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A GLANCE AT THE PAPAYA INDUSTRY IN PUERTO RICO: PRESENT  
SITUATION AND OUTLOOK

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ABSTRACT

Tropical or exotic fruits are in constant demand within and outside the Caribbean. Among them, papaya (*Carica papaya*) offers great economic potential. The demand for papaya is the resultant of the recognition of its nutritional value and of consumer's preference attributable to changes in dietary habits. Papayas are cultivated intensively in Puerto Rico for local consumption as well as for export to selected markets. Yields per hectare of papaya are very high if intensively managed. Economic returns are attractive for investors. Significant improvements can be achieved in the papaya industry with sound and realistic planning from preplanting to marketing coupled with the use of high-yielding cultivars and appropriate management technologies. This paper discusses the current situation and suggests recommendations to strengthen production of papaya in Puerto Rico. These could be useful to other countries of the Caribbean Basin.

INTRODUCTION

Agriculture is a major sector of the economy of Puerto Rico. According to statistics from the Puerto Rico Department of Agriculture (Anonymous, 1987), Gross Farm Value in 1986-87, was around \$680 million. The food import bill is around \$1.2 billion, thus revitalization of agriculture is of utmost importance. The value of sales of tropical fruits for that same year was around \$37.9 million. Pineapples, papayas, mangoes and melons were the major fruit crops. Papaya sales were estimated to be around \$3.7 million (Anonymous, 1987).

Papaya is widely cultivated in the island for local consumption and for export. The outlook for increased cultivation and production is promising if sound agricultural technologies are used and an efficient and organized marketing system is established.

This paper looks into the present status of the industry and attempts to foresee its future prospects from the standpoint of an agricultural extension agent.

## DISCUSSION

Among tropical fruits, papaya appears to offer very good perspectives for commercial production in Puerto Rico. Consumer's demand is increasing at a quick pace due to changes in dietary habits and preference for fresh tropical fruits of high nutritional value. Yields may be as high as 160 ton/ha. An added advantage is the relatively short cycle from planting to initial harvesting that then continues for several months. This provides cash income within a short time on a continuous basis. According to the Puerto Rico Agricultural Extension Service (Anonymous, 1988) one hectare of papaya could produce revenues of \$47,127/ha, with total expenses of \$34,849/ha. These data, from the 1988 budget model, is based on a price of 34 cents/kg in the case of fresh fruit and 16 cents/kg in the case of fruit for processing. The study reveals that 60% of the crop is marketed as fresh fruit while 40% is used for processing.

Papaya is typical of a crop where supply meets local demand and leaves a margin for growth as new markets are explored and opened. In the past 30 years the University of Puerto Rico, Agricultural Experiment Station has carried out extensive research in the development of papaya cultivars primarily for the local market and of appropriate production technologies. A sound technological production system has evolved, which is summarized in a publication entitled "Technological Practices for Papaya Production", (Acín, et al. 1987).

The papaya industry in Puerto Rico has been subjected to constant changes, where major limiting factors have been viruses and mycoplasmas infections and an unstable market situation. Various commercial farming operations have contributed throughout the years to meet local demand. At present, Puerto Rican papayas are being produced for the local fresh fruit market, for export into the U.S. east coast, and for processing mainly the preparation of candied papaya, papaya paste, papaya nectar and as a component of a tropical fruit salad. There are four processing plants in Puerto Rico.

The area under cultivation is around 120-130 hectares. The number of farmers involved in this type of venture is not large compared to other enterprises. This may be attributed to the level of sophistication and specialized techniques which are essential for successful commercial production as well as to the high risk and capital investment needed.

Major markets for fresh papayas are the large supermarket chains, the tourist trade (hotels, cruise ships), market plazas, and roadside fruit stands. Participation of the farmer in these types of marketing operations is usually through his own initiatives and efforts. A lower price is obtained if the farmer depends on intermediaries to market his production. Experienced farmers integrate the marketing-production process and avoid, to some extent, dealing with intermediaries that in some cases have been problematic over the years.

Papaya production areas have been shifted during the past 25 years to different regions within the island. The cultivars grown in Puerto Rico have been mostly the large fruit type developed by the Agricultural Experiment Station through years of research. In the past five years the

"Solo" type varieties have increased in popularity but the local consumer is still not used to its higher price.

There are a few cultivars which are widely grown in the island. Commercial plantations range from 0.4 to 24 hectares. Families usually like to keep one or two plants for household use. Commercial plantations vary widely as to ownership and land use patterns. The "Solo" type is grown mostly by foreign-owned companies in land leased from the government. The traditional cultivars are produced by local farmers in privately owned land.

The main cultivars currently used are (8):

P.R. 6-65. Produces an excellent fruit used mainly for industrial or processing purposes. It is characterized by high yields and large fruits.

