



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**



**12th ANNUAL MEETING
JAMAICA**

1974

VOLUME X11

Some Economic Aspects of Root-Crop Production in Jamaica

Lloyd B. Rankine

Faculty of Agriculture, U.W.I. Mona
Jamaica

SUMMARY

In terms of total production as well as yields per acre the Yam (*Dioscorea spp.*) is the most important root-crop in Jamaica and a major component of the sub-sector commonly designated "Domestic agriculture."

In 1962 this sub-sector contributed \$15.5 million to the GDP. By 1972 this had increased to \$24.9 million having achieved an annual growth rate of 5.4% while the agricultural sector as a whole grew at only 3.2% per annum and the economy as a whole achieved a growth of 5.3%.

Yam production over the period 1965 - 1972 represented between 50% (1965) and 64% (1968) of the production of the major root-crops grown in Jamaica including sweet potatoes, Irish potatoes and others, and averaged 50% over the period. Production of Yams rose from 56.6 thousand tons in 1965 to 164,000 tons in 1972.

Yams as an Earner of Foreign Exchange

Reports by the Agricultural Marketing Corporation disclose that for the period 1964 - 1971 approximately 14.3 million lbs. of Yams were exported by that Corporation bringing in approximately \$0.71 million in foreign exchange. Private traders also are believed to have exported significant quantities.

Varieties

Among the ten (10) most popular varieties of Yams grown in Jamaica - Yellow yams have been predominant, averaging annually 33,000 tons over the period 1965 - 1972 or 35.6% of the total Yam production, with Negro yam 21,800 tons or 23.7%, Renta yam 1,760 tons or 1.4% and Lucea yam 7,600 tons or 8.2%.

Employment

It is estimated that 28, 018 acres devoted to Yam production in 1972 provided 3,299,679 man days of employment on farms in that year. Additional employment opportunities were provided by marketing and processing activities in the public and private sectors.

Status of Yams as a Food Item

Yams constitute a major food item in the local dietary. The nutritional value of yams compares favourably with that of Irish potatoes and other root-crops.

One thousand grams can supply just under $\frac{1}{2}$ the daily requirements of calories for an adult male, approximately 30% of the protein requirements, nearly $\frac{1}{2}$ the fat required and more than adequate iron, nearly twice the requirement of Vitamin C and also some trace of Vitamin A.

Linkages with Manufacturing: Examples of linkages cited are -

- (1) the manufacture of Instant Yam in Barbados consisting of yam flakes

- (2) current investigations into the incorporation of Yam Flour into Baking Flour and use of root-crops as animal feeds.

Characteristics of the Root-Crops Industry

Production is seasonal - periods of abundance allowed by periods of scarcity with corresponding price fluctuations.

Research inputs are small and spasmodic without defined policy objectives. Only small increases have been noted in yields/acre from year to year.

Effect of Government Policies

Establishment of the AMC providing a guaranteed market at guaranteed prices for root-crops and initiation of a subsidy programme are considered to be largely responsible for the expansion of production of root-crops between 1969 and 1972. During this period yam production increased from 68,900 tons to 163,900 tons.

The AMC has done much to develop the export of Yams and presently handles between 10 and 20 per cent of all domestic food crops produced in Jamaica.

The Agricultural Subsidy Programme provided a subsidy limited to \$16 per acre of Negro yam (D. rotundata) White yam (D. alata) or Yampie (D. trifida) grown by small farmers and to a limit of 2 acres per farmer. Subsidies paid out over the period 1969-1972 totalled \$208,812 for Negro yams (13,050 acres) \$10,825 for Yampies (676 acres) and \$8,834 for White yams (552 acres).

It appears that approximately 75% of all Negro yams planted received subsidy, 37% of the Yampies and 40% of the White yams planted.

Trends, Acreage and Yields

The Paper presents Tables which indicate continuous annual increases of acreages planted to Tellow yams, Negro yams, Renta and Yampies between 1967 and 1972.

White yam after showing marked increases between 1970 and 1971 showed a slight decrease between 1971 and 1972. This might be due to depredation by nematodes and disease problems.

Preliminary data for 1973 indicate the likelihood of a decrease in all yam acreage harvested during 1973. This may be partially attributable to a prolonged period of low prices combined with spiralling input costs and partially to pest and disease infestation.

Comparison of yield per acre from one year to another show variations upwards and downwards which may reflect weather effects. However, over the six year period 1967-1972 the average annual production of Lucea yam increased to 5.34 tons from 4.97 tons per acre in 1967.

