Agriculture

Annex No. 13

COUNTRY REPORT 1977-78

IICA Office in Jamaica

IICA

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THE PRODUCTION AND MARKETING OF YAMS

FROM

ALLSIDES AND THE CHRISTIANA AREA OF JAMAICA

"AGRICULTURE IN JAMAICA"

Collection of papers of the Office of IICA in Jamaica.

No. 1. Fritz Andrew Sibbles, "Basic Agricultural Information on Jamaica", Internal document of work, January, 1977.

No. 2. Yvonne Lake "Agricultural Planning in Jamaica", June, 1977

No. 3. Aston S. Wood, Ph.D., "Agricultural Education in Jamaica", September - October, 1977.

No. 4. Uli Locher, "The Marketing of Agricultural Produce in Jamaica", November, 1977.

No. 5. G. Barker, A. Wahab, L.A. Bell, "Agricultural Research in Jamaica", November, 1977.

No. 6. Irving Johnson, Marie Strachan, Joseph Johnson, "Land Settlement in Jamaica", December, 1977.

No. 7. Government of Jamaica "Agricultural Government Policy Papers", February, 1978.

No. 8. Jose Emilio Araujo, "The Communal Enterprise", February, 1978.

No. 9. IICA and MoAJ "Hillside Farming Technology - Intensive Short Course", March, 1978.

No. 10. Jose Emilio Araujo, "The Theory Behind the Community Enterprise-Seminar in Jamaica", March, 1978.

NO. 11. Marie Strachan, "A National Programme for the Development of Hillside Farming in Jamaica",April, 1978.

No. 12. D.D. Henry, "Brief Overall Diagnosis of Hillside Farming in Jamaica", May, 1978.

No. 13. Neville Farquharson, "Production and Marketing of Yams from Allsides and the Christiana Area of Jamaica, May, 1978.

THE PRODUCTION AND MARKETING OF YAMS FROM ALLSIDES AND THE CHRISTIANA AREA OF JAMAICA

By: Neville Farquharson

TABLE

OF

CONTENTS

No. 1 INTRODUCTION 2

No. 2 STORAGE GRADING AND TRANSPORTATION 4

No. 3 GENERAL FEATURES OF YAM PRODUCTION IN ALLSIDES 8

No. 4 PRESENT MARKETING OF YAMS 25

No. 5 MARKETING BY SMALL-TRADERS 29

No. 6 HIGGLER PRICES 30

No. 7 THE AMC 31

No. 8 DEMANDS, SUPPLIES, PRICES AND INCOMES 43

No. 9 COST OF PRODUCTION (WHITE YAM) 49

No. 10 IMPROVING THE PRODUCTION AND MARKETING OF YAMS . 53

No. 11 IMPROVING THE OPERATION OF AMC AND HIGGLERS IN RELATION TO SUPPLY, DEMAND AND PRICES 58

No. 12 REDUCING THE EFFECTS OF NATURAL LIMITATIONS 61

No. 13 PROVIDING FINANCE FOR PRODUCTION AND MARKETING 64

No. 14 PROVIDING INFORMATION AND ORGANIZING FARMERS AND HIGGLERS FOR PRODUCTION AND RURAL DEVELOPMENT.66

No. 15 SUMMARY OF SURVEY DATA 65

No. 16 BOTANICAL NAMES OF MAIN VARIETIES GROWN IN JA. .. 94

No. 17 LIST OF MAIN REFERENCES 95

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Neville Farquharson
(Agri. Economist)
22/4/78

1. INTRODUCTION

Purpose of Study.

The purpose of this study expressed in the simplest and most general way, is to see step by step, how yams produced in Allsides by farmers, reach and are purchased by consumers of this product mainly in Jamaica.

Viewing the study in this way enables us to first identify the people, whether groups and agencies involved in the production and distribution of yams, and at what stage and how they are involved in this process of getting yams from the farm to the consumer. The other factors, economic, social etc., which affect this process also have to be studied. Based on this knowledge of the human and other elements involved in this process, we are in a good position to suggest ways of improving production and the marketing system to benefit the majority of people affected by it and contribute to developing the nation.

Production of yams in the Christiana area and the nation as a whole, can be stimulated by increasing the available inputs directly required for growing yams. For example, the efforts of farmers, government and non-government agencies on the Project Land Lease (PLL) farm at Allsides. These efforts to increase the available land for yam production, providing credit to purchase fertilizers, material etc. can stimulate production.

But just as important, there must be a proper marketing system to make sure that once the commodity is produced, it reaches the consumer at a price which the house wife can afford and a farm-gate price which contributes for a better real income for the majority of farmers and traders.

In this respect, both physical, financial inputs and marketing work together to stimulate production, improve income of the majority of farmers and traders while increasing supplies at better prices to consumers.

GENERAL APPROACH AND SURVEY METHOD.

This work is really a case study of production and marketing of yams from Allsides, a district in the Christiana Area. But the fact that this district is in many ways similar to most others, and the Christiana Area is the major yam producer in the country, means that our approach must be to thoroughly look at all the elements involved in marketing in Allsides since the facts, conclusions and recommendations from this case study are important to yam production and marketing in Jamaica.

As mentioned before, our primary objective is to look at the various aspects involved in getting yams produced in Allsides to the consumer.
The main aspects to be dealt with are:-

1. Yam production - the production of the main kinds(or varieties) of yams grown in the area will be looked at to the extent that these aspects affect marketing.

An overview of the quantities of yams produced in Allsides, in the Christiana Area and in relation to Jamaica as a whole will help to set the importance of production and marketing from this district in proper perspective.

In addition, certain technical aspects and cultivation practices used will be discussed, particularly where they affect the distribution of this commodity. Factors like selection of varieties, planting,, pests and reaping will be briefly discussed in relation to quantity and quality of produce.

The general features of yam production in Allsides and where practicable in comparison with the Christiana Area and the country as a whole (eg. farm size, cropping systems) will be useful in providing the background or the overall framework of agricultural production and distribution of which this district is a part.

2. STORAGE GRADING AND TRANSPORTATION

The whole range of post-harvesting operations in yams, as in all agricultural products, needs much more attention than is presently given to these operations by farmers, the government agencies and others engaged in agriculture. It is pitiful to note that many farmers in Jamaica do not have a proper storeroom, nor the knowledge of the best way to store their products before they are sent to market.

So what do we find? We find situation, as was observed during this study, that a farmer uses his labour, fertilizers etc, credit supplied by government or otherwise, to produce yams and other crops with a duration of nearly a year. After reaping, his product is packed in baskets and hampers on donkeys and sent home to be stored in the open behind the house where it is in the shade for a half of the day, and in the sun for another half. There is no shed or any facilities provided for storage of the produce.

Not only storage, but transportation and grading of agricultural produce needs more study, recommendations for improvement and implementation of measures for improvement. (The implementation of measures is a matter that government, farmers and all engaged in agriculture must begin to deal with seriously, particularly at this time when imported foodstuff is getting more and more scarce each day).

In this study, these post-harvest measures will be dealt with particularly as they relate to yams from Allsides. Farmers, higglers, AMC and government agencies have a responsibility to get the produce to the consumer in sufficient quantities, in good quality and at prices that the consumer is willing and able to purchase. The incomes and existence of the various groups are dependent on this.

Our approach in studying the post-harvesting operations, as indeed all aspects of this paper is influenced by this concept.

These post-harvesting measure will be dealt with in relation to the operations of the traders involved in yam marketing.

Demand, Supply and Marketing of yams

The market mechanism in an economy characterized by small producers and traders dominating domestic agricultural production and distribution, is difficult to study in great detail, especially over a 2 month period. This is so although we are here concerned mainly with one produce, namely yams from a specified area.

Not only is it necessary to identify and study the role of the different agencies and groups involved directly in the buying and selling of yams, but one has to look at demand, supply and prices over time on a local and national scale. These factors have a dynamic effect on each other and influence farmers and traders alike.

For example, yam production in Allsides is hardly influenced by the demand for yams in Allsides or even Christiana. It is by and large influenced by the demand/supply situation in the townships of May Pen, Mandeville, Kingston and Montego Bay.

Higglers, AMC or whoever is marketing this produce will buy and sell for a certain price at a given time depending on local and national market conditions.

Our approach will be to identify as much as practicable the factors as they affect the market, especially where they affect the market adversely, to see what solutions are possible.

Survey Method.
It is difficult to carry out a meaningful case study without going into the field, especially in agricultural research. So, we carried out a simple survey over a four week period, from mid-March to mid-April of 1978.

We had lengthly discussions and made notes with of such discussions with many farmers and experienced agriculturalists dealing with production and marketing of yams from Christiana and other areas.

However, formal interviews were carried out with the following:-

21	Farmers growing mainly yams in Allsides.
10	Higglers marketing yams from Allsides.
12	Consumers who purchase yams from Allsides.
2	AMC Personnel - Christiana Branch Manager and Statistical-clerk at Kingston Branch.
2	Truck operators transporting yams from Allsides.
1	Agricultural extension officer from Allsides.
2	Christiana Irish Potato Co-op Managers.
1	" " " " Member
3	Colbeck Co-op Members.

The thrust of the present democratic socialist government and indeed many countries of the world, is to encourage cooperative production and marketing among small producers. Most of our study is to see to what extent the new thrust towards cooperatives in the country is of relevance to the production and marketing of yams from Allsides.

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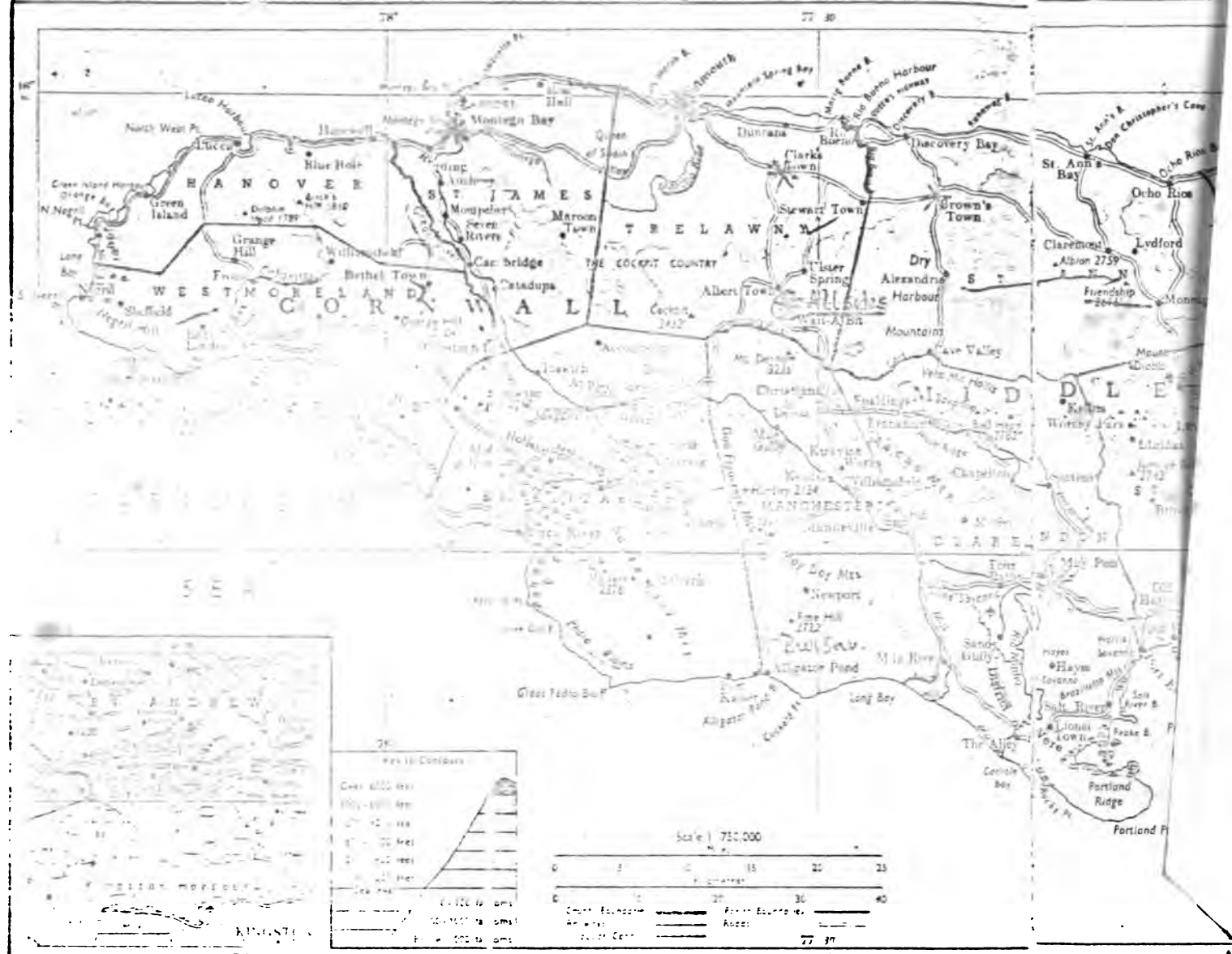
* The purpose of including members of the Potato Coop in our sample, is to get some background information on the operations of this cooperative engaged in selling agricultural supplies and marketing Irish potatoes of over 5,000 regular members in the Christiana area. The Colbeck Co-op, near Old Harbour was also studied to some depth, as this is a production and marketing collective operation.

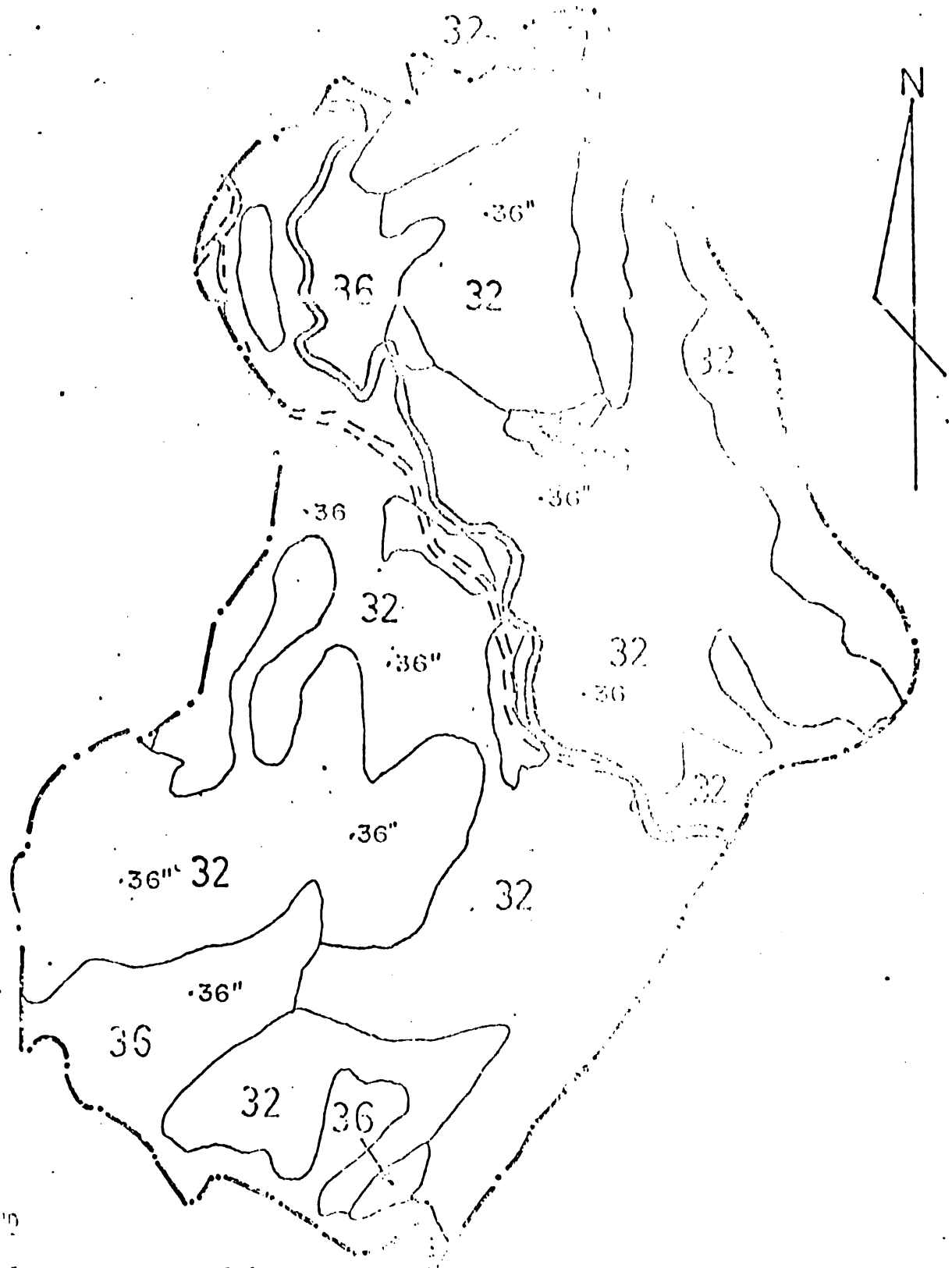
The questionaires used to interview farmers, higglers and consumers are given with tables 17,18 and 19. These questionaires and all interviews were structured along the lines of our general approach of identifying the stages, operations and factors involved in getting yams from the farmers to the consumers.

A summary of the data from the survey is given in Tables 17,18 & 19. The information is given in this form and in so much detail, like other tables and figures in this publication, to allow the reader to do independent analysis and be able to draw his or her own conclusions.


