	--
Cherries	--	2,000	--
Strawberries	7,372	--	--

Source: Department of Commerce, Division of Trade and Industry

Consequently the buyers prefer to do business with the suppliers on whom they can depend.

The Virgin Islands Department of Agriculture has recognized the fact that in order to keep production going and to bring the many acres of good agricultural land under cultivation that are not producing food crops, the farmer must be offered a package program. The farmer must be assisted from the preparation of land, selection of seeds, planting, and crop management to the marketing technique, such as proper harvesting, grading, packing and finally marketing.

PRODUCTION AND MARKETING COORDINATION

This new program has been made possible through the Federal-State project entitled: "Development of new system of production, marketing and preservation of vegetables and fruits in the Virgin Islands." The main objective of this program is to work growers and provide them with the information and technical assistance necessary to:

- 1) Select the proper variety
- 2) Coordinate planting time to insure a steady supply throughout the year
- 3) Advise on plant protection measures and crop management
- 4) Advise on maturity standards
- 5) Demonstrate harvesting, grading, storing and packaging methods
- 6) Advise on produce merchandising
- 7) Develop market outlets like state farmers' markets, roadside vegetable and fruit stands
- 8) Identify new buyers and assist in negotiations between farmers, supermarkets, and local hotel managers to reach a mutual contractual arrangement

Secondly, to assist home owners in raising vegetable and fruit gardens.

An economic model for increasing crop production in the U.S. Virgin Islands is presented in Figure 1. However, the success of the program will depend on how vigorously these recommendations are implemented.

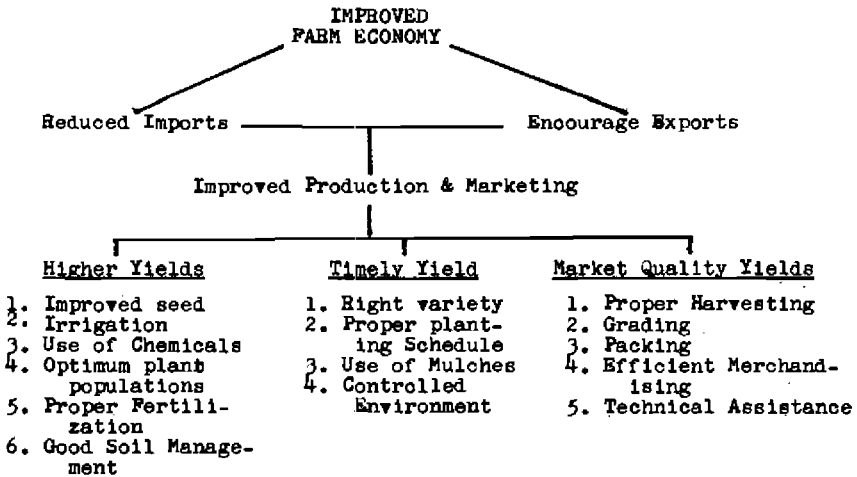


Figure 1.- Economic model for increasing crop production in the U.S. Virgin Islands.

CONCLUSIONS

In conclusion, an improvement in the rate of growth in vegetable and fruit production in the U.S. Virgin Islands will depend on the will and ability of its government and people to take needed steps. It will require extremely large increases in (a) the availability and use of a wide variety of such production inputs as irrigation, fertilizer, pesticides, machinery, and last but not least land; (b) public and private investment in applied and adaptive research to create the technology and trained personnel required to get the needed gains in agricultural productivity, and (c) investment to create an improved fresh crop marketing system required to increase the competitive ability of the local producers.