Negro yam at an average of 5.64 tons showed no appreciable change, neither did Renta or White yams averaging 4.79 tons. Yellow yams with an average 4.38 tons showed variations upwards and downwards, but Yampies at 2.75 tons per acre showed an increase over the 1967 average of 2.54 tons. Other varieties showed no significant change.

The Author suggests that the deficiency in research inputs directed towards development of a complete package of technological improvements may have been responsible for the rather static position of Yam yields in the country.

Production System

The bulk of the island's yam planting takes place January to March and harvesting is continuous between September and January. However, owing to climatic variations some Yams are available at all seasons of the year.

Lucea yams are grown chiefly in the Grange Hill Land Authority area while Negro yam and Yellow yam are concentrated mainly in the Christiana area.

Yams are most commonly planted on hills with spacing varying between 3 x 3 and 7' x 6'. Small tubers, heads or bits are normally used for planting.

Yams are staked using Bamboo or Hard wood poles - and cultivation practices are normally restricted to weeding, twining of the yam vines around the stakes and application of fertilizer. Chemical weed control is rarely practiced. Great care is exercised in harvesting to avoid damage to tubers - a pointed stick is commonly used. After reaping, the yams are exposed to the sun for drying - this facilitates removal of excess earth and promotes healing of any tubers damaged during harvest. The system of yam production adopted is highly labour intensive and little use is made of mechanical equipment. Production units are often fragmented.

Economics

Data provided by the Agricultural Planning Unit and from a survey conducted 1968-1970 involving 98 farms, suggests that Yam growing was only marginally profitable in two Land Authority areas while other areas showed losses up to 9 cents per lb. These returns are based on Farm Gate prices ranging between 4 and 6 cents per lb. which are closely related to prices paid by the Agricultural Marketing Corporation.

Cost of production varied between 4 cents per lb. in the May Pen area to 14 cents in the Grange Hill area. The average overall being 7 cents per lb.

Labour expenses varied between 33% and 60% of total costs. Land preparation involved the highest labour inputs ranging between 44 to 66 man days per acre.

Planting involved an average of 11.5 man days per acre ranging between 5.85 in Christiana to 25.5 in Grange Hill. Weeding and other cultural operations, excluding fertilizer application, averaged 19.56 and 12.59 man days respectively.

Harvesting involved an average of 15.95 but ranged between 11.50 and 24.50. Total man days required per acre per crop ranged between 91.62 to 152 man days.

Family Labour

Family labour contributed an average of 45 man days per acre but ranged between a low of 28.25 and 74.62 man days.

Yield Per acre ranged between an average of 3.5 tons in some areas to over 5 tons per acre in others.

It is concluded that there is considerable scope for improvement in the majority of the farms surveyed (these were mostly on farms of less than 5 acres in size).

Labour Productivity

The survey indicated that the overall average productivity per man day employed on the farm was 69.43 lbs. of yam ranging between a low of 40 and a high of 99 lbs.

Marketing Aspects

While retail price to consumers varied between 10-25 cents per lb. prices paid to farmers ranged between 4.29 and 7.38 cents in 1972 and between 6.33 and 10 cents in 1973. A Table is presented showing monthly prices paid to farmers by the AMC between 1967 and 1973 for six different varieties and another showing annual average price paid. The latter indicates a steep increase in the prices for Yellow yam between 1972 and 1973 (from 4.29 cents to 10 cents) and modest increases in other varieties, following six years of virtual price stagnation.

The Table of monthly prices indicates wide fluctuations depending on availability of supplies - Lucea yam for example ranging between a low of 5.50 cents in January to a high of 10 cents in July and Yellow yams from a low of 3.91 cents in January to a high of 6.86 cents in August.

The Export Market

Between 1964 and 1970 over six million lbs of Yams were exported to the U.S.A., the U.K., Canada and other Caribbean islands. Between 1971 and 1973 another 3.9 million lbs. were exported but a decline which started in 1971, has developed - due, it is suggested, to competition from Africa and other Caribbean countries.

The Author proposes that in order to expand the export market it will be necessary -

- (1) to change the form in which the product is now available
- (2) to increase the protein content of yams
- (3) to secure greater co-ordination of export activities between Caribbean exporting countries

Long Term Development Planning

The Author suggests that in order to promote sound development of the Yam industry it will be necessary -

- (1) to effect the utilization of land with high production potential than those now commonly used for the crop
- (2) to mobilise resources of research to develop a package of improved production techniques.