HANOVER
ST. JAMES
TRELAWNY
WESTMORELAND
CORNWALL
MIDDLE
SEA
Montego Bay
Falmouth
Duncans
Clarks Town
Discovery Bay
St. Ann's Bay
Ocho Rios
Stewart Town
Brown's Town
Claremont
Lydford
Maroon Town
Seven Rivers
Car bridge
Catadupa
Bethel Town
Grange Hill
Green Island
Blue Hole
Lucea
Dry Harbour
Alexandria
Mountain
Cave Valley
Newport
Haym
Salt River
Portland Ridge
Portland Pt
Long Bay
Alligator Pond
Green Island Harbour
Lucea Harbour
Scale 1:750,000
GEOLOGY
ANNUAL RAINFALL
Over 200
Irrigation areas
Forest Reserves
Coconuts
Sugarcane
Bananas
Pimento
Ginger

3. SOIL [illegible]

sides Property Demarcation [illegible]



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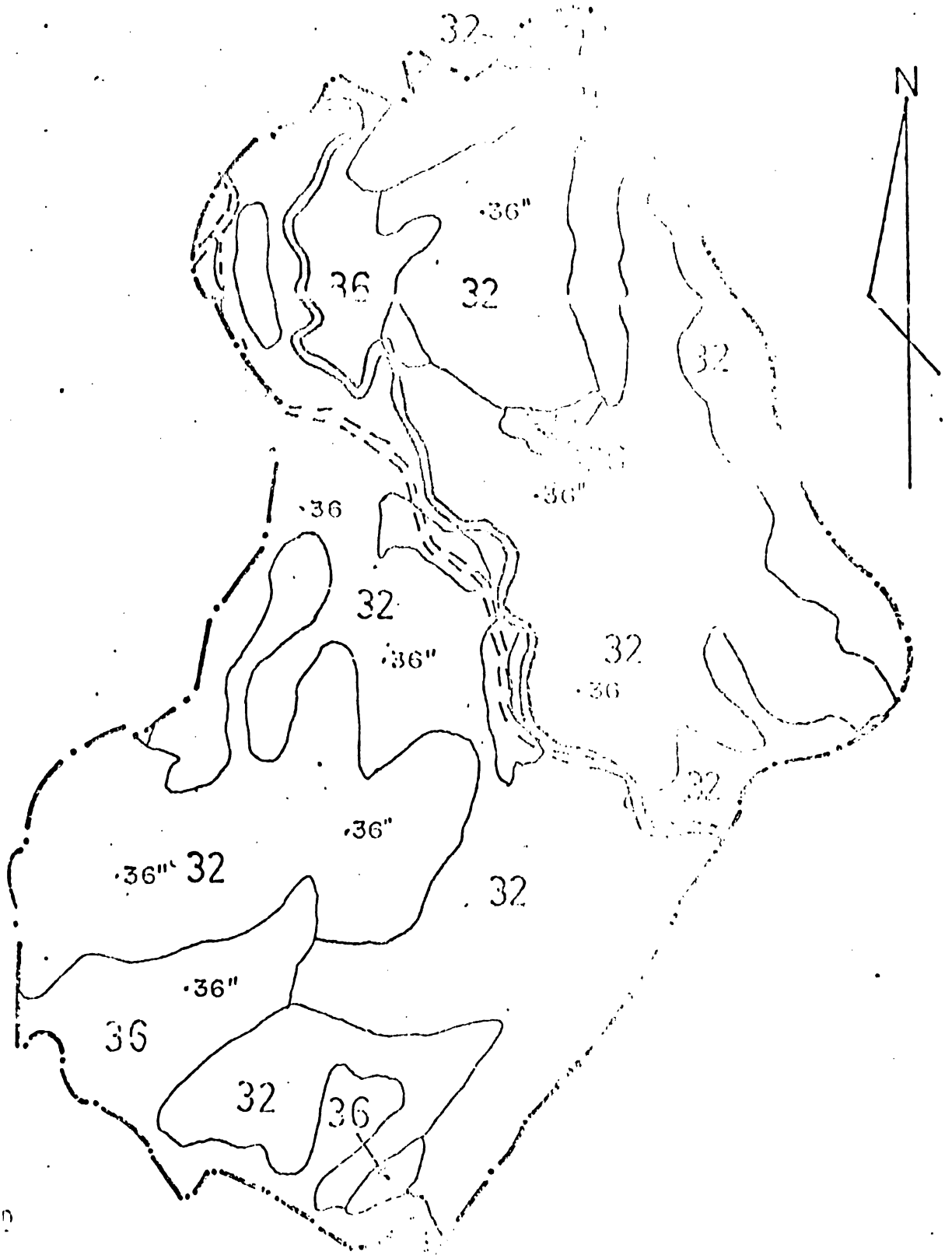
SCALE 1:12,500

[illegible] Gravelly Loam = 33

3. SOIL [illegible]

Isidoo Property Demarcation [illegible]



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LAND CAPABILITY

sides Property Data Area

SCALE = 1:12,500

3 GENERAL FEATURES OF YAM PRODUCTION IN ALLSIDES

Some Important Features of Allsides.

Location. Allsides is one of the many districts that make up the Christiana Area. Up to early 1977, about a year ago, these 12 districts made up an agricultural community administered by the Christiana Area Land Authority of the Ministry of Agriculture.

The rural township of Christiana is located in the North-Eastern hills of Manchester and is part of the hilly interior range running east to west forming the back-bone of Jamaica.

The township is located at one of the highest points in the area, an altitude of almost 3,000 ft. above sea level. Christiana is about 13 miles from Mandeville, the parish capital, 30 miles from May Pen and about 70 and 80 miles from the capital cities of Kingston and Montego Bay respectively.

(Map I. - Jamaica).

Allsides district is about 10 miles down-hill, north of Christiana in the south of the parish of Trelawny. In fact, the Christiana area is made up of districts in Manchester and Trelawny, but their geographical, economic and social features link Allsides more to Christiana than to Falmouth, its parish capital.
The district falls within a triangular area bounded by Albert Town, Warsop and Wait-A-Bit with the Hectors River to its north and the Quashie River south-east and Hectors River to the south-west.

The size* of the district is estimated to be close to 3 square miles, nearly 2,000 acres.

The entire Christiana area, and particularly Allsides and its surrounding districts, is hilly and rugged. The highest point in Allsides is about 2,000 ft. above sea level, while the lowest point further south drops to about 2,000 ft.

Map II -Christiana Area

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* Estimated size of Allsides made from Vol. 5. part 7. (Trelawny) publications by Department of Statistics from 1970 population census.
Maps I and II are intended to give the location of Christiana to the townships mentioned and Allsides in the Christiana Area. One might be tempted to question the need of such details more relevant to a geographical study than a marketing study.

As we shall see later, not only does Allsides depend on Christiana for most of its agricultural and household supplies, which in turn depend on Mandeville, May Pen, Kingston and Montego Bay, but these said towns are the main centres of demand for yams from the district. These geographic and economic factors have implications for the availability and costs of agricultural supplies to Allsides, and the ability and cost of supplying yams to those centres from Allsides,

In a situation where farmers and traders in the Christiana Area have a monopoly on yam production and distribution to these centres, the consequence of the geographical facts (distance, elevation, terrain) would be a higher price to yam consumers. This would be so, in a monopoly situation, and contributes to the present high price of agricultural produce even in the present situation where yams from this area, have to compete with yams from areas of St. Catherine, however and other major producers.

In this situation of competition by supplying areas for the demand of these centres, these geographical factors as they affect availability and cost of transportation from Allsides, has implications for difficulties in marketing yams, prices and incomes of farmers and traders in the Allsides area compared to other areas of Jamaica.

Climate and Land Use.

The entire Christiana Area has a fairly good climate for agriculture compared to most of the island. Its elevation and topography contribute to its coolness and fairly good rainfall, and these with the absence of large tracts of level land for sugar plantations - a legacy of Jamaica's colonial past, have made the Christiana area of fairly diversified agricultural production.

Rainfall figures for Allsides are not available, but 30 -year averages from Albert Town and Wait-A-Bit are representative of the rainfall pattern of Allsides. These can be compared with Old Harbour which indicates the conditions obtaining on the northern coastal region.

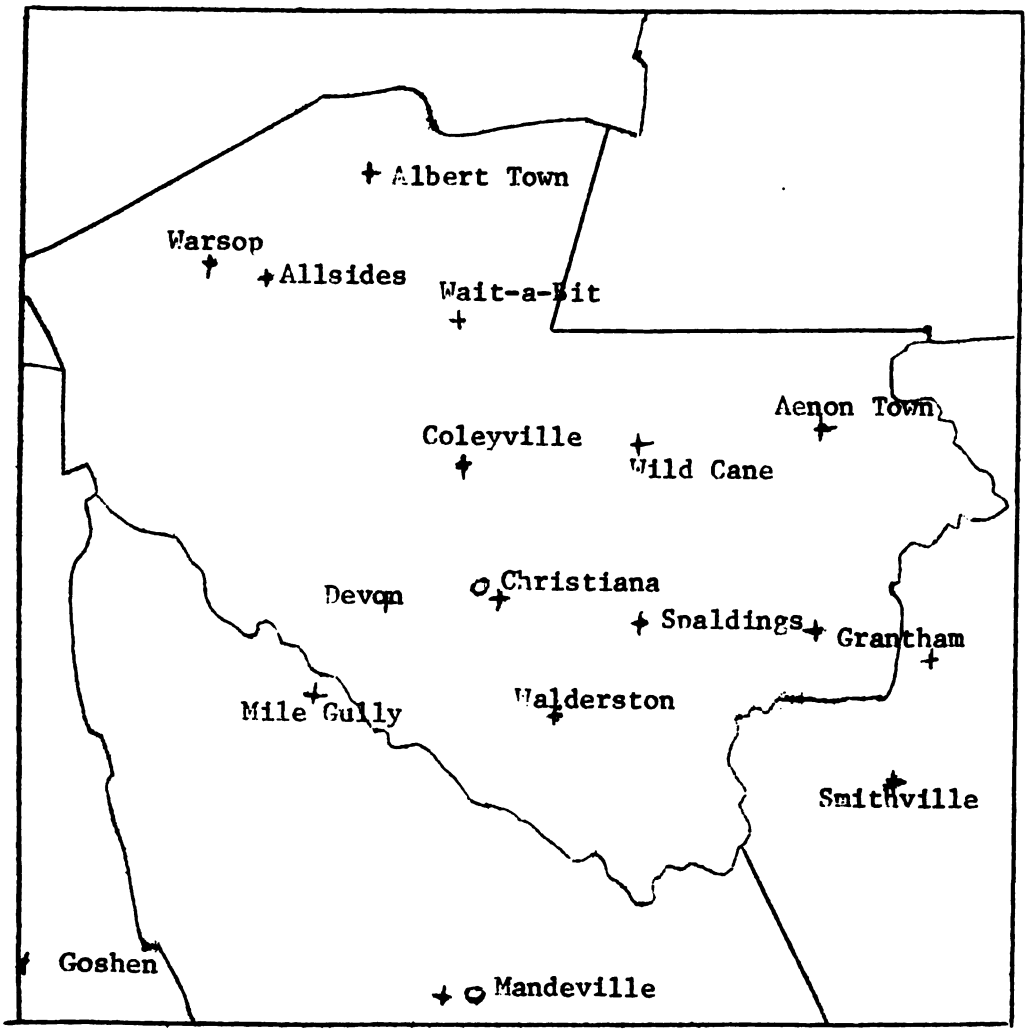
Albert Town
Warsop
Allsides
Wait-a-Bit
Aenon Town
Coleyville
Wild Cane
Christiana
Devon
Snaldings
Grantham
Mile Gully
Walderston
Smithville
Goshen
Mandeville

Table 1.

Average monthly rainfall of Albert Town and Wait-A-Bit, compared to Old Harbour.

(1931 - 1960 Av. rain in inches

Stations	Jan.	F	M	A	M	J	J	A	S	O	N	D	Year
Albert Town	2.6	2.8	3.4	6.8	11.5	5.7	5.1	9.5	9.1	11.9	7.6	3.0	77.8
Wait-A-Bit	3.1	3.4	4.2	8.4	13.1	7.3	4.4	8.8	10.3	13.6	7.6	4.2	90.0
(Average (Indicates Allsides)	2.9	3.1	3.8	7.6	12.3	6.5	4.8	8.6	9.7	12.8	7.6	3.6	83.9
Old Harbour	1.8	n.a	1.7	3.0	6.0	5.1	3.2	6.0	6.3	10.5	4.8	n.a	

Table 2.

Average monthly day (max) Temperatures for Christiana and Old Harbour
(1931 - 1960 Av. Max. Temps. in °F.)

Stations	J	F	M	A	M	J	J	A	S	O	N	D	Year
Christiana	77°	77	78	78	78	79	80	83	81	80	79	76	99° Max.
(St. Holmwood) 300') sea.													60° Max.
Old Harbour	85°	85°	85	87	87	88	90	90	88	87	87	86	87° Max.
St. Bodles 120.) sea													66° Min.

Ref: Monthly Figures from Met. Division, Ministry of Public Utilities.

Jamaica's rainfall ranges from 50 ins. -100 ins per annum for over 80% of the island and this is distributed over a heavy period, April - May and Sept. - Oct., with dryer periods, even drought mainly in the southern lowland region between these two periods, Jan - Mar. and July - August. Over the last 3 to 4 years (75-77) total rainfall has declined in the entire country, so that even places like the Christiana area suffered considerable spells of drought.

As is seen from Table I, the Allsides area fits into the overall rainfall distribution pattern of the country, but its total and distribution, as mentioned before, is more suitable for agriculture than Old Harbour or Southern Manchester where low rainfall and limited facilities for irrigation literally kills crops and livestock during the dryer periods.

Table 2 sets out the temperature figures indicative of the entire Christiana Area and allows for comparing these with the hotter southern costal areas. Although both are important, the rainfall pattern is of greater interest to this study since it directly affects the production pattern of yams, like most other crops in Allsides.

For example, yellow yams can grow and yield well, planted almost any time and reaped almost any time of the year at Allsides. But it has rather seasonal output, the bulk being reaped in the first quarter of the year and not spread throughout the year. One of the main factors responsible for this skewed output is the pattern of rainfall in the area.

With a crop like this, which has a very limited storage life, this production pattern again affects supply, prices, distribution and level of incomes earned by yam farmers and small traders (higglers).

Land - Use.

The present and potential use of land in Allsides is affected mainly by

- climate
- topography
- Soils
- Land-distribution and ownership pattern
- agricultural traditions
- availability and acceptance of information on agricultural developments.
- economic factors eg. market for produce.

Yam production is by far the main use to which land is put in the area. The cool - temperatures and fairly good rainfall favours yam production. One may note in passing, that the hilly interiors of St. Catherine, in the Garden Hill and Point Hill areas, have a similar climate to the Christiana Area, and are the closest rivals.

The topography of Allsides as mentioned before is hilly, with average slope of 24° and only about 2% below 7°. Such steepness is not suitable for yam cultivation, since these food crops with a duration of about a year, require cultivation of the soil which encourages erosion.

But the main soil type of the area, is one in which yam is one of the few crops that will do well. There are only 2 soil types*:-

(1) Wire-fence Clay Loam, which occupies over 80% of the area.
(2) Donnington Gravelly Loam, which occupies less than 20%

This is indicated by:
Soil Survey of the Allsides Property, part of which is presently a Project Land -Lease (PLL) farm and site of a joint Ministry of Agriculture (Soil Conservation Unit) - Inter-American Institute of Agricultural (IICA) project.

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*Ref; " Allsides Development Project" - by Grant Kerr and Lindo,

Both soil types are acidic, but the Donnington Gravelly Loam is slightly acidic (p tt. 6.5 - 7.0), while the main soil type, the Wirefence Clay Loam is very acidic (p tt 4.5 - 5.0). Both types are weaker in structure, hence erode easily, although the main soil type is less fertile.

As mentioned before, yam is one of the few crops that will grow well on very acid soils. Another such crop is pineapple: But most vegetables and food crops do best on slightly acid soils.

A visit to Allsides and most surrounding districts, at almost any time of the year, will show that the area is by and large a one-crop area. Both from the agronomic, - (benefit of crop rotation on soil fertility and on disease and pest control), as well as the economic aspects - (income gained over a single reaping period while the one source of income can be wiped out by a yam disease), this largely mono-cropping pattern is not the best.

1. It is for this reason that the presence of nearly 20% of Allsides in the Donnington Gravelly Loam is very important. " Firstly, yams produced on the Gravelly Loam tend to be of poorer quality, tending to 'fork' or 'branch' more and suffer more from burning (nematode-infestation) than yams grown on looser soils which are free of small stores. Yams on the Gravelly loam soil are also more difficult to reap. Branching of tubers and burning increase loss to farmers and housewives, who always point out that the " straighter the yam, the easi r to peel and the less we lose in peeling it".

2. The Gravelly loam can grow a wider range of crops, given its lower acidity.

In all, soil type distribution offers some hope for diversifying the crop production pattern of the area. This in turn will change the pattern of crop out put for marketing, incomes and standard of living of farmers and traders from Allsides.

Tables 3, 4, 5 & 6

Table 3 ESTIMATE OF DOMESTIC CROP PRODUCTION

FOR JAMAICA AND CHRISTIANA AREA

Crops	Ja. Quantity (S. tons)			Chr. Quantity(s.t.)		Approx. Yield (S. tons)	
	1975	1976	1977	1975	1976	Ja-75&76	Chr. 75 & 76
PULSES							
Beans	330	370	370	2	5	0.27	0.32
Cow Pea	770	480	860	7	5	0.32	0.35
Gungo Pea	2360	1510	1140	85	45	0.32	0.28
Red Pea	2260	2300	3700	680	425	0.28	0.35
Peanut	1170	500	2030		-	0.36	-
Sub Total	6990	5160	8100	774	480		
Tomato	9370	14170	26680	530	330	4.0	4.2
Turnip	1600	2070	1700	15	5	2.6	n.a
Beetroot	660	1270	650	10	5	3.0	2.0
Cabbage	8910	17000	9900	1945	1510	3.5	3.3
Calaloo			10780				
Carrot	6010	10600	8610	370	330	3.5	3.0
Cho-Cho	4410	4990	6130	360	295	2.8	3.4
Cucumber	4940	6100	8010	140	115	3.8	3.0
Lettuce	2540	3740	850	170	195	4.8	5.5
Okra	1260	1100	1170		5	1.0	0.8
Pumpkin	29060	23490	29840	1870	730	4.6	4.0
String Bean	860	970	860	100	90	1.7	1.4
Sub Total	69620	85500	105180	5510	3610		
CONDIMENTS							
Escallion	940	1560	2730	20	30	1.4	0.9
Ginger	950	1000	420	380	435	1.7	1.6
Onion	2390	3540	4750	5	10	4.2	1.5
Pepper	1420	1450	1850	2	10	1.6	1.4
Sub-Total	5700	7550	9750	407	485		

Table 3 contd.

CROPS	Ja. Quantity cont'd			Chr. Quan.		Approx. Yields (S. tons)	
	1975	1976	1977	1975	1976	Ja. 75 &76	Chr. 75 &76
FRUITS							
Pineapple	5100	4050	5350	380	215	4.3	5.3
Paw-Paw	2170	2580	2800		-	4.5	2.0
Watermelon	2250	3750	12410		-	5.0	-
Sub-Total	9520	10380	20560	380	215		
CEREALS							
Corn	12380	12300	10190	190	165	0.7	0.7
Rice	n.a	na	6140		-		
Sub-Total	12380	12300	16330	190	165		
Plantain	19580	16730	24370	n.a	495	4.5	5.5
Banana (export)	70000	79000	80000	approx	8000		
GROUND PROVISIONS							
Irish Potato	14910	8430	9280	5060	2620	3.3	2.8
Sweet Potato	16630	18020	30260	1315	775	3.5	3.0
Sub-Total	31540	26450	39540	6375	3395		
Negro Yam	28200	15270	26360	9915	3810	5.3	6.0
St. Vincent Yam	11040	11670	11550	555	280	4.7	4.6
Lucea Yam	14340	13030	14280	1160	1460	5.2	4.8
Tau Yam	9350	10430	10000	1420	605	5.4	5.4
Yellow Yam	46200	44620	52120	10425	13410	4.8	4.9
Sweet Yam	5140	6530	6090	655	365	3.5	3.5
White Yam	1650	1420	n.a	90	30	5.5	5.4
Renta Yam	25700	26090	25940	1135	750	5.1	5.5
Sub-Total*	141620	123060	146340	25350	20710		
Coco	12900	11690	15980	660	365	3.1	2.9
Dasheen	21900	21490	22160	1130	690	5.7	4.2
Sweet Cassava	5410	6750	13710	50	45	3.4	3.2
Bitter Cassava	15140	16320	23280	340	240	4.2	4.0
Sub-Total	55350	56250	75130	2180	1340		
GRAND TOTAL	352300	349380	445300	41170	30400		

*Main varities of yams.

