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THE SUSTAINABILITY OF WHITE POTATO PRODUCTION IN ST. KITTS

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ABSTRACT

White potato production in St. Kitts was re-introduced in 1985 and has shown dramatic increases during its first five years from 15,875 kg in 1986 to 303,907 kg in 1990 but declined to 243,580 kg in 1991. White potato production was re-introduced as part of the Agricultural Diversification Programme with the main target being to meet half of the annual domestic demand of 544,300 kg by 1990. To support the activity, Government provided incentives including subsidised seed, land for potato production as well as research and developmental support. The initial success of the white potato activity resulted in the private sector becoming involved in seed importation while farmers found potato production highly profitable with a relatively large domestic market. The sustainability of white potato production in St. Kitts is dependent on continued Government support, increased private sector involvement and development of export marketing. There is also need to improve storage facilities, to further develop cultural practices using appropriate technology and to ensure that increased production has no negative impact on the environment.

INTRODUCTION

St. Kitts and Nevis is a small independent country with a population of 45,000 people and has a combined area of 269 square km. The twin island Federation is located at approximately latitude 17 15'N and longitude 62 40'W and is a part of the sub-regional grouping of the Organisation of Eastern Caribbean States (OECS). The economy has traditionally been dependent on agriculture, mainly sugar, but within recent years a significant decline in sugarcane production has been recorded. The decrease in importance of the sugar subsector to the economy is reflected in the decline of its contribution to the GDP from 17 per cent in 1980 to 4 per cent in 1990 *[Planning Unit, 1992].* Sugar export earnings however continue to be significant and account for up to 20 per cent of total exports during 1990.

The Government has placed emphasis on economic diversification and is implementing an agricultural diversification programme. One of the targets of the 1986-90 Five Year Development Plan was the reduction of vegetable imports by 50 per cent during the Plan period as a result of local production *[Development Plan, 1986].* White potato *(Solanum tuberosum L.)* was identified as a major food import item among the vegetables with potential for local production. The annual estimated demand for white potatoes is 578,000 kg.

White potatoes had previously been grown in St. Kitts during the early seventies by small farmers and the planters on the sugar estates. The last cultivation was during the 1976/77 season when production was estimated at 71,262 kg. The main reason given for the decline of white potato production during the mid-seventies was the high cost of the seed material. The cultivar grown then was Red Pontiac and a private company was responsible for the importation of seed from Canada.

White potato production on St. Kitts was re-introduced in 1985 when the Government procured 5,000 kg of seed tubers for planting during the 1985/86 season. The seed material which consisted of two cultivars, Desiree and Monalisa, was sold to 30 farmers at the subsidised price which was approximately 75 per

cent of the CIF price. The subsidy on the imported seed decreased annually until 1991 when the seed material was sold at cost price which included the CIF price plus local handling charges. The Department of Agriculture and the Caribbean Agricultural Research and Development Institute (CARDI) provided technical support and the crops were grown under rainfed conditions by farmers on small plots around the island.

PRESENT PRODUCTION

Since its re-introduction in 1985, white potato production in St. Kitts has shown dramatic increases with production increasing from 15,875 kg in 1986 to 303,907 kg in 1990 (Table I). During that period the number of farmers involved in white potato production increased from 30 in 1986 to 115 in 1990 while the area cultivated increased from 2.0 to 22.0 ha. Also during that period the average commercial farm yield increased from 7,500 kg/ha in 1986 to 14,027 kg/ha in 1990. Up to 70 per cent of total production came from the commercial farms and generally those yields were higher than on the part-time or traditional farms. A decrease in production was observed in 1991 when the annual area planted declined from 28 to 22 ha and the total production declined from 303,907 kg in 1990 to 243,579 kg in 1991.

Table I. Summary of Annual White Potato Production In St. Kitts, 1986-91

Year	Est. Total Production (kg.)	Average Commercial Farm Yield (kg/ha)	Est. Area Planted (ha)	No. Farms
1986	15,975	7,500	2.0	30
1987	34,019	11,000	3.5	50
1988	106,594	14,349	5.0	70
1989	272,155	17,798	16.0	90
1990	303,907	14,027	28.0	115
1991	243,579	12,718	22.0	110

Source: Dept. of Agric., St. Kitts.

In St. Kitts the white potato crop is normally planted during the last two months of each year and harvested during March and April of the following year. The white potato has a storage life of approximately three months under ambient conditions hence good quality potatoes are available between March and June of each year. As a result of the short storage life under ambient conditions, only about 200,000 kg can be sold annually on the domestic market. A situation of relative surplus would therefore prevail during the second quarter of the year, which in turn would lead to significant losses if no export market is developed. A reduction in the price of white potatoes on the domestic market has also been observed during that period. However, the storage life of the white potato can easily be expanded by cold storage.

The involvement of the private sector in significant purchases of seed has declined since 1989 because as a result of the additional seed imported, production in 1990 was 50 per cent more than the market was able to absorb during the short production period. It has already been shown that because of the absence of cold storage facilities for white potatoes, significant losses can result when production is more than 200,000 kg. Surplus production resulted in trial shipments of up to 25,000 kg to Antigua during 1990. The export to Antigua has not been sustained mainly due to relatively high export prices and unreliable sea transport between the islands. However, smaller amounts have been exported during 1991 and 1992 to other nearby islands.