P.R. 7-65. This is also characterized by large fruits and high yields. It may be used for industrial purposes, but is widely used for the local fresh fruit market. Currently a small part of the production is exported. It is grown mostly in the municipalities of Comerío, Naranjito, Barranquitas and Corozal in the central mountainous region of the island.

P.R. 6-55. Grown mostly in the municipalities of Carolina and Canovanas close to the large metropolitan markets of the San Juan area. It is used mostly for fresh fruit and reported by farmers to be a good yielder of medium sized fruit with good demand for the fresh fruit local market, (R. Colón, Papaya Production Farm, Inc., Personal Communication).

"Solo". Characterized by a lower yield than the local varieties, but with excellent qualities and a good market as fresh fruit. It is grown mainly for export into the U.S. east coast. Plantations are mostly located on the southern and southwestern coast (Santa Isabel, Guánica) and are equipped with drip irrigation systems. According to information provided by the Land Authority of the Puerto Rico Department of Agriculture, 60-70% of the production is for export (Anonymous, 1988). A government-owned packing plant leases its services to the producer companies in that area. The "Solo"-Sunrise cultivar is the major one under cultivation. "Solo"-Waimanalo is cultivated in a small scale in the municipality of Comerío, in the mountain region, for the local fresh fruit market. (A. Torres, Agro-Industrias de Comerío, personal communication).

The area in cultivation of the "Solo" cultivars for the local fresh fruit market is expected to increase, as consumers discover them and develop a "taste" for such a delicacy.

The case of papayas is one where the supply does not entirely meet the demand. Recent publications, like the U.S. Surgeons General Report on Health, indicate that a better diet based on fresh fruits and vegetables is important for health. This report is likely to influence dietary habits in the near future. On basis of the preference for tropical or exotic fruits among U.S. consumers it seems logical to expect an increase in the demand for tropical fruits, specially papaya.

At the farm level it is very important to use a complete package of management technologies for efficient and cost-effective production. This includes the use of highly pest-resistant, high-yielding cultivars of good quality fruit and of appropriate horticultural practices including judicious fertilization, irrigation, and others. Papayas are extremely susceptible to a great deal of viruses, mycoplasmas, insects, and fungus, which may easily destroy a plantation.

The Agricultural Extension Service is called to provide a more efficient and timely flow of information as well as to profitiate horticultural the adoption of cost-effective technologies.

Improvement in marketing --particularly in the case of fresh fruit for export and for the tourist trade-- is of critical importance in these times where agricultural products face intense competition at any level. Farmers must become actively involved and committed in establishing guidelines and policies regarding this enterprise.

Our experience is that successful farm enterprises have been typically those with the most efficient and organized marketing system. Good examples are the local dairy and poultry industries.

Papaya appeals to the consumer and demand is expected to become widespread. Therefore, production will increase not only in Puerto Rico but in other countries of the Caribbean Basin as well. As has been the case in many instances, the supply could overcome demand and prices will decrease. As it happens, retail prices usually stay at the same level but the price at the farm level is generally the most affected.

The development of an orderly system for pricing based on supply and demand will be necessary. This action will have to emerge only through the consensus of all papaya producers. An action of this type should contribute to guarantee fair market prices and improved marketing strategies. Promotions programs are a must. It will be necessary to allocate resources for this activity in order to create greater awareness among the public and stimulate consumption of papayas. An illustrative case is the publication of feature article on papaya in one of the major local newspapers (Krockmal, 1988). This improves exposure and increases sales by creating more demand.

The export market for papayas into the United States should be further explored and stimulated since it appears to offer good perspective. That market is extremely competitive and requires special considerations such as uniformity in fruit, quality, and large volume shipments. Proper handling, packaging and transportation are extremely important (Anonymous, 1987). The infrastructure in Puerto Rico is favorable because there are suitable transportation and communication systems. Fresh products can be delivered almost overnight. Some major airline offer special produce rates for this purpose.

Papayas can be shipped at a quarter ripe stage, without the need of costly treatments prior to shipping. A high quality fruit can then be sent overseas.

Another major segment of the economy in which sales of fresh fruit

should be stimulated is the tourist trade since millions of tourists are visiting the Carribean yearly. By providing high quality fruits on a sustained basis a new potential market is opened, as tourists will shop for tropical products when they return to their homeland. The tourists trade is also a very good source of revenues for local farmers.

Papaya is a promising crop for Puerto Rico. A partnership between all parties involved, that is, the private and the public sector is likely to solve problems and strengthen papaya production and trade. The end result will be beneficial to all as reasonable income can be obtained, more jobs can be created that pay fair wages, and the government can collect more revenues.

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