ESTIMATED ACREAGE OF SELECTED AGRICULTURAL COMMODITIES

Table 4. PER LAND AUTHORITY - 1976

COMMODITIES	PA ALA	PM ALA	CL ALA	YV LA	MB ALA	LA LA	MP ALA	CA LA	IP ALA	SC ALA	FA LA	GH ALA	CA ALA	TOTAL
LEGUMES														
Broad Bean	23	41	17	74	102	46	66	20	47	22	23	65	94	640
Sugar Bean	75	74	50	11	181	114	89	1	12	40	42	74	63	826
Cow Pea	185	187	46	96	105	149	403	13	20	80	50	204	86	1624
Gungo Pea	144	124	48	219	651	1035	836	159	610	576	34	169	401	5008
Red Pea	922	341	961	509	250	794	684	1241	632	927	248	658	489	9656
Peanut	-	-	2	84	1	44	15	-	17	1248	13	5	-	1430
Sub-Total	1349	767	1124	993	1290	2182	2093	1434	1338	2896	410	1175	1133	18184
VEGETABLES														
Beetroot	1	5	23	96	9	7	48	3	7	190	-	-	1	390
Cabbage	200	158	597	314	70	570	989	450	308	231	69	70	157	4233
Carrot	149	113	133	523	310	191	186	114	445	391	34	54	147	2790
Cauliflower	-	-	-	2	-	14	-	-	1	8	-	-	-	25
Celery	-	3	-	14	-	7	3	2	-	-	-	-	-	29
Cho-cho	141	159	111	255	121	257	148	94	53	37	56	82	206	1720
Cucumber	33	93	48	232	31	177	271	38	22	360	32	112	156	1605
Egg Plant	-	-	-	7	-	11	-	-	-	12	-	10	-	40
Iceburg Lettuce	-	16	2	75	1	1	639	34	4	-	4	4	10	790
Other Lettuce	11	27	3	281	10	65	11	-	6	-	3	3	18	440
Okra	108	53	14	129	73	161	95	7	3	18	42	92	115	915
Pumpkin	342	331	242	382	249	390	672	205	127	523	485	340	797	5095
String Bean	2	15	8	239	30	17	53	75	38	9	6	16	54	562
Tomato	141	326	110	231	63	609	557	90	94	548	46	187	368	3370
Turnip	61	34	57	252	54	117	53	1	46	208	3	12	45	943
Sub-Total	1189	1333	1348	3032	1021	2594	3725	1113	1171	2585	780	982	2074	22947
CONDIMENTS														
Escallion	4	-	-	233	64	8	19	30	170	512	-	-	-	1040
Ginger	2	-	-	6	12	1	261	250	-	11	1	35	6	585
Onion	17	86	100	78	62	117	47	3	22	134	47	65	7	790
Hot Pepper	125	81	37	91	63	125	61	12	135	27	32	66	75	930

cont'd...

Table 4. cont'd..

Sweet Pepper	2	1	-	74	-	34	26	1	26	96	6	15	6	287
Thyme	-	-	-	95	37	6	12	15	19	82	-	3	-	269
Sub-Total	150	168	137	577	238	291	426	316	372	862	86	184	94	3901
FRUITS														
Paw-Paw	104	54	19	48	135	28	62	33	1	12	43	53	41	602
Pineapple	58	127	50	26	24	144	31	44	16	212	22	51	115	920
Watermelon	22	23	3	36	40	26	27	-	92	371	1	-	6	647
Sub-Total	184	204	71	110	199	198	120	47	109	595	66	104	162	2169

(* Banana occupy about 10% of cultivated lands (5000 Ac. in 1970) in Christiana Area.)

CEREALS														
Hybrid Corn	331	222	1965	80	150	546	799	73	1440	2488	917	703	1806	11520
Ordinary Corn	109	89	423	105	213	168	346	187	365	730	227	305	263	3530
Sub-Total	440	311	2388	185	363	714	1145	260	1805	3218	1144	1008	2069	15050
PLANTAINS														
Giant Plantain	4	4	12	1	-	34	24	3	14	8	9	4	3	120
Horse Plantain	385	442	23	158	662	307	188	47	18	45	85	374	271	3015
Maiden Plantain	154	109	17	7	21	69	248	56	14	51	12	154	218	1130
Sub-Total	543	555	62	166	683	410	460	106	46	104	106	532	492	4265
POTATOES														
Irish Potato	2	296	126	30	-	98	169	933	538	225	-	1	102	2520
Sweet Potato	285	232	559	403	165	372	628	258	554	490	167	222	535	4870
Sub-Total	287	528	685	433	165	470	797	1191	1092	715	167	223	637	7390

Cont'd...

Table 4 Contd.

YAMS														
Hard Yam	9	3	17	7	3	41	69	22	23	18	-	11	22	245
Lucea Yam	111	41	127	14	4	94	9	339	7	157	26.	1215	506	2450
Mozella Yam	2	12	23	-	2	15	42	40	15	58	-	5	-	214
Negro Yam	110	87	213	118	40	741	469	739	122	109	36	158	163	3105
Renta Yam	300	179	123	221	759	1440	562	171	76	363	169	449	258	5070
St. Vincent Yam	255	125	131	117	167	694	324	66	35	166	96	215	209	2600
Sweet Yam	23	-	440	30	-	9	66	129	7	11	42	950	85	1800
Tau Yam	36	57	49	4	18	826	562	136	161	53	15	34	149	2100
Yellow Yam	326	195	705	96	81	1539	1021	2769	369	411	175	1278	390	9355
White Yam	66	20	18	1	21	42	30	6	10	28	2	11	5	260
Yampie	39	21	15	-	-	21	12	11	3	55	-	2	1	180
Sub-Total	1277	740	1969	608	1095	5462	3166	4428	826	1429	561	4328	1580	27379
OTHER TUBERS														
Bitter Cassava	152	134	30	69	223	700	343	64	384	1032	174	260	205	3770
Sweet Cassava	116	169	5	100	205	237	302	15	49	195	114	323	65	1895
Coco	533	346	251	175	426	645	267	130	85	132	112	341	267	3710
Dasheen	681	181	25	80	190	454	318	166	1	97	116	937	539	3785
Sub-Total	1482	830	311	424	1044	2036	1230	375	519	1456	516	1861	1076	13160
MISCELLANEOUS														
Sorrel	50	36	24	71	38	81	22	9	10	34	33	85	65	558
Yam Distribution	5%	3%	7%	2%	4%	20%	12%	16%	3%	5%	2%	16%	5%	100%

Ref: Data Bank, Ministry of Agriculture.

Table 5. ESTIMATE OF ALLSIDES CROP PRODUCTION

CROPS	Acreages Reaped		% of Total		Quantity (S. tons)		
	1976	1977	1976	1977	1976		
PULSES							
Beans	-						
Cow Pea							
Gungo Pea		3					
Red Pea	66	180			21		
Peanut		3					
Sub-Total	66	186	16%	34%			
Tomato	4	3			11		
Turnip							
Beetroot							
Cabbage	13	6			44		
Calaloo		4					
Carrot	6	4			17		
cho-cho	2	3			8		
Cucumber	2	4			7		
Egg Plant							
Lettuce							
Okra		1					
Pumpkin	3	5			14		
Sub-Total	28	27	7%	5%			
CONDIMENTS							
Escallion	10	8			10		
Ginger	5	2			8		
Onion							
Pepper	2	1			2		
Sub-Total	17	11	4%	2%			

* Approx. acreages occupied by each crop can be got by dividing acreage reaped by the number of crops grown each year.
Figures include bordering areas of Warsop and Troy.

Table 5 contd.

ESTIMATE OF ALLSIDES CROP PRODUCTION.

CROPS	Acreages reaped 76	77	% of Total 76	77	Quantity ($. tons) 1976		
FRUITS							
Pineapple	1	1			2		
Watermelon							
Sub-Total	1	1					
CEREALS							
Corn	53	66			37		
Rice							
Sub-Total	53	66	12%	12%			
Plantain	2	5			13		
Banana	40(est.)						
Sub-Total	42	45	10%	8%			
GROUND PROVISIONS							
Irish Potato	7	5			19	(%of) (Allsides)	
Sweet Potato	3	10			9	(Yam Prod.)	
Sub-Total	10	15	5%	3%		(1976)	
Negro Yam	22	32			130	16%	
St. Vincent Yam	1	1			3		
Lucea Yam	25	30			120	15%	
Tau Yam	1	1			2		
Yellow Yam	94	98			460	57%	
Sweet Yam	21	10			75	9%	
White Yam							
Renta Yam	2	1			10		
Sub-Total	186	203	45%	37%	800		
Coco	6	2			16		
Dasheen	2	3			9		
Sweet Cassava							
Bitter Cassava		2					
Sub-Total	8	7	2%	1%			

GRAND TOTAL 410 550

Table 6.

YAM PRODUCTION PATTERNS (1976)

YAMS	Christiana Rating in Ja. (1976 Acreages)		Rating of Areas in Christiana				
	%	Position	1st	2nd	3rd	4th	5th
Negro Yam	24%	1st	Devon	Coleyville	Walderston	Wait-A-Bit	
St. Vincent	3%	10th	Wild Cane	Aenon Town	Wait-A-Bit	Walderston	
Lucea	14%	3rd	Wait-A-Bit	Devon	Coleyville		
Tau Yam	6%	6th	Granville	Walderston	Aenon Town	Spauldings	Coleyville
Yellow Yam	30%	1st	Wait-A-Bit	Coleyville	Devon	Walderston	Wild Cane
Sweet Yam	7%	3rd	Wild Cane	Aenon Town	Wait-A-Bit	Coleyville	
White Yam	2%	11th	Devon	Wait-A-Bit	Coleyville		
Renta	3%	10th	Wait-A-Bit	Granville	Aenon Town	Wild Cane	
ALL YAMS	16%	2nd	Wait-A-Bit	Devon	Coleyville	Walderston	Wild Cane

* Note- Wait-A-Bit area includes Allsides district.

Table 3 is given to show the overall picture of land use in the country and the Christiana Area with regard to crop production.

Table 4 shows the distribution of production in the 13 Land Authorities which existed up to 1976. With regard to Yam which occupies the largest acreage in the Christiana area, and is followed closely by bananas.

(Actual acreages for bananas is difficult to obtain as most records are kept in terms of "boxes of banana" reaped for an area, but the last agricultural survey of 1970 indicated banana occupied nearly 8% of cultivated lands, - which was approximately 6000 acres of the total 70,000 acres in the area.) Although there has been a decline in acreages of both crops over the years, it has been estimated that yam is still the leading crop in the area.

The Christiana Area Land Authority (CALA) is the 2nd largest producing area in the country, following the Linstead Area (LALA). Although Christiana and Grange Hill (GHALA) each accounted for 16% of total acreage in 1976, in acreages and volumes over the years, the Christiana Area is usually ahead.

Table 5, indicates land use and production patterns in the Allsides District. It is clear that yams alone occupy about 1/2 of the land under cultivation at any time.

Banana is of much less importance in Allsides than it is in the entire Christiana Area.

Livestock occupies very little land in the Christiana Area and even less in Allsides. Apart from small stocks, there is very little livestock in the district. As a matter of fact, there are more donkeys than cattle in Allsides, since donkeys are the main means of transporting yams from the farms to roadways.

The importance of yams in the Allsides economy is not fully indicated from Table 5, because of one aspect of the cropping pattern used by Allsides farmers and many small farmers in under-developed countries. Farmers tend to cultivate an area of the farm for 2 of 3 years, and when poor yields and quality are evident in his produce, that yield is 'rested' for a year or two and another section cultivated.

Because of this, ne can estimate that to every 4 acres of land being cultivated, there is one acre of land used for yams "resting" (see Survey results). On this basis, one can safely estimate yams occupying 2/3 of Farm Lands in Allsides. The main variety grown is yellow yam, about 50% of total yam production. Negro yam and Lucea yam are also grown in fairly large amounts. The tables can be used for more detailed analysis of land use and crop production, but for our purposes, it concretely shows the importance of a proper marketing system for yams from Allsides and surrounding districts.

The total area of Allsides, as mentioned before, is about 2,000 acres, which is close to 3% of the total Christiana area.

Idle land in the Christiana Area is less than 10%, one of the lowest in Jamaica and almost every acre of cultivable land in Allsides is presently under cultivation or'resting'for later crops.

The population * of Allsides is about 1800 and with the number of dwellings about 300, the average family size is about 6. Nearly the entire adult population and income of the district depends on yam production: farmers, higglers, agricultural workers,transport-operators, shop-keepers and other forms of economic activity are closely knitted to this: unemployment, by national standards - presently over 25%, is low in Allsides, since most adults and even youths have a plot of land on which they cultivate mostly yams, Almost 2 people in each family are engaged as farmers, approximately 600 of the 1,000 people over 14 years in the district.

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* Population estimated from comparing 1970 Population Survey with overall population growth per parish up to 1976. Ref: Statistical Abstract -1976 and Population Census 1970 for Trelawny.

GROWING AND HARVESTING YAMS.

Yams are ready for reaping in 8-12 months after planting. Farmers usually keep check on how long the crop has been planted, since some varieties like yellow yam, are usually mature and can be reaped before the leaves start to ripe and dry off.

The crop is planted on hills by the majority of farmers in Allsides and throughout Jamaica. One to three sprouting "Leads" of tubers from the previous crop, are planted in each hill, these hills about 6 to 8ft or 6 to 4 ft apart. Most farmers plant 2 'Leads', weighing 2 to 4 lbs each in a hill.

This gives a population of about 2000 to 3000 plants per acre, (1000 to 1500 hills), and utilizing about 5000 to 10,000 lbs of planting material.

Here we are dealing with Yellow, Lucea and Negro yams the main varieties grown at Allsides. Smaller varieties of yams like St Vincent and Yampies are also grown on hills, but are planted more closely with smaller planting material and less per acre.

During the life of the crop, not much maintenance work is required for yams compared to legumes, vegetables or even root crops like fresh Irish potato.

Yams are sometimes intercropped mainly with red kidney peas. When this is done, apart from the usual cultivation practises needed to grow the yams, regular spraying and weeding are required. But in pure yam stands, the main operations are staking, fertilizing and weeding.

Bamboo or wooden stakes, a very expensive and scarce item in Allsides, usually 10 ft to 15 ft tall are firmly planted between the yam hills to allow 2 or even 3 hills of yam to use the same stake. Vines twine around the stake for support.

Most farmers use their fields about 2 or 3 times during the crop depending on weed growth. Most farmers also apply fertilizers once or twice each year using about 1 lb. per hill, approx. 10 to 12 lbs.* per acre.

Very little spraying is done to control insects, diseases or nematodes, which is a major pest of yams in the area. As a matter of fact, the main form of control used by these farmers is to rest a section of the farm for about 1-2 years, every 3 years.

Donkeys, cattle or goats will be fed on plots that are resting.

As we shall see later from our survey results and indicated by data on production patterns in the Christiana area, yellow yams, the main variety, are planted and reaped throughout the year.

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* lbs 3 hundred pounds.

Scarcity and the high price of yam heads which have to be purchased at certain times of the year, is one reason why total yam production in Allsides is not greater.

This year-round planting pattern of yellow yam peaks in February to April, and reaping in December to April. Negro yams and Lucea are planted more seasonally, with their peak in December to March, and reaping from September to around February.

It should be noted that the peak periods of planting and reaping in Allsides are the same for the entire Christiana area and the country as a whole. This is related to the rainfall of the country, as most farmers plant just at the beginning of the 'March rains'.

Although Allsides has relatively better rain than most areas of the country, which is partly responsible for its year-round production of yellow yams, the fact that the island's production of yams peaks in Allsides and the country at the same time, December to April, has serious implications for supply and prices. This we shall deal with in greater detail later.

Yams heads are planted on the hills mostly with cutlass. This tool and the fork are the chief implements used at reaping.

On the fairly loose Wirefence Clay Loam, harvesting is not difficult and it takes a farmer only a few minutes to dig a hill of yam, -"much less than to dig a yam hill".

When the hills were well-dug(about 2 ft. deep) and mounds well prepared (about 2 ft high x 3 ft in diameter), the fork can be used to loosen the soil towards the periphery of the hill, and the cutlass used closer towards the tubers. None or only slight damage is likely to be done to a mature healthy tuber.

Tubers suffering from 'burning' (nematode-infestation) or 'hollows' (pathological and or physiological-fertilizer/moisture conditions), are more likely to suffer 'skin' damage and breaking as the head of the tuber is shook and lifted during harvesting.

Yams grown on the Donnington Gravelly Loam, are more difficult to reap and suffer more damage at reaping. Apart from the more compact and gravelly nature of the soil, the greater 'branching' of tubers on this soil type makes injury by cutlass or fork more common.

Each yam head usually produce 7 to 8 lbs of marketable yam, after 2 or 3 lbs of 'head' are removed for planting the next crop. The yield of marketable yam from each hill is 8 - 16, with average of close to 10 lbs, resulting in 4 to 5 tons per acre for yellow yams. Lucea yam gives about the same yields as above. Negro yams bear heavier, and usually produce 4 to 6 tons per acre.

4 PRESENT MARKETING OF YAMS

The marketing of yams, as most other farm commodities in Jamaica, commences not at the 'farm - gate', but on the exact spot where reaping is done. This is related to the operation of the higglers, who sometimes even help with reaping.

For this reason, post-harvest operations like storage and transportation of yams, will be dealt with in relation to the operation of the main traders involved in getting yams from the farmers to the consumers.

The main traders in the distribution of yams are:-

1. Farmers.
2. Higglers. (Small-traders)
3. AMC.

THE SMALL TRADERS.

The small private traders, and the AMC dominate the internal marketing system of most crops consumed locally. There are separate commodity boards and agencies, state and privately owned,which market crops produced mainly for export · eg. sugar, coffee, banana etc. The Christiana Irish potato coop is one of the few large enterprises engaged in marketing of a domestic food crop.

It may be mentioned in passing, that these small traders and the AMC also market most imported crops for domestic consumption. Onions and red kidney peas, for example, are imported through AMC, who retails a portion, but also sells wholesale to higglers and super-markets.