SUSTAINABLE PRODUCTION

The sustainability of the production levels is dependent on the availability of planting material, land for planting and expansion of the market. White potato production during the first five years since its re-introduction was sustained by Government's support which included sale of seed material at a subsidised price, availability of land for planting, research and developmental support and a relatively large domestic local market. The Government through the Ministry of Agriculture has remained the major purchaser of seed. From 1989, small amounts of seeds have

been purchased annually by a local company and during 1990 a local agricultural company purchased a significant amount of seed material.

IMPACT ON DOMESTIC PRODUCTION

White potato production in St. Kitts has impacted on agriculture production in a number of ways. Following its re-introduction it has become the major cash crop for a large proportion of farmers. The financial success of white potato production as a farm activity has been the main reason for the rapid growth during the first five years.

White potato production has enhanced the viability of non-sugar agriculture crop production and has positively affected the development of commercial small to medium scale farms on St. Kitts. Successful white potato production requires timeliness of all cultural practices including fertilizer application, weeding as well as pests and disease control. St. Kitts does not have a strong tradition in non-sugar commercial agriculture and so the farmers tend to be reluctant to adapt improved technologies which may be necessary for sustained agriculture production. White potato production has demonstrated to farmers the importance of adopting improved cultural practices if farm productivity is to be further developed.

White potato production has had some negative impact on vegetable production. Compared with other vegetables, the greatest demand exists for white potatoes which occupies the largest vegetable crop area during the first half of the year. This crop is given priority by many farmers during its growing period at the expense of other vegetables. As a result timely cultural operations for other vegetables have suffered and have led to occasional shortages or decreases in quality of other vegetables during the first half of the year.

IMPACT ON THE ENVIRONMENT AND NATURAL RESOURCES

White potato production has been successful to date because of the low incidence of pests and diseases and the availability of land for crop rotation. During the first three years, white potato was planted on farmers holdings but as production expanded and mechanisation developed, there was need for larger tracts of relatively flat land. During 1990 and 1991, the increased demand for land was met by crop rotation with sugarcane on lands provided by the sugar industry. Availability of lands on farmers plots for white potato production is becoming a limiting factor because of the need for crop rotation. Crop rotation is important for sustainability if we are to minimise the incidence of pests and diseases.

The present small scale of production appears to have minimal impact on the environment. However, if white potato production is developed for the export market of the nearby OECS countries, then the sustainability of the environment can be adversely affected if the use of pesticides and fertilizers are not closely monitored.

As the scale of production increases, the risks of serious soil erosion grows as well. White potato production leaves the soil relatively bare during the first month which generally coincides with the end of the rainy period. Significantly soil erosion can result during the period and can adversely effect soil fertility including rapid loss of soil organic matter. It is proposed that white potato crops be rotated with sugarcane which adds relatively large amounts of organic matter to the soil annually.

APPROPRIATENESS OF TECHNOLOGY

There is increasing mechanisation in the production technology being developed. All the land preparation activities are mechanised while planting is manual. In the larger size plots on relatively flat lands, mounding and pesticide applications are also mechanised while harvesting is generally manual but some mechanisation has been introduced.

The use of heavy harrows during land preparation leaves the soil bare at the start of the cropping period. The land is also left flat as opposed to having ridges and furrows when it is prepared for mechanical mounding. Both activities can result in severe soil erosion during heavy rains. The land is also left bare for longer periods when pre-emergent herbicides are used.

IMPACT ON SOCIAL AND CULTURAL INSTITUTIONS

There are no organised farmer groups in St. Kitts. Farmers operate fairly independently and the type of crops grown are mainly influenced by what the farmers believe that they can sell, the ease with which the crop can be produced and the level of risk. Farmers generally sell to supermarkets and hotels or directly to consumers in the public market on weekends. Because of its larger volume, farmers have had to expand their marketing operations. An increase in the wholesale activities have been observed and the need for farm transportation has been realised. Farmers have also become temporary employers on non-family labour particularly during the planting and harvesting period.

FUTURE GROWTH

There is ongoing agronomic research with The University of the West Indies to develop an improved production system for white potato production in St. Kitts. The research aims to increase productivity and to reduce the cost of production so that the white potatoes can become competitive in the sub-regional market and export markets can be developed. The small domestic market limits future growth in production unless the export market is developed and or cold storage facilities are provided.

Development of the export market would require Government support at least during the initial stages. In the absence of any farmer organisation, the Department of Agriculture and the Central Marketing Corporation (CEMACO) can be expected to play leading and facilitating roles. However, the sustainability of such an effort would require the development of some form of private enterprise to assume the responsibilities for export marketing. It would be preferred if the farmers become actively involved in the grouping that develops the marketing initiative.

CONCLUSIONS

This paper has reviewed white potato production activities in St. Kitts since its re-introduction in 1985 and has examined the sustainability of the production system. The importance of Government's support during the first five years of production has been emphasised while the need for improved storage and new markets for expanded production has been highlighted. It was shown that the rapid growth in production during the early years was mainly as a result of the profitability to the farmers.

The paper has also attempted to briefly examine the impact of white potato production on domestic production, the environment, farmer groupings and the appropriateness of the technology used. It was shown that successful white potato production had a positive impact on farmer adoption of improved technologies but diverted farmers attention away from the production of other vegetables during the first half of the year. The potential negative effect on the environment was also presented and a recommendation for crop rotation with sugarcane to minimise loss of soil fertility was made.

REFERENCES

DEVELOPMENT PLAN (1986): National Development Plan of St. Kitts and Nevis, 1986-1990.

PLANNING UNIT (1992): St. Kitts Statistical Division/OECS/EAS 1991 Provisional data.