We will not here go into much detail on the general operation of the internal marketing system for locally produced crops, since in our view, a recently published study, "Higgler Survey - by Smikle and Taylor (1977)" of the Agricultural Planning Unit, is already a very good detailed report on the present system. We will deal more specifically with yams from Allsides, but as mentioned before, yam produced in any part of the country, goes on the national market, where it is marketed with yam from other districts and parishes, and with other crops.

This is an obvious, but very important point, since unlike production, we are not able to deal with marketing of yams from Allsides without dealing with marketing of yams in Jamaica at the same time. For example, on a given market day at Coronation Market, yellow yam sells for a given price range irrespective of where it is produced. The same goes for AMC wholesale or retail prices.

The small traders, farmers who sell their produce (farmer-higglers) and traders who buy produce to sell (higglers), are the main dealers in yam, as in most other crops.

Smikle and Taylor estimate that there are about 14,000 higglers operating in Jamaica, with about 50% buying directly from the farmers and selling wholesale to other higglers, or retail to consumers mainly in the 100 (Parochial) markets throughout the island.

About 80% of the higglers are women, and the 20% men are mostly farmer-higglers. One may point out, that the line between the 2 types of small traders is not very clear, particularly those involved in marketing a crop like yam.

Our case study in Allsides, shows that nearly 25% of the sample of farmers were selling their own produce, and 70% of those who claimed to be higglers, were selling produce from spouses and children. 'Higglering' for the majority of those in the yam trade, is a part-time occupation, which supplements their incomes.

The actual number of small traders marketing yams from Allsides is not known, but it seems that some 10 trucks operate from the area on Fridays, each carrying about 15 higglers, supplies, 1/3 the number of which is from Allsides. About 50 small-traders leave for market on Friday evenings, and 1/2 that number leave from Thursday.

Our estimate is that about 80 small traders are engaged in marketing yams from Allsides weekly. This is roughly one person out of every four families, as against the number of farmers, about 600.

While most small traders operating from Allsides try to purchase and sell a mixture of crops, yams are by far their main item.

Indeed, the farmer-higglers deal almost completely in yams and bananas to a lesser extent. Higglers also purchase coco, peas, cassava and whatever is available at that time of the year.

Small traders market about 3/4 of the yams distributed from Allsides with the remainder going mainly to AMC (see Table 8). Most higglers market about 400 to 1,000 lbs of yam per week depending on supplies, while the national average, according to Smikle and Taylor, is about 200 lbs from yam areas. Although our survey did not indicate this, there are reports of a few higglers taking up to a ton of yams to market. Such a trader is usually taking a portion of this to sell wholesale to another higgler, or to what is called a 'depot-main' operating usually in big markets like Coronation in Kingston or Montego Bay.

REAPING AND TRANSPORT.

Yams are reaped on the same day they are to be taken to market. The farmer, with the help of his wife and bigger children, does most of the reaping and transporting of yams from the field. Friday is the main reaping day, (a day when school attendance is low), but where a farmer gets an order from a higgler, the AMC, a wholesale buyer in Kingston etc. or if his wife decides to go to market, reaping is also done on a week-day.

In some cases, where the farmer and his higglers have a good relationship or where supplies of yams are scarce,higglers help farmers with the reaping and transport of yams from the farm. As a matter of fact, this is one of the advantages that the higglers have over the AMC. The higglers go to wherever the crop supplies are, helping with reaping and transportation to a larger extent, reducing the problems and costs of these operations to the farmer.

Farmer -higglers usually transport the yams, mainly by donkeys and on heads, to their homes. There the yam heads are removed, the cut surface dipped in ash for curing, before they are later set.

The marketable portion is weighed and put by the road-side from which a truck or van will transport this to market. It is not uncommon for 4 or 5 farmers to have a truck to transport 5 or 6 tons of yam to sell wholesale to AMC or private traders outside the area.

Higglers mostly purchase at the farm gate, and transport the yams in basically the same way as the farmer. As indicated in our survey, there are more donkeys than cattle in Allsides. The yams are carefully put in'hamper-baskets', protected from damage by banana thrash and grass in these hampers.

There seems to be relatively little damage done to the yams during transportation to the roadways. But we need to point out here as was mentioned by most higglers and some farmers interviewed, that a better feeder road system in the district would reduce the problems and burden of getting yams to the road to which trucks have access. Even the road to the Allsides PLL property needs considerable improvement.

Some farmers and higglers have to transport yams on heads and donkeys for almost 1/2 mile to the road. As a matter of fact, apart from the cost of transporting yams $12 for up to a 1000 lbs load to Kingston, some higglers have to employ a worker for a day for $5 or $6, to help with the transportation of her load. This eats into the potential income of small-traders, and that is why most have to stop their children from school on Friday to help with this operation.

Transporting yams to market, as is the case with marketing of yams from Allsides, is not so much availability of facilities which is a problem, but more the costs and returns from utilizing these facilities. Put another way, there are many areas, where getting a vehicle to move farm produce to market is much more difficult than from Allsides.

About a dozen trucks move directly from or pass through the district, transporting yams and other supplies to the main markets on Thursday and Friday evenings especially, getting transport is not as serious a problem, as each small trader has a regular truck which picks up his food for market.

The inside of the truck body is cushioned with banana thrash and grass, and yams are thrown up, one -by - one, by workers and packed in heaps on the truck. The said materials are used to ' mark off', the yams of one trader from another. When the truck is loaded, yams, other produce and 10 to 15 small traders will start on their long journey to market.

(Refer to Map I. of Jamaica , where Allsides is marked with a ⊕ and the main markets locations with a *.)

The main markets in order of amount of yams taken to them are:-

1.	Coronation (Kingston)	-	80 miles (from Allsides)
2.	Montego Bay	-	70 "
3.	May Pen	-	40 "
4.	Old Harbour	-	52 "
5.	Falmouth	-	26 "
6.	Clarks Town	-	16 "
7.	Christiana	-	10 "
8.	Spanish Town	-	64 "
9.	Browns Town	-	22 "
10.	Mandeville	-	23 "

Although these are the main markets, and the yams tend to move in directions away from Allsides, there are some town-higglers who because of convenience, will buy a mixture of crops at Coronation market and transport their entire load to sell in May Pen or Mandeville. Because of this, a small amount of yams, move back towards the rural towns.

Also, it is fairly safe to say that with the operation of the higgler system and the AMC, yams from Allsides are marketed much wider than indicated by the main markets. During the survey, we were able to identify a farmer-higgler who has a van, and markets his yams in Annotto Bay and Port Antonio, because he is able to get a better price and quicker sales in this north- eastern town where yams are not as plentiful as on the south coast.

The general tendency too, is for most of the yams from Allsides to move to the southern rather than northern coastal towns. Most northern towns, mainly because of good roads and transportation, tend to get their supplies from Hanover and from St. Ann.

As would be expected, the Christiana market is not a very good yam market, since it is largely the people living in Christiana township and to vicinity which is mainly occupied by bananas and people from smaller centres in the area where yam production is not plentiful, that buy yams in Christiana market. The people buying yams in the market, do this mainly for convenience, since they can buy most of the different crops needed, including yams, in the market.

Checks carried out on a Friday evening, showed a total of nearly 70 higglers with about 8, approximately 10% selling yams. On Saturday, the number increased to about 250 higglers, with about 40, less than 20%, selling yam. Incidentally, the main crops are oranges and a mixture of vegetables, most of which we not widely grown in the Christiana area.

In relation to the question of improving the system of transportation and costs to farmers and higglers, the following are relevant.

1. Improving feeder road system.

2. Reducing costs of transport to higglers. By current rates in Jamaica $12 to transport 10,000 lbs of yam for a distance of up to 80 miles-cheap. This is about $1.20, or $2.00 per 100 lb at most for higglers transporting 500 lbs of yam, compared to about $2.00 per passenger on public transport from Kingston to Mandeville.

   But this cost eats into the income of small traders and there is need to reduce both the amount of travelling done by these traders and the cost of transporting yams to market.

3. Use of crates to reduce time involved in loading trucks and reducing damages in loading and unloading of yams.

We may point out here that in all this, the AMC has a crucial role to play. But these matters we will have to deal with later.

5. MARKETING BY SMALL-TRADERS

Once the yam is unloaded near the market another set of traders immediately come into the system. About 1 out of every 6 small-traders sell wholesale to other traders.

1. The town-higgler, may buy a portion of the load of the country- higgler These town-higglers may buy from a country-higgler who is willing to sell at a 'reasonable price' - that is the going wholesale price which allows a profit at going retail prices.

Most times however, the town-higgler had ordered the amount of yams required from the previous week. This varies anywhere from 50 to 200 lbs, depending on demand in the area in which the town-higgler operates. These higglers usually take the yams to sell either in another market in Kingston, or operate as Curb-side higglers. Markets like the Papine market, from which Consumer 10 in our survey purchased yams, is one of the markets in which mostly town-higglers operate. One should note that the 40 ¢ per lb. paid by C10. is the bottom price, given the heavy supply of yellow yams available in March-April.

cont'd...

Curbside higglers sell at slightly higher prices than even town-higglers in the market: spot checks on curb-side higglers operating outside the Old harbour market, show these higglers asking 35 ¢ per lb. for yellow yam when it was selling for 30 ¢ in the market nearby.

One should note however, that the main reason for curb-side selling is to reach the consumer before the consumer reaches the market, so that these town-higglers may sell at the same retail price obtained in the market.

On a whole, town-higglers buy from country-higglers with whom they develop social relations , sometimes, they are from the same district, family etc.

Buying from country-higglers afford:-

(a) Fresh supplies of food;

(b) Regular supply even when AMC supplies are unavailable;

(c) Social reasons, like contact with relatives in the country-part etc.

On the other hand, some town-higglers prefer to buy from AMC, especially when supplies are available, since AMC's wholesale price is usually lower than that of country-higglers. In 1975, for example, higglers purchased wholesale about 5850 tons of produce from AMC which accounted for 20% of AMC total sales. In 1965, they purchased about 50% of AMC's total sales.

6. HIGGLER PRICES

During the Survey period(mid March to April 1978), most higglers were buying at $20 per 100 lbs of yellow yams in Allsides, but were selling wholesale for $23 to $24 , since they knew that most town-higglers would retail at $30 or even $35 per hundred. The AMC's farm - gate price was $14 and a wholesale price of $20 per 100 lbs, for yellow yams.

2. The 'depot-man ' is the second group that may take a portion of the load from the small-traders from the rural parts. However, he deals more with farmer-higglers, since he is primarily a wholesale higgler, who sets up a big stall in the market area. He usually orders the yams and other produce from a number of farmers and country higglers, then sells to town-higglers. In short, the depot-man operates a wholesale yam shop.

Fig. 1 · shows the different chains and number of inter-mediaries involved in moving yams from the farmer to the consumer.

Supply wholesale customers is usually done on Saturday morning in Kingston since trucks usually reach that market so late Friday night, that little unloading or trading can be done.

After dealing with the town-higglers and depot-man, the small-traders usually employs a hand-cart man to transport her yams to a stall if she intends to sell in the market. Some higglers erect temporary shelters & retail the produce from the parking area near to the market.

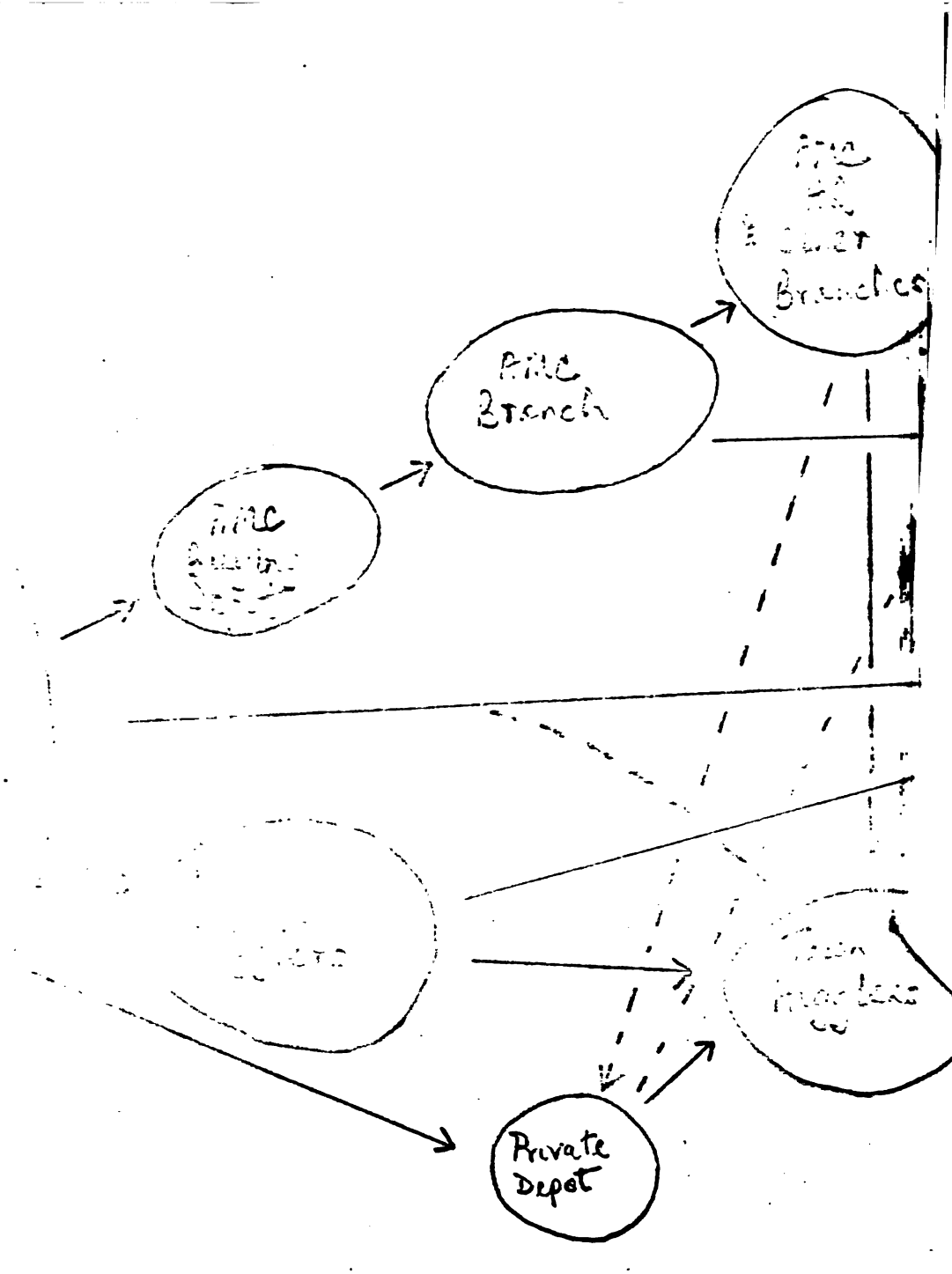

Fig. 1 Marketing Chan

Usually, by Saturday evening, the higglers will sell off their produce, although when supplies are plentiful, they will be forced to sell cheaper in the evening to get rid of supplies. Some consumers and town-higglers wait till then to buy their yams.

Although Saturday, and Friday to a lesser extent, are the main market days, yams are sold in markets or on sidewalks every day of the week. A set of higglers, including one or two with yams from Allsides usually travel by bus to sell in Old Harbour side-walk (curb-side) markets from Sunday night, returning home Monday evening.

The multiple channels and middlemen involved in moving yams from farmer to consumer, have serious effects on the whole existing marketing system of domestic crops.

In Fig. 1 the main channels are shown by solid lines, while supplementary supply lines are indicated by dotted lines. The arrows also indicate the directions in which the yams move.

The net result of this maze of channels and traders, is a relatively low farm-gate price of yams, which with the small-scale operation of most yam farmers, produce a low level of farm income. On the other hand, consumers have to pay high retail prices, with the margin shared by the too-numerous petty-traders who have to make their living from this 'hustling'.

In general, this has adverse effects on incomes and standard-of living of the majority of farmers, traders and consumers. The operations of the AMC, in a way contributed to all this, but it is our view that it is this 'big-trader', which has the greatest potential to play the key role in transforming the existing situation and helping to improve the production and marketing of yams and help the majority engaged in this as well as the consumers.

7. THE A . M. C.

The Agricultural Marketing Corporation is the only other trader in the distribution of yams from Allsides. What small traders do not distribute, the AMC takes care of.

This is the general pattern in the marketing of most crops produced locally for domestic consumption. But with a few crops, for example dasheen, the AMC is not the only agency involved in marketing on a large scale. There are large private enterprises involved in its marketing, although primarily purchasing for the export market with some grains and vegetables, state and private enterprises purchase these from farmers and from the AMC although much of this is for the food processing industry.

A part of the AMC's purchase of yams from the Christiana area, over the years has been exported.

Again, we must point to "Smikle and Edwards - Higgler Survey" done last year, which goes into useful general description of the operation of the AMC and its role in the country's distribution system. This work is worth consulting for a deeper understanding of how yam marketing fits into the overall operation of the AMC.

Figure I, shows the chain of AMC operations which we shall now discuss briefly.

In 1967, total yam production in Jamaica stood at about 80,000 tons. By 1971, 5 years later, it had increased to about 135,000 tons, an increase of nearly 70%. At the end of 1977, our estimated production was about 146,000 S. tons, nearly double the estimates 10 years ago. The Christiana Area is one of the main areas responsible for this increase, although figures are not available for the entire period.

Rankine and Ferguson, in a "Review of yam production in Jamaica (1962-1972)", has identified 2 main factors contributing to the rapid increase in yam production during that period.

1. - "The creation and expansion of the AMC",
2. - "The initiation of loan in subsidy for agriculture especially food crop subsidy".

In fact, in 1963 when the AMC was established, yam production was about 55,000 tons having moved from about 54,000 tons in 1960. So the AMC came on the scene at a time when production of yams like many domestic food crops, was showing little increase while imports of food was increasing as it has always been since the days of slavery.

Before the formation of this state enterprise, it was only the small-traders, farmers and higglers who distributed yams in Jamaica.

The AMC was created primarily to market surplus that small-traders could not handle and till today, nearly 15 years later, its function has largely remained the same, buying and selling what the higgler trade cannot distribute.

In 1976 AMC purchase less than 10% of most domestic crops produced by the farmer, but as much as 70% of a crop like Irish potato which is not heavily marketed by higglers.

It is generally estimated that the AMC purchases and sells about 20%* of the total crop output produced and marketed locally. Incidentally, it is the main exporter and importer of food crops in Jamaica, importing about 25% of its total purchases in 1975/76.

The main functions of the AMC*, as stated in the AMC Act of 1963 are:-

1. To provide and maintain adequate marketing outlets for agricultural produce grown primarily for domestic consumption;
2. To buy and sell agricultural produce;
3. To provide for the collection transportation, storage, grading, packaging and processing of agricultural produce;

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* Ref: 1971"Report on Domestic Food Crops"- by Agricultural Planning Unit. Any policy arrived at increasing domestic production, for it to work, must include measures aimed at marketing this increased output.

* Ref: marketing of Agricultural Produce in Jamaica by Hocker.

4. To import and export agricultural produce.

Among the policies that the AMC use to carry out the above functions are:-

(a) Assuring farmers a minimum guaranteed price for some crops;

(b) Assuring reasonable prices to consumers.

Partly because of the reasons why the AMC was set up, the loose nature of the Act- (buy and sell all agricultural produce) - and the speech and actions of some politicians, farm leaders and AMC personnel, most farmers are of the opinion that the AMC should purchase all the food that is suitable for marketing, but which higglers are unable to take. In addition, AMC prices should be close if not the same as higgler farm-gate prices.

The consumers on the other end, expect the AMC to provide good, fresh agricultural produce at lower retail prices than higglers.

With respect to yams, like most other crops, the AMC has not been successful in meeting the expectations of the majority of farmers and consumers islandwide.

Smikle and Edwards have shown that the main reasons why farmers sell to AMC are:-

(1) The AMC is reliable (45%); (2) AMC purchases large quantities (40%).

Their main reasons for selling to higglers are:

(1) Higglers are convenient as buyers and assist farmers (50%);

(2) Higglers pay higher prices than AMC (30%).

Our survey among yam farmers from Allsides, shows their main complaint against the AMC was low farm-gate prices paid by the Agency, but farmers want the agency to continue and expand its operation in the area primarily because of its ability to buy a larger volume than higglers and to make quicker cash payments.

The majority of higglers who buy from farmers, definitely do not want the AMC to get out of the trade.

Among consumers of yams, the survey showed the relatively small number of people and the limited operation of AMC compared to the parochial markets and higglers in the rural trade.

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* Ref: Paper on AMC marketing of yams from seminar on Yam Production in Jamaica 1974.

There are many negative features of the AMC, expressed by farmers, higglers, consumers, agriculturalists and even AMC personnel, some of which we will discuss in relation to improving the marketing system. But again, we should express our view that it is the AMC, working as part of an overall plan of national development, which has the greatest potential to satisfy the expectations of the majority of people depending on agricultural marketing.

Table 7. AMC's MAJOR LOCAL PURCHASES 1974 - 1975

Commodity	Quantity 000 lb.	VALUE J$	% of Total Prod.
Carrot	1,290, .1	148,486	
Cabbages	2,177, .3	199,740	12%
Pumpkins	3,679, .3	237,647	
Lettuce	499 .5	58,893	10%
Dasheen	164, .1	15,070	
Sweet Potatoes	2,194, .4	147,785	
Negro Yams	2,710,. 9	337,822	5%
Yellow "	1,927, .3	235,371	2%
Table Potatoes	14,274, .1	1,835,424.	48%
Cocoes	259, .1	30,403	
Cucumbers	533, .5	27,449	
Onions	202, .1	40,204	
Peanuts	710, .6	277,659	
Sweet Yams	202, .8	27,059	2%
Manalucie Tomatoes	1,072, .2	127,056	
Oxhart "	178, .8	20,639	
Eggs (lb)	148, .4	88,097.	
TOTAL	32,224, .9	$3,850,811	

All yams (74/75) 2,650 S. tons $650,780 - Av. $12 per hb.

MAJOR LOCAL PURCHASES 1975 - 1976

Commodity	Quantity 000 lb.	Value $	% of Total Prod.
Cabbages	1,636 .9	301,581	5%
Carrots	2,896, .6	416,004	
Cocoes	298, .8	41,030	
Cucumbers	1,430, .7	106,539	
Dasheen	123, .9	10,818	
Eggs	645, .3	316,099	
Lettuce	661, .3	57,545	9%
Onions	1,488, .9	362,553	
Peanuts	609, .5	187,018	
Tomatoes -Manalucie	1,097 .1	171,123	
Tomatoes - Oxhart	72, .5	11,242	
Table Potatoes	11,727, .6	1,545,817	70%
Sweet Potatoes	510, .6	49,870	
Negro Yams	4,034, .9	583,417	13%

Cont'd...

Sweet Yams	264,	.2	39,136.	2%
Yellow "	2,616,	.1	332,989,	3%
Pumpkins	4,916	.1	302,802.	
TOTAL	34,030,	.1	$4,835,591.	

All Yams (75/76)	3,280	5.tons.	$1,044,260	-	Av. $16 per hb.
All Yams (76/77)	2,700	5.tons.	767,900	-	Av. $14 per hb.

Table 8

AMC's CHRISTIANA BRANCH PURCHASES

	CHRISTIANA BRANCH			
	1975/76 Quan. S. ton.	1975/76 Value $000	1976/77 Quan S.ton.	1976/77 Value $000
All Commodities	7,736	2,193	3,805	1,146
YAMS				
Lucea Yam	45	14.2	205	64.9
Negro "	159	50.8	850	280.3
Yellow "	750	203.8	1,187	360.1
Sweet "	61	17.2	72	21.5
Total 4 yams	1025	286.0	2,314	726.8
Average		$14/lb		$16/lb

ALLSIDES DEPOT

	1975/76 Quan. S. ton.	75/76 Value $000	76/77 Quan. S. ton	76/77 Value $000	75/76 %of Tot. Prod.	76/77 %ofTot. Prod.	75/76 % of Tot. Marketed*
All Commodities							
YAMS							
Lucea Yam	44	13.0	41	20.5	37%	29%	40%
Negro "	1.5	0.3	5.0	1.4	2%	1%	2%
Yellow "	132	34.9	120	41.4	29%	20%	33%
Sweet "	2.5	0.7	2.5	0.7	3%	6%	4%
Total. 4 Yams	180	48.9	231.6	64.0	Average		Average
Average		$14/lb		$14/lb	22%		25%

* Based on the Survey data, the average family in Allsides eating yams twice per day for 6 days during 3 months reaping, utilize about 10% of total Production AMC's share of the purchases is calculated by: (Tot AMC Purchases) / (Tot. Production - 10% Farm family Consumption) %.

AMC - Purchasing and Distribution of yams from Allsides. The way the Christiana Branch purchases and distributes its supply of yams, is very similar to the operation of all branches in its distribution of most domestic crops.

The Christiana Branch is one of 9 branches operating throughout the country. The others are in Kingston (Head Office), Bull Savanah, Morant Bay, Browns Town, May Pen, Ivrys Hill and Montego Bay and Port-Antonio.

Attached to each Branch are a number of Buying Depots, a total of over 140 buying once or twice each weekly when supplies are plentiful in the area from which each depot purchases.

The AMC has about 20 buying stations or depots operating in Manchester and Trelawny, most of these attached to the Christiana Branch. It has 4 depots in Trelawny, one of which is at Allsides.

The Allsides Buying station purchases yams from Allsides 1 day each week/when supplies are plentiful, but only bi-weekly out-of season.

Purchasing is done by the AMC field-staff from the Branch office, but the Agency has a'contact man' employed by the AMC, and living in Allsides. This agent is in touch with farmers who want to sell to AMC, and informs the Branch Office of such farmers in turn, the Branch Office on compiling its order for yams from Allsides -i.e. farm-gate price, quantity and variety of each yam required from each farmer, - sends orders in telegrams to its contact-man, who distributes these to each farm on the week-end before the purchase is to be done.

The Branch office compiles its overall order based on request from the Kingston Office and other Branches chiefly Bull Savannah which is not located in a big yam area. Finally, the Branch also includes its requirement of yams for distribution on wholesale basis to different institutions (schools, hospital etc.) and to higglers, and for retailing at the Branch Retail Shop and its Mobile Unit.

At present, the AMC operates about 140 retail outlets- viz.- 20 green groceries;

60 special shops;) operating in low income areas and selling at a
60 mobile units;) subsidized price of 20% below normal retail prices.

Farmers usually reap yams the day before or from early morning on the day that the AMC is buying in Allsides. The AMC truck stops at a number of buying points in the district, at which the yams are purchased at the AMC's buying price for that week. Labour is usually employed or family labour used to help with reaping and transporting yams to the buying point.

Farmers transport their yams from distances of up to 1/2 mile mainly on donkeys and on their heads in much the same way as when dealing with higglers. Some farmers complain that the AMC's buying operation and the route of the AMC truck should be more extensive. The AMC field-personnel responsible for purchasing, grade the yams before weighing and loading them on the truck

In grading yams, 2 standards are used, unlike some vegetable crops. Yams are either accepted or rejected. Yams are rejected if they have too many, usually more than 2 'toes', and should have no ' burning' (nematode-infection) or hollows.

Farmers complain that sometimes the grading is too rigid as yams with only slight bruises are rejected. This is a fairly common complaint by farmers about the AMC which the agency should improve. In general, the AMC's manager claimed that the quality of yams from Allsides on the Wirefence Clay is fairly good. This to a large degree is supported by farmers who hardly complain of rejection of produce by AMC because of poor quality.

Yams grown on the Donnington Gravelly Loam tend to be of poorer quality.

During its purchasing for a week, the AMC also gets an estimate from each farmer on estimated supply which will be available the following week. In this respect, the AMC, Extension Service and the Data Bank Division of the Ministry of Agriculture could work together more closely in the area of crop forecasting and marketing intelligence in the Christiana Area and the entire country.

The yams purchased from farmers at a buying point are weighed and each farmer given a voucher indicating the payment to be received.

The AMC makes prompt payments, usually a few days to a week after purchase. Payment by cheque will be delivered to the farmers by the AMC's Contact Man or other field officers.

Yams are transported by trucks padded with banana leaves. When available boxes are used. Most trucks operating from the Christiana Branch are not owned by the AMC, but hired from private owners. Each truck carries 7 or 8 tons of yams and the owner paid a maximum of $60 per day,depending on the amount of load transported and the distance involved.

Farmers from a district sometimes hire a truck and transport yams to the branch after securing an order: the AMC pays up to $60, which may be all or a part of the transportation costs.
The Christiana Branch now operates largely as a collection and dispatch point for yams in the AMC.

Up to 1976, the Branch was responsible for the operation of the Coleyville storage, but because of poor design of that unit, cost of operation and other problems, the AMC rented the storage plant to the Christiana Irish potato.

Therefore the Christiana Branch does very little storage of yams. Most yams from Allsides are sent directly to Head Office in Kingston and to a lesser extent May Pen and Bull Savannah Branches the same or the next day. The Branch Office keeps a portion of its purchase for wholesaling & retailing, depending on its demand at a given time.

Our survey in Allsides, backed by experience at the AMC, indicates the maximum storage life of the main varieties from Allsides as Follows:-

Yellow yams	-	5	days
Negro yams	-	3	months
Lucea yams	-	3	months

Yams are usually stored on shelves which allow the circulation of cool, but not damp air, since this encourages moulds (fungus) to grow.

The AMC also purchases from farmers on a contract basis. But this is not usually done, since these contracts are mostly given for out-of-season supplies which are limited in the Christiana area because of the topography and the lack of irrigation.

AMC prices - As mentioned before, these are usually lower than those of small traders. During the survey period, (April, 78), the AMC was buying yellow yams at $14 per 100 lbs and Negro yams for $20 per 100 lbs, wholesaling for $20 and $24 and retailing for $22 and $26.
The higgler prices were mostly $20 per hundred for yellow yams and $24 for Negro yams, and retailing mainly for $25 for Yellow yams and $30 for Negro yams.

The JAS* Branch and PLL play important roles in AMC's operation at Allsides. The JAS has helped to educate and encourage farmers to handle their yams to meet the standards of the AMC. This has helped to improve the quality of AMC's purchase from the area.

The PLL farmers on the Allsides Land-Lease have to sell a portion of their produce to AMC. The total PLL farm is about 350 acres but much of this was not, under cultivation.

With the help of JAS and PLL, the AMC was able to purchase 132 and 120 tons of yellow yams in 1976 and 1977 respectively. As shown in Table 8, this represents 29% and 20% of total production in Allsides, which is higher than AMC's island-wide purchasing of 3% of national yellow yam production in 1976. In 1975/76 AMC was able to purchase about 33% of yams marketed from Allsides (see food note for table 8, on farm-family consumption). This has to do with our earlier comment of AMC being a surplus-buyer, purchasing about 25% of total yams marketed with most of the remaining 75% marketed by higglers.

* J.A.S. = Jamaica Agricultural Society.

* P.L.L. = Project Land-Lease, report at Dec. 1977.

Table 9. AMC Purchases and Sales of main Yam varieties.

Yams	(1976) Quantities		(1970 Values		(1977) Quantities		(1977) Values	
	Purchases '000 lbs	Sales '000 lbs	Purchases $000	Sales $000	Purchases '000 lbs	Sales '000 lbs	Purchases $000	Sales $000
Negro	3,034.0	3,154.7	$ 583.4	$ 550.0	2,355.2	2,053.9	$340.6	$372.0
Lucea	561.9	421.7	$ 77.2	$ 69.6	396.3	395.3	$ 58.6	$ 79.9
Yellow	2,617.0	2,025.2	$ 333.0	$ 312.4	2,309.5	2,046.6	$318.8	$348.8
Sweet	264.2	184.8	$ 39.1	$ 30.0	313.6	262.7	$ 44.8	$ 47.9
TOTALS	7,477.1	5,786.4	$1,032.7	$ 962.0	5,374.6	4,758.5	$762.8	$848.6

Note that the relative 'profitability' of yams in 1977 is the unprofitability in 1976 & is typical of AMC's operation, although overall the AMC has been operating at a loss and has had to be subsidised by government for most of its 15 years of operation. Inefficiencies, as indicated in the difference between quantities of yams purchased and yams sold, have been one of the AMC's major problems. Losses on quantities in 1976 were about 23% but improved to about 11% last year. Negro yams are purchased in the largest quantities because of supplies and its ability for storage, yet it also shows wide margins between what is purchased, and what is sold especially in 1976.

Once the AMC purchases yams or any crop from a district, it becomes difficult to follow its movement and location of its consumers. The AMC markets most of the yams purchased, through its own outlets, retailing to consumers and wholesaling to higglers, restaurants, public and private institutions. These prices, like the minimum guaranteed prices paid to farmers, are set at the Head Office, although in certain situations, the branch has a certain degree of freedom to set prices around those set in Kingston.

There have also been some reports of food stuff spoiling at AMC from time to time, due to poor storage facilities, expertise, management and the attempt to operate the AMC like a private business. The differences between quantities purchased and sold, as shown in Table 9, can only be due to spoiling, damages and possibly theft. The AMC also exports yams, and is the main agency in this.

Table 10 Yam Exports Jamaica

Year	Quantity (S tons)	Value $000	% Tot. Produ.	% AMC Purchases
1972	2,487	403.7		
1973	3,410	648.2		
1974	2,205	446.6		
1975	1,973	581.3	1%	60%
1976	1,387	586.3	1%	30%

* AMC exports at least 80% of Tot. Exports of yams.

8. DEMANDS, SUPPLIES, PRICES, COSTS AND INCOMES.

Demand

Yams are widely grown and widely eaten by the majority of people in Jamaica. In fact it is the most widely produced and consumed food crop in Jamaica, with the probable exception of bananas.

Unlike a crop like Irish Potato, the majority of people in Jamaica have a tradition of eating yams. Rice and flour are probably the only other staple foods more widely consumed and preferred to yams and bananas.

Here lies one of the greatest potential for the production of yams, particularly at a time of scarce foreign exchange to import the bulk of the rice and all of the flour demanded by the consumer.

The estimation of demand for items required widely, has got very little attention compared to production. By comparing data from the "Agricultural Production Plan (1977/78) " and "Demand Projections for Agricultural Commodities" by Shillingford), the present demand (1978) for root crops is about 270,000 S. tons of which approx. 200,000 tons are for yams.

Our survey indicates that the average family in the Christiana area consumes about 30 lbs of yam each week, while families in the urban areas, most of whom only cook once per day, purchase about 7 lbs per week. Considering that about 60% of our total population lives in rural districts, and although many of these areas are not large yam producers, one can safely estimate that the average family in Jamaica eats about 10 lbs of yams. We need to point out the obvious that these rough estimates are money-demand, as there is another type of demand based on nutritional requirements.

As mentioned before, once yams from Allsides enter the national system of marketing, they become part of national supply, competing with yams from other areas, and how well they are purchased depends not so much on where they come from, but on overall demand & supply in the particular outlet and the country as a whole,

Supply

Measured against this overall demand of 200,000 tons in 1978, overall yam production in the country has made considerable strides in the last 10 years from 80,000 S. tons in 1967 to about 146,000 tons in 1977; but production is still lagging by about 50,000 tons.

This is with respect to overall supply and demand throughout the country, because for about 6 months from December to about May, supplies in most markets are more than adequate. For example, during the month of April, our interviews showed considerable problems faced by yellow yam farmers and higglers who complained that there was a glut and yams were selling for 20 ¢ per lb. to 25 ¢ at most, from which they were barely able to recover production and marketing costs, with little or no profits.

Given the poor distribution system for most domestic crops, apart from periodic shortages and gluts, there is often shortage of yams in one part of the country while a glut exists in another part.

Tables 11 & 12 and the graphs in Fig. 2, show the production pattern of yams in Jamaica Christiana and Allsides, also Farm-gate and retail on a quarterly basis for 2 to 3 years.

It is clear that the 3rd quarter is the period when yam output is lowest in all 3 areas, and Farm-gate and retail prices are highest.

The following Table (13) , and the graphs on Figs. 3,4 & 5, show the pattern of AMC purchases by months. At first glance these tend to conflict with the pattern of production shown in the previous graphs. But this is not really so, since while it is true that Negro and Lucea yams tend to peak from the 3rd quarter, yellow yams, renta and the bulk of the other varieties produced carry the sway and are relatively scarce in the July to Sept. period.

As mentioned before, the farmers and higglers complain more about the price of yams than availability of markets, although these factors are all linked. They are not alone, as consumers complain more about the price they have to pay for yams, than availability or quality of yams marketed.

The next table (14) illustrates the movement of prices over the 5 year period, 1973 to 1977. While the price of yams from Allsides might have varied around these averages, they followed the general pattern.

One should note again the rapid increases in prices especially in'75 to 77' and the generally lower AMC prices. (Table 15)

Table 11.

QUARTERLY PRODUCTION (S.tons)

	JAMAICA 1976					JAMAICA 1977				
Yams	1st.Qtr.	2nd.Qtr.	3rd.Qtr.	4th.Qtr.		1st.Qtr.	2nd.Qtr.	3rd.Qtr.	4th.Qtr.	
Negro yam	3800	1150	3110	7210		4420	1150	6710	13870	
Lucea	1650	360	4880	6130		1230	230	6800	4020	
Yellow	16730	15590	4320	7980		15920	15830	8200	11480	
Sweet yams	2000	520	110	3900	Tot.	2330	430	80	4170	Tot.
All yams	48,400	51,900	13,600	38,000	131,000	46,900	31,400	24,900	48,300	151,500
Rating of Quarters	1st.	3rd.	4th.	2nd.		2nd.	3rd.	4th.	1st.	

Table 12.

Quarterly Production (S.tons)										Quarterly Production (S.tons)				
Christiana 1976					ALLSIDES 1976					Allsides 1977				
1st.Qtr.	2nd.Qtr.	3rd.Qtr	4th.Qtr.		1stQtr	2ndQtr	3rdQtr	4thQtr		1st.Qtr.	2ndQtr.	3rd.Qtr.	4th.Qtr.	
970	40	400	2400		20	-	10	100		36	-	8	150	
-	10	530	920		2	-	50	70		2	-	100	38	
3880	80	2080	1390		80	220	90	70		100	260	50	80	Tot
140	-	-	240	Tot.	40	-	-	35	Tot.	35			2	
6010	1050	3010	5520	15,600	145	220	150	280	805	173	261	158	271	868
1st.	4th.	3rd.	2nd.		4th.	2nd.	3rd.	1st.		3rd.	2nd.	4th.	1st.	

Fig. 2

YAM PRODUCTION PATTERNS

(and Farm Gate & Retail Price Movements for Jamaica)

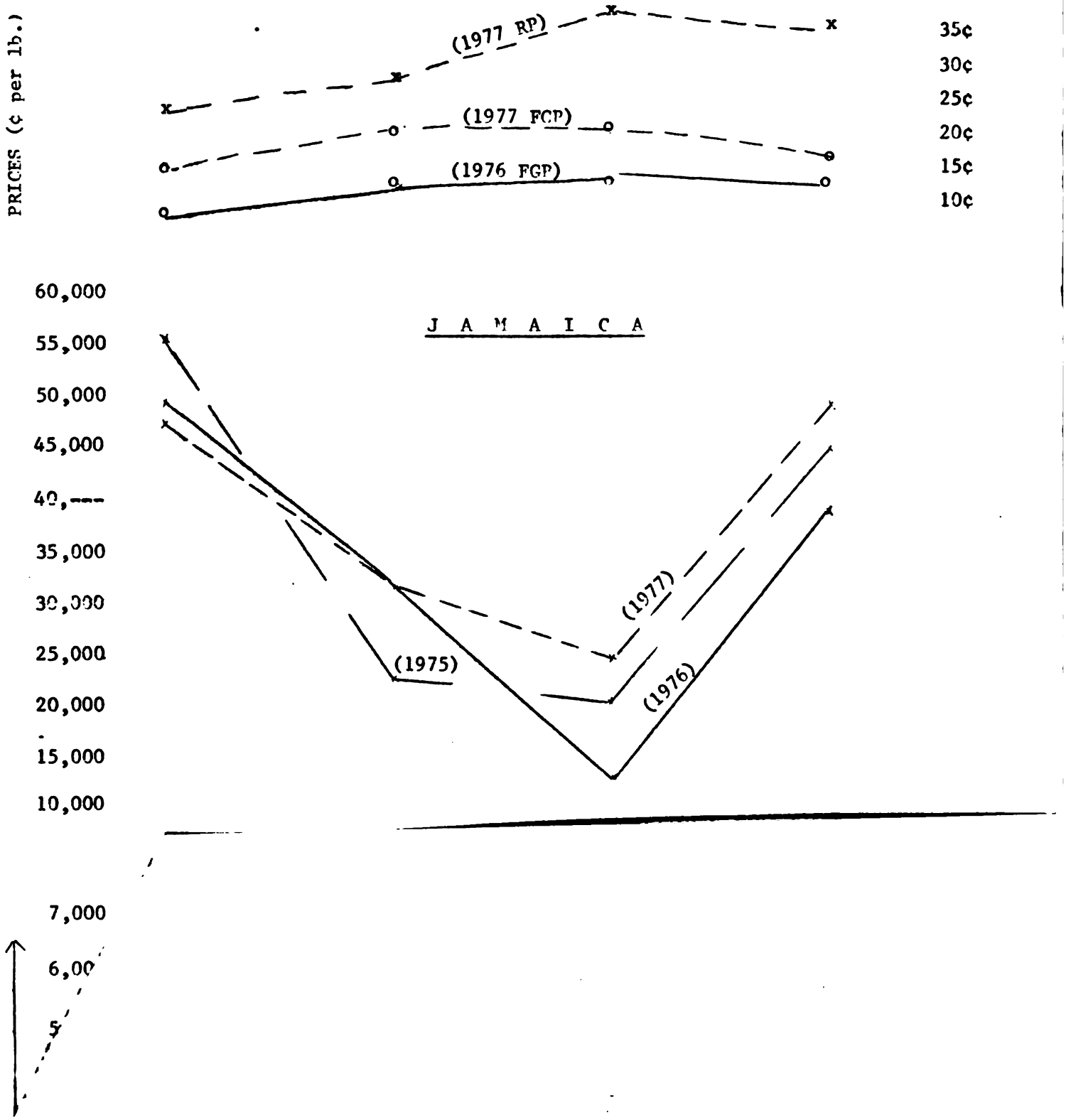


Table 13. TIME AND AVAILABILITY OF YAMS IN JAMAICA

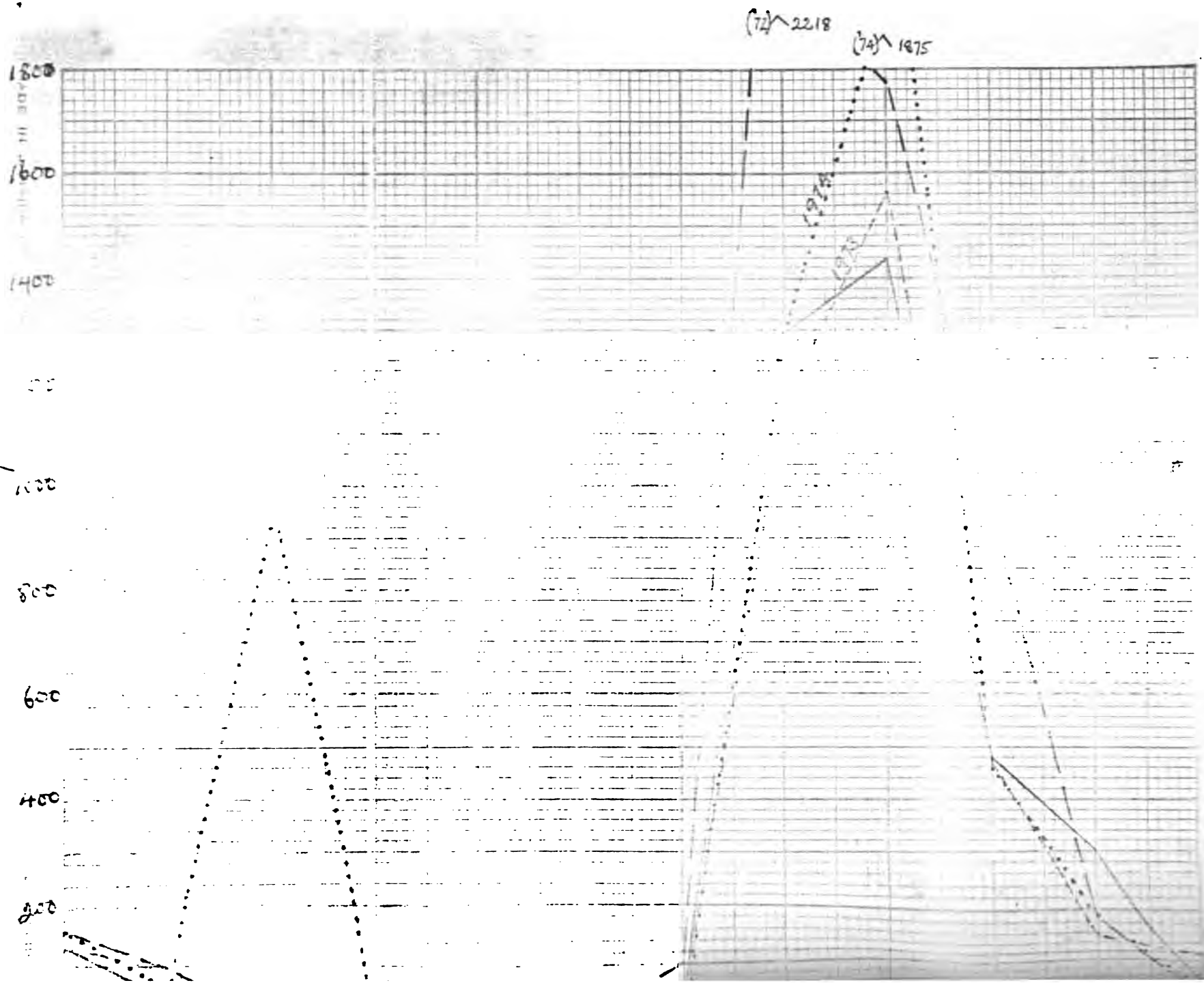
CROPS	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC
YAMS												
Negro	S	S	S	VS	VS	F	F	VH	VH	VH	VH	H
Yellow	H	H	H	H	F	F	F	S	S	S	F	F
White	F	F	S	S	S	VS	VS	VS	VS	VS	S	S
Lucea	S	S	VS	VS	VS	VS	S	H	H	F	F	S
Round Leaf	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
Sweet	S	S	S	VS	VS	VS	VS	VS	VS	S	F	F
China	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS	VS
Tau	S	S	S	VS	VS	VS	VS	VS	VS	VS	VS	VS
Yampie	F	F	F	S	VS	VS	VS	S	S	S	S	F

Source: Files, Agricultural Marketing Corporation, Jamaica.

Legend: F - Fair Supply
H - Heavy supply
S - Scarce supply
VS - Very Scarce supply
VH - Very Heavy supply

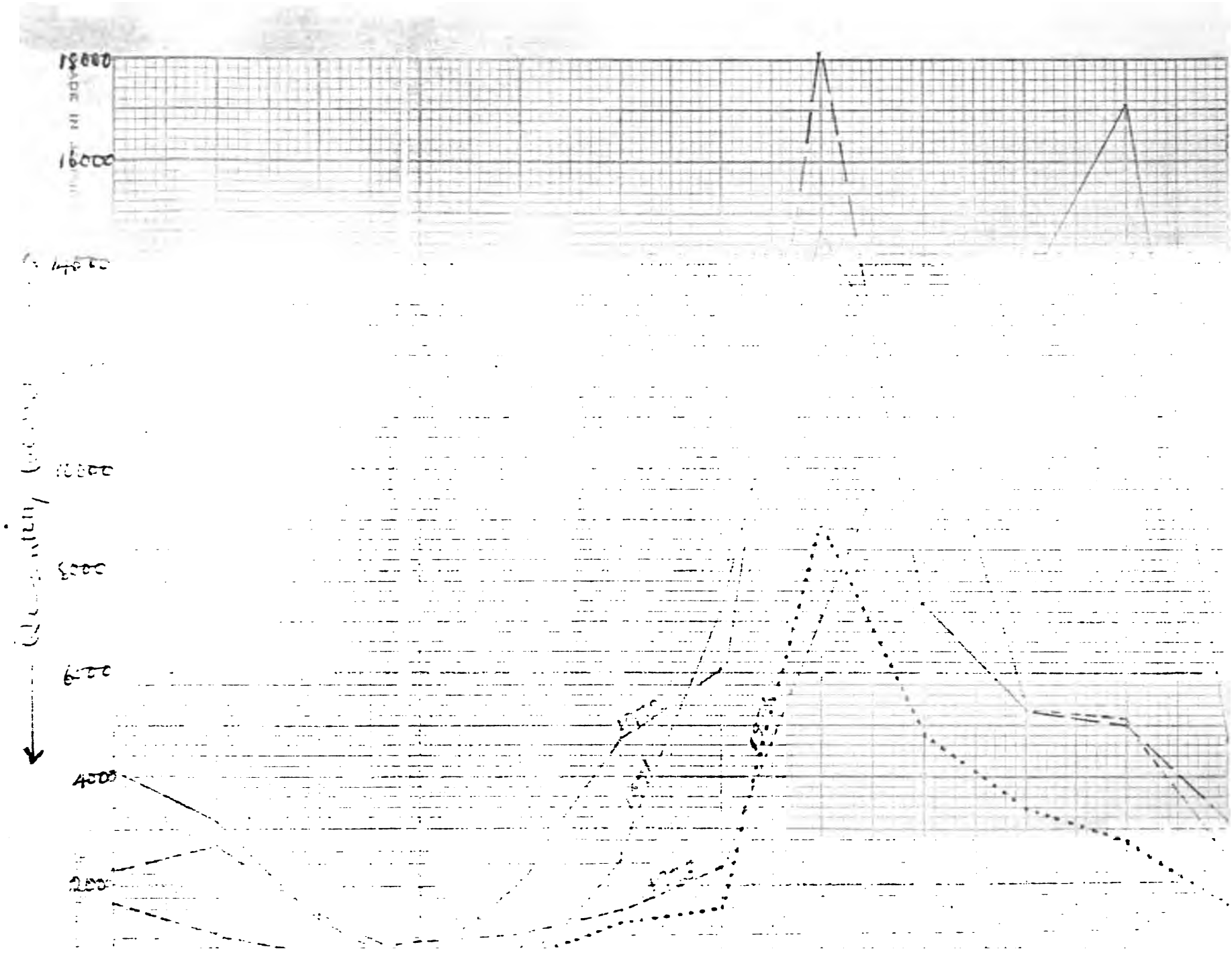
AMC Purchases. — Crop: LUCERA YAM

Fig. 3.



ARC Purchases — Crop : NEGRO YAM

Fig. 4.



Area Purchasing — Crop : YELLOW YAM

Fig. 5.

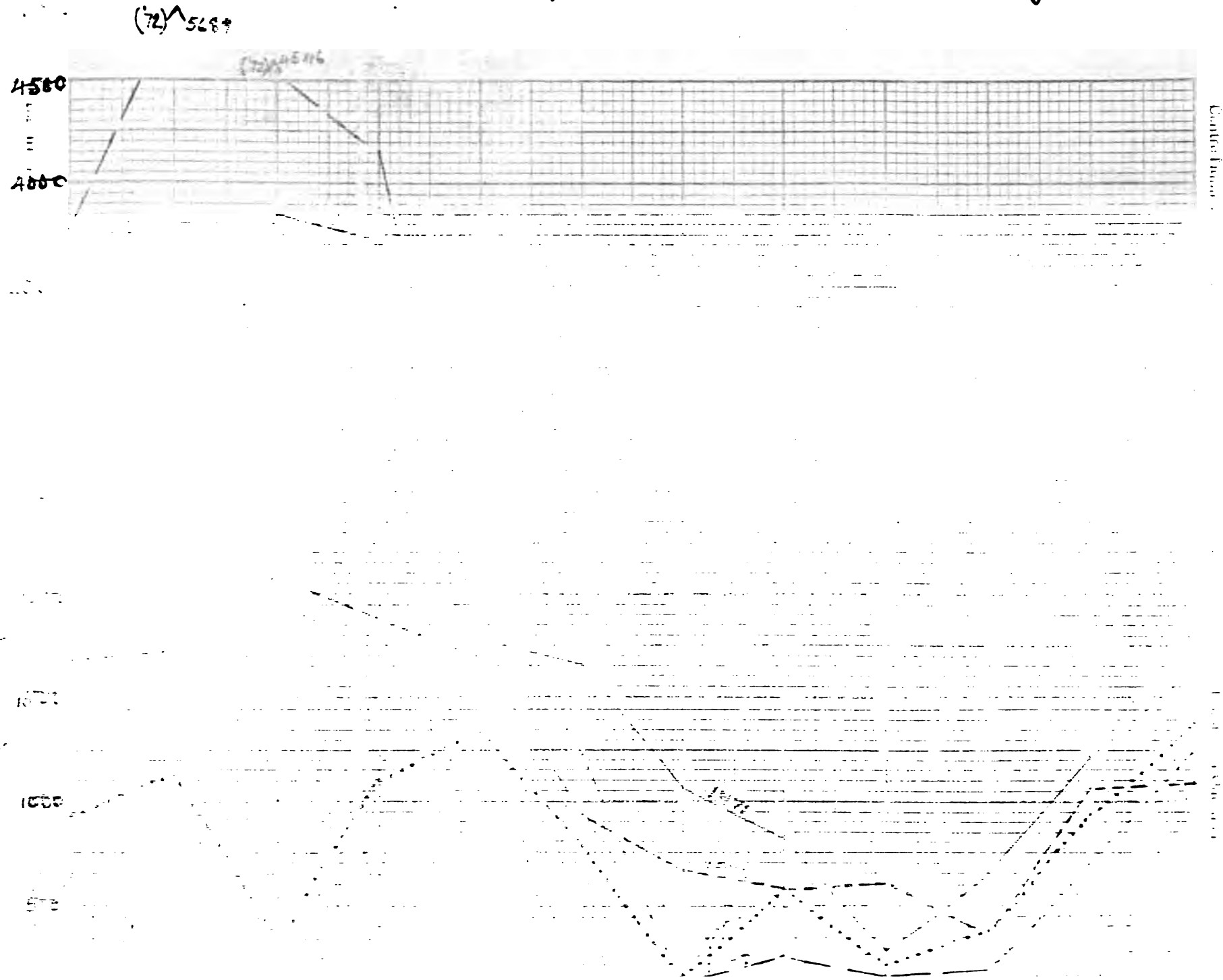


Table 14.

	Farm Gate Prices* ($ per lb.)					Detail Prices ($ per lb.)				
	1973	1974	1975	1976	1977	1973	1974	1975	1976	1977
Lucea Yam	$ 12	15	15	15	22	$ 11	19	24	26	30
Negro "	$ 9	13	16	17	22	$ 11	19	24	25	28
Yellow Yam	$ 8	14	17	19	22	$ 12	22	27	29	30
Sweet Yam	$ 12	15	16	15	21	$ 13	19	22	24	28
Renta Yam	$ 5	12	11	12	15	$ 9	14	19	20	25

(* These prices are average prices based on AMC and higgler prices, but are closer to higgler prices because of their greater share of the market.)

Ref: Data Bank - Ministry of Agriculture.

Table 15.

	AMC		Prices		
Yams	Min.	Guaranteed	Buying	Wholesale	Retail
	1973	1977	1977	1977	1977
Lucea	$6.50	(removed)	$15	$20	$23
Negro	$6.50	$15	$16	$20	$24
Yellow	$6.50	$16	$16	$22	$25
Sweet "	$7.00	(removed)	$16	$20	$23
White "	$7.00	$18			

Table 15 cont'd...

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* All Yams - The average purchasing price for all yams during the period, which is the school price at which crops were purchased, is given in Tables 7 and 8. The minimum guaranteed price is the Farm gate price based on a 25% margin on the cost of production of each crop. Two is set by AMC and APU

Ref: AMC lists of guaranteed prices & Figs. from AMC Christiana Branch.

9. COST OF PRODUCTION

WHITE YAM

Population: 1,000 hills - 3 plants per hill-

Labour Operation	Rate	Total Cost
Land Clearing	$35 acre	$35.00
Dig hills, mound & open	$20 each	200.00
Transport plants to field - 4md	$5 md	20.00
Planting yams - 6md	$5 md	30.00
Transport stakes & staking - 18md	$5 md	90.00
Mulching (bush) - 6md	$5 md	30.00
Weeding	$40 acre	40.00
Wrapping vines	$5 md	20.00
Reaping	12¢ per hill	120.00
Pack & Transport from field - 4md	$5 md	20.00
		$605.00
Materials		
Yam heads - (3 lb per hill) 45 cwt	$22 cwt	990.00
Stakes -	30¢ each	300.00
Fertilizer - 3 cwt.	$15 cwt.	45.00
		$1,335.00
Other Charges		
Contingencies	10%	194.00
Land Rental	$30 acre	30.00
		224.00
Total		2,164.00
Less value of yam heads (1 ton)	$22 cwt.	440.00
Net Cost of Production		1,724.00
Add Return to Management	30%	517.00
		$2,241.00
Marketable Yields - (6 tons)	12,000 lb	19¢

Ref: Agric. Planning Unit. July 1977

COST OF PRODUCTION AND MARKETING.

According to the latest figures (1977) available at the Agric. Planning Unit, the cost of production for most varieties of yams is about $2000 per acre and close to 20 ¢ per lb.

The various items and costs involved are given in Table 16 for White yams, which is a fair indication for most varieties.

(Table 16)

Our survey showed costs of $500 to $900 per acre for yam production in Allsides. This excludes the farmers labour and that of his family in addition to land rental and other miscellaneous charges.

The main costs incurred in moving yams from the farm-gate to market is the same for most small - traders travelling the same distance.

These are:-

1. Labour costs, equivalent of one-man a day at $6 rate to help with transporting yams to road-way.

2. Transportation costs, usually $5 to $12 depending on distance to market and amount of load. Most higglers pay about $10 for transportation costs which include 'hand-cart' charges.

3. Cost of market-fees, bench etc. about $4 for a single market day, to $7 for 2 days.

Total market costs to Kingston or Mo Bay from Allsides vary between $20 to $25 for a load of over 500 lbs, but may be as low as 1/2 these amounts depending on the amount of load and the market. Most small traders do avoid the labour cost ($6), by using their own family to help with this aspect of the work.

Before going on to look at the incomes of those engaged in yam production and marketing, one may look at a theoretical model relating cost of production and sales of the output to incomes.

$$C_{(Yam)} = \text{Tot. Acr.} \times (c_{fert.} + C_{heads} + {}_{stakes} + C_{labour} \ldots + C) \quad i$$

$$S_{(Yam)} = \text{Tot. Acr.} \times (FP_{yam} \times \text{Yield (p.oc.)} \quad ii$$

assuming that all marketable yield is sold

($C_{(Yam)}$ and S(Yam) are costs and sales of yam respectively)

FI (yam) = S - C

Where FI is farm-income from yams.

FI can be increased in 3 main ways -

cont'd...

(1) $\uparrow FI = S - \downarrow C$

or (2) $\uparrow FI = \uparrow S - C$

or (3) $\uparrow FI = \uparrow S - \uparrow C$ where $\Delta S > \Delta C$

The road possibility where farm income is increased by increasing sales and increasing costs, but the change in sales (Δ S) is greater than the change in costs (Δ S), is the most common way that farm income can be increased.

But to determine how to reduce loss of production of the total amount of yams produced, one has to look at ways of reducing all the inputs involved in the cost (equation (i)). For example, the cost of fertilizer (C. fert.) cost of heads (C_{heads}), stakes etc. and all other inputs ($C_{..}$) have to be looked at & ways found to reduce their individual costs or the overall cost of involved. This means that even if the cost of all inputs cannot be reduced, the major ones have to be reduced.

As far as increasing sales are concerned, one has to increase either the total acreage (Tot. Acr.) in yams and/or farm-gate prices (F_p.) and/or yields (per. acre.) (Equation (ii)). But the usual situation is that increases in acreage or yields of yams, necessarily mean increases in inputs and cost of production. Hence increasing farm incomes usually means that the farmer has to ensure that his increase in sales is greater than the increase in cost of producing the additional output.

INCOMES OF FARMERS AND HIGGLERS.

The majority of farmers and higglers engaged in the production and marketing of yams from Allsides are poor. By national standards, the peasantry of the Christiana area have a higher standard of living than in most rural communities. This can be easily observed in passing through the area, as the size and the building material used in the construction of houses and their general condition is much better than in most other rural areas.

The general trend is for agricultural communities far away from sugar estates and other plantations to be more prosperous than those on the fringes of these properties.

The labour statistics * for 1976 October, shows 16% of the employed labour force earning under $20 per week, 52% earning between $20 to $50, a total of 66% of the working population earning less than $50 per week with only 1/3 over $50 per week or $2600 per annum. Added to this is an unemployment rate of over 20%

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* Ref: Labour Force Survey - Dept. of Statistics.

In 1976, the National Farm Family Income* was estimated to be about $1500 per annum or $30 per week, for 2 working adults. Per-capita farm income is less than $800, which is much below the 1976 national level of $1,180.

Average farm family income in Allsides* was also estimated to be about $800 per annum or $15 per week.

Smikle and Edwards found that about 1/3 of the estimated 14,000 higglers in Jamaica in 1977, reportedly earn less than $20 per week and less than 10% earned over $50 per week, The majority earned less than $30 per week. Buying yams for $24 per lb. and selling for $28, their gross margin was less than 5%. Net profit is even less.

How does the average farmer or higgler involved in producing and marketing yams from Allsides compare with the national levels?

Before looking at the results of our survey, one may comment on the ridiculous notion being held by some people that because higglers sell for high prices, they make a lot of money and are some of ' the biggest capitalists', in the country.

The data from our survey showed most farmers reporting incomes of between $600 to $1200 (60% of farmers), with the other reporting as low as $400 and as high as $1400 per annum from yam production. These figures include payment for the labour of the farmer and his family. An average income of $900 per year ($1 per week) seems to be the standard for the Allsides yam farmer. Other crops are usually grown to supplement this income.

The incomes of higglers are much more difficult to arrive at since a number of them were reporting prices which seemed low, but some consumers were reported purchasing at these same prices. In addition, there is a weakness in the survey being done in the month of April when yam supplies are fairly high and prices low.

Most higglers earned between $5 to $15 per market day. This does not include the costs listed earlier as costs of marketing. A full time higgler going to market twice per week would earn between $10 to $30 per week.

The national average income of $20 per week earned by the majority of higglers in Smikle's Survey is supported by the higglers dealing in yams in the Christiana area.

It seems that the majority of peasant families engaged in yam production and marketing are below the national averages of incomes except where a farmer and a higgler are in the same family. This is the situation for nearly a quarter of the families in Allsides. But for such families and the majority of people in the Allsides and Christiana area, their incomes and standard of living need improvement. An income of at least $3000 per farm family** system of production and marketing of yams from the area.

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* Ref: "Allsides Agricultural Development Project", by Kerr, Grant and Lindo.

** Note The CARICOM Secretariat has recommended a regional farm income of $3,000 per annum and PLL also seems to use this target, which has to be adjusted as the cost of living increases annually.

10 IMPROVING THE PRODUCTION AND MARKETING OF YAMS.

The 5- year Development Plan (1978 - 1983) which has just been completed and being discussed by various organizations and individuals, proposes that in the Agricultural Sector, production of most crops be increased to make Jamaica self-sufficient in most domestic food crops by 1983.

As far as Root Crops are concerned, the Plan calls for an increase from 48,000 acres S. tons reaped in 1977 to 60,000 acres with volumes from 216,000 S. tons in 1977 to 340,000 tons in 1983.

Yam production is to increase from 27,000* acres reaped at the end of last year to 33,000 acres in 1983 and quantity, from 134,000 S. tons in 1977 to 214,000 S. tons in 1982.

In the Emergency Production Plan of 1977, a programme was put forward by the government and farmers were called on to increase production. A year later, farmers in the Bull Savannah areas of St Elizabeth complain of no market or very low prices for crops like sweet potato and escallion, farmers in Douglas Castle of Clarendon have similar complaints about cabbage, while those at the Colbeck Co-op in St. Catherine have serious problems in selling onions.

The lesson from the Emergency Production Plan is that for the 5-year Plan to succeed, not only the production but the provisions for marketing of the produce must be adequate, - or the plan simply will not work well!

In 1977, it is estimated that Jamaica's population is almost 2.1 million, which has to be fed more and more by domestic production. It is left to the 150,000 farmers, 14,000 higglers, 85,000 agricultural workers and most of the other 15,000 - total approx. 265,000 people out of a 'labour force' of 900,000, to carry out the programme.

Based on our study of the production and marketing of the yam production from Allsides and to a certain extent, much of this information would apply to the entire Christiana area, our aim is to identify the problems and suggest how to deal with them so that Allsides and the Christiana area can contribute to achieving the objectives set out in the 5-Year Development Plan.

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* These figures for '77 production', seemed to have been a forecast of production as in fact shown in Table 3, actual production was about 146,000 S. tons reaped from an acreage of closer to 28,000 acres. This difference in forecast and actual production, leads us to another point.

The problem of yam shortages and gluts at different times of the year, or for different years and in different locations at the same time of the year is a major one. The reasons for this general pattern of production and distribution of agricultural produce for domestic consumption are many. The main ones are suggested measures to deal with them are:-

(1) Land Reform Limited central - planning and implementation of a programme of economic and social development, typical of free-enterprise (capitalist) economies, especially under-developed ones, in which production is left to be determined by the market mechanism, through prices, is one of the main problems affecting all spheres of economic life.

This general feature of capitalist economies has serious consequences, particularly in post-colonial plantation economies where most of the best land with resources for all year production of agricultural produce for domestic consumption is used for the production of traditional exports like sugar.

To illustrate this point, with respect to yams, the peasant farmers in Allsides occupy about 3 acres each of steep lands with poor acid soils suitable mainly for yams. No irrigation is available, so that even a crop like yellow yam which is not as sensitive to seasonal changes as other varieties, most of it has to be planted in March to April during the spring rains. The more gentle slopes and the plains of all parishes are occupied by sugar cane, banana or some other export crop, much of which up to 2 or 3 years ago was owned by foreign absentee proprietors. This means that even where climate, irrigation, soil conditions etc are suitable for yam production to reduce the gap between national demand and supply of yams and produce in the May to November short period, also helping to reduce yam prices and generate demand, the present pattern of land ownership and its distribution, would not allow a more even supply of yams throughout the year. About 75% of the farmers in Jamaica, like those at Allsides, work on farms of less than 5 acres and occupy about 200,000 acres or 20% farm lands, while about 1% of farmers occupy 40% of farm lands. This shows the need for an overall plan of agrarian reform which is implemented to get agricultural production and marketing on a firm basis through making more lands with irrigation available to small farmers. This can help to provide more food and cheaper prices to the majority of the people, while increasing employment and standards of living of the majority engaged in agriculture. PLL, operating within an overall development plan, is a step in the right direction, but needs to be speeded up and stream-lined.

In April 73 when PLL was started as the major instrument of agrarian reform, idle and under-utilized lands in Jamaica stood at about 120,000 acres, and unemployment stood at about 180,000 people. By March 1977, PLL had brought nearly 50,000 acres of land under production and placed nearly 25,000 farmers on the land. But the total idle and under-used lands increased to about 130,000 acres. (Ref: Date from Emergency Production Plan, - 1977), while the unemployed had increase to about 215,000 people.

The Allsides Land- Lease established during this period had at December 1977, nearly 220 acres under cultivation out of 370 arable acres. This is nearly 60%, which is fairly good compared to most other PLL projects and considering the traditional practice among these farmers to "rest" a portion of their land. But the other 40% of that property and other lands which can be leased in Allsides, working with the Soil Conservation Unit and the farmers themselves, PLL can improve its operation in the short and long run.

(2) Improving the distribution system.
Inadequate and under-utilized storage facilities, poor market facilities, bad roads etc, all contribute to a poor distribution system, worsening the effects of the tendency of ' free-enterprise' economies to produce gluts and shortages contributing to unstable prices supplies to consumers. A poor distribution system with other factors contribute to the low income levels of small farmers and higglers.

In respect to yams produced in Christiana area, among the 4 things that will have to be improved are:-

(a) feeder-road systems availability of transport and costs;

(b) use of AMC's general storage system and the Coleyville plant (now operated by the Potato Co-op), and the scope for increasing and improving storage facilities for yams on the farm in transit and at the varous outlets of AMC;

(c) storage techniques for yams, especially yellow yams;

(d) operations of AMC and higglers to better possibilities of providing a more stable supply of yams to consumers at lower prices and at higher farm-gate prices, than now paid by AMC;

(e) parochial markets, especially the size and facilities provided for traders and consumers.

Feeder roads and transportation. - The need for extending and improving the roads to farms in the Allsides area has already been discussed to some length.

The difficulty of getting supplies to some farms and transporting produce to the main road or parochial roads hampers the movement of farm input and output and increases transportation costs to farmers and higglers.

Given the difficulties faced by farmers and higglers due to inadequate feeder road system, any programme of increasing production is to be affected by this. And even if output of yams and other crops were to be increased, the difficulty and cost of getting this output to the consumer would also increase, having little or no effect in increasing farmer and higgler incomes while making a more stable supply available to the consumer at lower prices.

Better roads would also enable the AMC to increase its number of buying points to operate nearer to the farm-gate, helping the agency to reduce this disadvantage compared to the operation of higglers. The Ministry of Agriculture through the Engineering Division and the Ministry of Local Government, through the Public Work Department should seek to build more feeder roads in the Christiana area to meet the requirements of the 5-Year Development Plan.

(Perhaps, resources being used to construct the Williamsfield to Coleyville highway would have been better used on feeder roads in the area).

Availability of trucks and vans to transport produce to market is a problem, but not mentioned as much as the cost. As indicated before, it is the higglers whose income suffers most from these costs.

Reducing transportation costs is a national problem, which has to be tackled by national guidelines on transportation rates. In general, expansion and greater use of railways, and running trains more regularly, offers the greatest short-term potential for both higglers and the AMC.

The nearest railway link to Allsides is at Kendal nearly 20 miles away, but if some of the trucks and vans used to make journeys to Kingston and MoBay markets were used to transport AMC or higgler supplies to the Kendal station, where suitable and adequate freight and passenger cars are made available, especially on Fridays and Saturdays, this could bring some quick reduction in transportation costs.

In this regard, the use of crates, mentioned before becomes a greater necessity. It would seem that wooden crates, packed with dry banana leaves and grass would be adequate, as packing these crates on one another would not do as much damage to yams as using card-board or worse, no crates at all.

Wooden crates also have a much longer life & depending on the type of wood and the care it gets, can be used for years. This is important in reducing the cost of these boxes to higglers or AMC.

AMC Storage - The AMC, before renting the Coleyville storage to the Irish Potato Co-op, had cold storage facilities for about 7,000 tons of produce in Christiana. It also has space for about 2,500 tons in Kingston and 2,000 tons in various branches and outlets.

The AMC also has dry storage space for about 4,000 tons of mixed produce. This dry space is of greater importance here, since yams store well under cool dry conditions.

These facilities are not being fully and properly utilized, especially at the Kingston Branch. A major factor in this, is that the agency has not been able to purchase sufficient supplies, due to lack of finance, poor farm-gate prices etc.

Storage Techniques - It may be advisable for AMC to study the new developments in the storage of yams, particularly yellow yams. The Ministry of Trade, through its Storage and Infestation Unit has found out that the storage life of Negro, Lucea and Yellow yams, the main varieties produced in Allsides, can be extended by curing. Loss of weight and fungus attack are reduced when the yams are cured at 36°- 40°C and at relative humidity of 95-100% for 24 hours. It is reported that yellow yams which normally can be stored for 5 days at most, can store for up to 40 days (Ref: p.51. Review of yam production in Jamaica by Rankine and Ferguson).

The higher purchases, local and export sales of Negro yams by AMC are due mainly to its better storage ability but yellow yams are preferred by consumers and with its year round production pattern, longer storage life could be of great importance. While farmers and higglers would not have the facilities required for curing, the AMC can study this technique with a view to using it.

It could buy yams, cure and store a portion of its supply, which could help to even out the glut and shortage situations of the 1st and 3rd quarters respectively.

It could use this to boost its income, not from increased price in the 3rd quarter, but greater volume of sales. Farm-gate prices paid by AMC could be raised, while lowering average retail price for yams in that quarter, thus helping both farmers, consumers and its own operation.

Its wholesale customers, including higglers, would also benefit. AMC's storage space would be more efficiently used and expanded if necessary.

When we discuss other measures to improve the overall operations of the AMC, one will see the possibilities of not only increasing the efficiency in use of storage, but the whole range of AMC facilities in its operation from the farm-gate through to retailing locally and even for exporting yams. The curing of yams is particularly important to the exporting of yams by sea.

Although it is not the purpose of this paper to go into details on the management of AMC, the corporation over the years has been criticised for inefficient management. For the AMC to succeed in playing a greater role in the marketing of yams and other produce, and the agency seems to be in the best position to help to solve most of the present problems in distribution of yams, it needs to have dedicated, efficient management and workers in the greater democracy in decision making.

11. IMPROVING THE OPERATION OF AMC AND HIGGLERS IN RELATION TO SUPPLY, DEMAND AND PRICES.

The overall aim of improving the system of production and marketing of agricultural produce should be to make sure that consumers get as much of the commodity as they demand at lower prices throughout the year, while increasing incomes and the standard of living of the majority of people engaged in production and marketing.

At present, the high retail prices that consumers pay for yams has a negative effect on demand. As the data collected and computed from consumers' responses show, because of the high price of yam relative to the incomes and employment levels of the majority of consumers, yam has very little chance of competing with rice and reducing the trend among Jamaican consumers to eat more rice and less yams in their diet.

Rice is richer in energy, cheaper and can'stretch further' to feed more people than the same weight of yams.
But given the foreign exchange problems faced by Jamaica, increasing the production and marketing of yams is critical for 2 reasons viz.

- to satisfy existing levels of demand, which is nearly 1/3 ahead of production (200,000 to 146,000 S. tons in 1977);

- to satisfy increased demand from import substitution (yams for rice) given the foreign exchange situation. The survey indicates that based on the reported quantities of yam and rice consumed by the families, represented in the sample, a reduction in 25% of the amount of rice and substitution by the equivalent amount of yams- (approx. 4 times as much to substitute for energy and quantity differences) - , this would cost most of the families, between 60% and 100% more buying yam and rice, than rice alone.

Including the factors already discussed, a critical element in meeting these objectives is to reduce the number of stages and different categories of 'middlemen' that the yams pass through before reaching consumers.

This is crucial to increasing farm income and reducing retail prices, and it is by large-scale operations at the farm-level through to retailing, that this objective can be best achieved.

The 2 most important measures to this policy are:-

- a minimum guaranteed price for the varieties of yams produced and consumed in the largest quantities;

- a maximum retail price;(retail price controls); for these varieties.

Before discussing these measures more fully, there is need for a word of warning:

cont'd...

" RETAIL PRICE CONTROLS ON CROPS, SHOULD NOT BE ENFORCED AND CANNOT BE
" EFFECTIVE IF THEY ARE NOT A PART OF AN OVERALL PROGRAMME WHICH WILL
" PROVIDE EMPLOYMENT AT HIGHER INCOMES FOR THE MAJORITY OF HIGGLERS WHO
" ARE LIKELY TO BE FORCED OUT OF THE TRADE.

Higglers cannot sell yams cheaper, without suffering a cut in their incomes and standards of living. But they pay higher farm-gate prices which benefits farmers, but can only purchase on small-scale. The AMC cannot pay higher prices to farmers, while selling cheaper to consumers, unless it can increase its volume and share of yam purchases and sales

The imposition of controls on the retail price of yams, like any other crop, if this is set at lower levels, will benefit the majority of yam consumers immediately and can increase the demand for yams.

For these incremental demands to be met, not to mention increases due to a substitution effect away from other root crops to yams, a large scale marketing agency (or agencies) are needed. The AMC is already established with under-utilized facilities and scope for expansion.

With increasing demand and potential supplies, the AMC would be in a position to increase its farm gate price for yams to a level comparable with price levels paid by higglers. This would be a further boost to farm-family incomes, although, with a general land-reform programme, increased production and productivity in yams would raise incomes even without any significant increase in farm-gate prices. Because higglers would no longer be able to sell above the retail price at which AMC can sell, their ability to pay higher farm-gate prices than AMC and supplies available to them would be reduced. Many would have to get out of the trade, reducing the number of middle-men. A Land-reform programme and general development in production would allow many country higglers to become employed in agricultural production, with higher incomes and standard of living. Town higglers who could not continue in the trade, would have to be provided with alternative productive employment.

Working out the details and implementing such a policy would require considerable care since prices would have to be reviewed at given periods. However, posting of retail and farm-gate prices in public places is a waste of time, if the supplies, buying points, outlets and alternative employment are not available to make the system work. If these are not provided as part of an integrated system, the economic political and social consequences could be worse.

Finally, it should be clear that any programme to increase farmers, higglers and agricultural workers' incomes, while reducing the retail price of farm produce, can have only limited success if it is not part of a programme to first halt the rate of increase in the general consumer price index, followed by a reduction in the general price level.
Between 1971 and 1977, the cost of living had increased by about 135% at a rate of nearly 20% per annum. It would be crazy to expect the real income of the peasantry or any section of the population to increase and provide a better standard of living if the price of the items they sell is reducing while that of the items they purchase as inputs for production or for consumption continue to rise.

As for yam production, increased supply at reduced prices for key inputs like fertilizers, stakes, planting material necessary to reduce the cost of production for yams can contribute to the increased output required to meet demand at lower prices to the consumer.

Improving Markets. - The conditions of operation for higglers and consumers in most parochial markets need much improvement.

Apart from inadequate storage space and crowded stalls, the general sanitary conveniences and conditions in the markets or just outside markets are sometimes deplorable.

The Coronation Market, the biggest market in Kingston and in Jamaica is crowded, especially on Saturdays and suffers from numerous inadequate facilities making life, purchasing and selling difficult to higglers and their customers.

While prices in these markets tend to be cheaper, especially on Saturday evenings when country-higglers have to leave, many consumers stay away from these markets because of the bustle and time wasted to purchase in the crowded conditions. This is also true of some AMC special retail shops.

12. REDUCING THE EFFECTS OF NATURAL LIMITATIONS.

National factors like climatic, topography and soil conditions make a hardy crop like yam, needing much less attention than vegetables or legumes, more widely grown in the hilly interiors of the country that the majority of peasants control from ownership, lease or rent arrangements. Because of the fact that most depend on rainfall which basically follows the same pattern throughout the country, and the other seasonal conditions under which each variety of yam will do best are the same in most of these hilly areas at the same time, the seasonality of supplies is made even worse. Low yields, partly due to the cultivation practices used by farmers and to poor and badly eroded soils, also exist in these areas.

This is not to say that there are not areas with some variation from the general features mentioned above. There are areas, and these need to be closely studied to produce yams and other crops out of season. As, increase yields and overall production.

In Allsides, there is more scope for spreading the production of yellow yams more evenly throughout the year, planting more negro, lucea, sweet yams etc, and planting more of other crops, thus diversifying production patterns and the mix of agricultural output. Improved cultural practices need to be practised by these farmers if their yields are to increase. A project like the Soil Conservation Unit (SCU) and the IICA one, on the Allside PLL property is very useful in this respect.

This project* was started in April of 1977. Because of the weak structure of the Wirefence Clay Loam, the slope of the area and the heavy rainfall, especially in August to November, the area suffers from heavy erosion, which worsens the already low natural fertility of the soil. Many farmers are now planting their crops in sub-soil, as over the years, cultivation of yams on hills has contributed to the problem of erosion.

At Smithfield Demonstration Centre in Hanover, with similar soil and rainfall conditions as at Allsides, studies carried out by the SUC on 17° Slope, showed that over 50 tons per-acre of dry soil, or a depth of 0.4 ins of top soil was eroded each year when yams were planted on hills with no soil conservation measures applied. Nearly 20% of the 500 arable acres on the Allside property falls in the 15° - 20° slope, with about 50% of greater slope on which erosion would even be worse with yam cultivation.

When yams were planted on Bench Terraces, the soil loss was reduced to only about 7 tons per acre per annum and 16 tons using only Hillside ditches and 11 tons using Hillside ditches and continuous mounds to plant yams.

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* Source: Most of the information presented on this project has been collected from an interview with Mr. M. Ramsey of the SUC and from paper on Allsides Pilot Development Project, by Ministry of Agriculture and IICA.

The main aims of the project are:-

1. To introduce and help farmers to use terracing and other soil conservation measures and to grow yams on continuous mounds;

2. To intensify land use through a system of multipl cropping to help meet national food requirements, increase farm incomes and to pay the costs involved in terracing.

It is estimated that in 1977, hand-made terracing cost about $1000 per acre, and mechanized terracing cost about $300 per acre.

Fig. 6 shows the main cropping systems with which the SUC and IICA personnel have started to experiment.

Preliminary results show that the optimum yam population is about 4,500 plants per acre, giving yields of up to 17 S. tons of yellow yams grown on terraces with continuous mounds. Farmers planting in hills using 1,000 to 1,500 pl./.ac. get average yields of 4 to 5. S. tons as shown in our survey and tests on the project show maximum farmers yields of 8 to 10 - S. tons.

Apart from increased production and productivity, the potential to produce a larger and cheaper supply of yam heads throughout the year is made possible by a project of this kind.

Planting on terraces and using continuous mounds also makes it possible to use less stakes per acre. The availability and cost of stakes at present is a serious problem in the area. Farmers have to get stakes as far away as the woodlands around Mandeville at a cost of about $18 per hundred or in exchange for yam heads. This item costs about $300 per acre in the cost of production shown in Table 16.

Continuous mounds allow vines from 2 rows of yams to be supported by one row of stakes. With or without continuous mounds, the SUC and PLL together should look into the possibility of buying stakes in bulk from nearby woodlands in Manchester and Trelawny, e.g. some areas on the road from Christiana to Mandeville and from Albert Town to Clarks Town. These stakes could be more easily obtained and at cheaper rates to farmers than under the present arrangement.

Further results from the Project show that while most farmers plant yam heads of 3 to 4 lbs. each, the optimum required was about 2 1/4 lbs. Above this weight, there was hardly any increase in the size of the yam produced. This again has direct implications for reducing costs of planting material to farmers, even at their present low population levels and on hills. Similar heads can also increase the proportion of yam yields available for consumption.

PLL, the Extension Service, JAS etc. should try to encourage farmers to try to reduce their size of the heads planted, thus increasing the proportion of marketable yams as soon as the results from the trials are confirmed.

Incidentally, most farmers interviewed in our survey, were of the opinion that smaller heads would give almost the same yields they were getting, but most gave no reasons for not reducing the size of yam heads except that it was their tradition to plant this way.

Mixed cropping, is already practised to some extent by farmers who grow mainly red-kidney peas between and on the yam hills in the first 3 months of the crop.
But the cultivation of crops in rotation with the yams is not widely practised. The land is just left to rest for 1 or 2 years after 3 or 4 years of cultivation.

The agronomic and economic benefits of multiple cropping are many, considering the serious problems of burning due to nematodes and hallows from which yams suffer in the area.

Peanuts, Red peas and Irish potato have been tried in the area. The Irish potato Coop, independently, has tried to introduce this crop in Allsides, but to little success.

The results from the project indicate that these and some other crops can produce well in the area, but lime has to be applied to the soil to reduce its acidity. The Donnington Gravelly Loam, which is not quite as acid, would give better results without liming, but it occupies less than 20% of the area. (Pineapple is another crop which should be tried, and as showing Table 5, about an acre of the crop was scattered in the district).

The crops already tried,apart from the liming required to increase the soil p4, need much more attention in terms of spraying, weeding etc, and require more financial input on the part of the farmers. But the returns of multiple cropping can be higher than mono-cropping.
Finance is one of the major problems to introducing crop diversification in Allsides.

13. PROVIDING FINANCE FOR PRODUCTION AND MARKETING.

Certain agro-economic factors, like availability of markets for one crop compared to market for another crop, cultivation practices, labour requirements and storage life of different crops, also help to determine how widely a crop is grown and produced in a certain area. Finance or the lack of it also has a key part to play.

If one were to compare yams with vegetables, it is clear that greater risks and demands are made in growing the latter.

The average peasant farmer, wherever he is, and having to depend largely on rainfall, has to grow mainly low risk crops, needing relatively limited finance. Yams happen to fall in this category. The availability of finance to farmers in Allsides needs closer attention. The survey showed that finance in the form of loans was the item that 20/21 of the farmers interviewed mentioned as most needed by them.

At present there is a People's Cooperative Bank (C Bank) near Allsides. Loans are also made to small farmers through PLL and the Self-Supporting Farmers Development Programme (SSFDP) operated by the Jamaica Development Bank (JDB).

A detailed study of the operations of these institutions is needed to develop a programme aimed at making more credit available to farmers, to see to it that this is used for agricultural production and a proper system of repayments is implemented.
Again this would have to be part of a development programme in the Christiana area and the nation as a whole. Among the reasons why many small farmers use such loans for consumption purposes and are hard at repayments, is their low income and standard of living. Only a general development programme will effectively deal with this problem, get loans mainly from PLL and from higglers, but the majority of those in the district have to depend mainly on higglers, friends and families. The amount of loans that a farmer can get from these sources is limited by the fact that the sources are poor with a low income. But this small source of finance is very important to the farmer and is one of the reasons that farmers prefer to deal with higglers than the AMC.

Loans to higglers to help them with marketing costs, start higglering, expand their operations or for domestic purposes hardly ever come from established lending institutions. Although our survey was unable to establish specific shares of the different sources of finance to higglers or farmers, Smikle's survey shows that in Jamaica, 50% of loans to higglers come from friends and family 12% from P.C. Banks 5% from Agricultural Credit Board and less than 2% from Commercial Banks. Indeed loans from commercial banks to the entire agricultural sector, - although most of this goes to big farmers and plantations, is usually under 10% of their total lending.

The Ministry of Agriculture, through its Production Unit, and the ACB, should immediately look into the matter of providing loans through the PC Bank and other means to the peasant farmers and traders from Allsides since this seems to be their most pressing need at the time of our survey.

The Colbeck Farmers Co-op is one such farm operating successfully for over a year and improving its operation over time. Its members have succeeded in putting about 100 acres of land into production and reaping two crops from most of this acreage in spite of numerous problems. Records of daily attendance and work of the members are kept and payments during and at the end of each crop are made on the basis of a member's attendance and work.

Such a form of organization, when its members are willing to cooperate on this basis, shows the greater benefits of large-scale organization of production and marketing to its members and the nation as a whole.

But whatever form of organization is used in Allsides, it should advance the objective of bringing cheaper, larger and a more steady supply of yams to the consumers while providing increased income and productive employment to the majority of farmers, higglers and agricultural workers and a better standard of living for the people of Allsides.

15. SUMMARY OF SURVEY DATA.

The data sheets and a summary of information from farmers, higglers and consumers are given in Table 17, 18 and 19.

The data lends itself to much more extensive analysis than was done in the previous sections, like all other tables, the information is presented here so that the reader can further analyse and compare.

14. PROVIDING INFORMATION AND ORGANIZING FARMERS AND HIGGLERS FOR PRODUCTION, MARKETING AND RURAL DEVELOPMENT

The agricultural traditions, low educational standard and the availability and acceptance of information on new developments in agricultural production and marketing is another factor. In this respect, the operation of the Agricultural Extension Service, the JAS and the Christiana Potato Co-op and the Colbeck farmers Co-op, is of relevance.

PLL and the JAS working with the Co-op Department of the Ministry of Agriculture and the Extension Service, and JAMAL, should launch a programme of general education in Allsides.

Certain agricultural and other traditions of the peasantry must be preserved, but others should be discouraged in the light of general agricultural developments and improved practices and organizations for production and marketing. Much of the developments in the technical field have been dealt with in previous sections.

A brief word on the organizational aspects.

Most farmers interviewed during our survey responded positively to the establishment of a marketing co-op. Their limited contact with the Irish Potato Co-op in Christiana has shown them that there are certain benefits to be gained by buying supplies and selling their produce together. It is our view that farmers should be encouraged and educated with a view to starting an active and democratic marketing co-op in the area, beginning on the Allsides property.

A danger with cooperatives arises when they are operated as a private business, without much democracy and participation in the work of the Coop and its benefits by the majority of its members. These co-ops can push up the retail price of the product they market when they are operated by a few primarily to make profits and providing a service to its members is important only to the extent that it allows the organization to make high profits to boost the incomes of the few who manage it.

The operations of the Irish Potato Co-op should be studied more closely by the agencies mentioned above to look into the possibility of linking yam producers in Allsides to this organization or alternatively to set up a separate organization.

Further, where it is practicable, and a group of farmers are willing to work together, they should be encouraged over time to establish a more advanced form of cooperative, - the collective farm where production and marketing is done as a single unit.

QUESTIONNAIRE

MARKETING SURVEY ON YAMS FROM ALLSIDES (MARCH-APRIL 1978)

DATA SHEET FOR FARMERS

Name .....

Age (Estimate) .....

1. What kinds of yam?(varieties and Approx. Acreage of each)

   .....

   .....

2. What other crops or livestock do you raise? (Crops or livestock and total acreage occupied)

   (a) .....(b) .....

   (c) .....(d) .....

   (e) .....(f) .....

3. Is all your land under cultivation? .....

   How much? .....

4. If any land not presently cultivated, why and what o you think is needed to bring it under cultivation?

   _____

   _____

   _____

5. What time of the year do you plant yam? .....

   Why? .....

6. What time do you reap? .....

7. About how much of each kind (variety) can you get from a square chain?

   .....Yam Yield .....per sq. chain

   .....Yam Yield .....per sq. chain

..... Yam Yield ..... per sq. chain

8. Do you use your family to help you or do you employ someone?

.....

9. Who do you sell your yams to? Higglers .....

AMC ..... Market ..... (which)

Why? .....

Why do you (not) sell to AMC ? .....

.....

10. How much per 100 lbs did they pay for the last crop?

Higglers ..... AMC .....

Market .....

11. If higglers (or others), where do they sell the yam?

.....

12. Which yam do you like to grow most? .....

Why?(eg. easier to reap) .....

13. Which one can store longest? .....

14. How do you store your yam? .....

For how long? .....

15. What problem do you have with transporting yam from field to where you sell it? .....

.....

16. Do you grade and sell according to the grade? .....

17. Do you sell different kind (varieties) for different prices? eg. ..... Yam for $ ..... per 100 lbs

..... Yam for $ ..... per 100 lbs

18. What do you think should be done to help yam farmers in Jamaica?

.....

.....

19. What do you think about cooperative production and marketing?

.....

.....

20. What do you have to spend money on to grow a crop?

..... at $ ..... per .....total cost = $....

..... at $ ..... " ..... " " = $....

..... at $ ..... " ..... " " = $....

Table 17.

No. 1.

SUMMARY OF DATA FROM FARMERS.

	Farmer 1	F-2	F-3	F-4	F-5	F-6	F-7	F-8	F-9	Farmer 10
Estimate Age	60	40	35	30	60	25	65	30	60	60
Farm Location	PLL	PLL	PLL	PLL	PLL	PLL				
Tot. Acreage	3	5	3	5	6	4	3	4	2	1
Tot. Idle /Resting	3/4	1/4	11/2	1/4	-	1/2		2	1/2	-
Yellow Yam	1/2	1	1/2	1	2	11/2	1/2	1	1/2	1/2
Negro Yam	1/2	1/2	1/4	1	11/2	1/2	1/2		1/2	1/4
Tot. Yam	1	1 3/4	1	2 1/4	4 1/2	23/4	1	1 3/4	1 1/4	3/4
Banana	1	3	-	2	1 1/2	1/2	2		1/4	1/4
Peas	-	-	-	1/2	-	1/4		Intercrop	Intercrop	
Vegetables	-	-	-	-	-	-				
Other Crops.	1/4	-	1/2		-	-				
Livestock	-									
Cows (no.)	-			3	1	1				
Goat (no.)	-	3					5	5		2
Pigs (no.)	-	14	1		1					
Fowls	-					12				
Donkey (no.)	1					1			1	

No. 2.

	F-11	F-12	F-13	F-14	F-15	F-16	F-17	F-18	F-19	Farmer 20	21
Estim. Age	45		65	70	65	30	30	65	35	25	35
Farm Location				PLL		PLL					
Tot. Acreage	2 1/4	4	3 1/4	2 1/4	5 1/2	6	5 1/2	3 1/2	2	1/2	4
Tot Idle /Resting	-	1/4	1/4	-	1/4	1/4	2	-	1/4		1/4
Yellow Yam	3/4	1	3/4	1	4	4	1/2	1	1	1/4	2 1/2
Negro Yam	3/4	1/2	-	1/2	1	1/2	1/2	1 1/4	1/2		1/2
Tot Yams	1 1/2	1 3/4	1	1 3/4	5	4 3/4	1 1/2	2 1/2	1 1/2		3 1/4
Banana	1/2	2	2	1/2	1/4	1/2	2	1	1/4		
Peas		Intercrop	1/4				Intercrop				1/2
Vegetables		1/4									
Other Crops	1/4					1/2	1		1/4		
Livestock											
Cows (no.)						8					
Goat (no.)			1								
Pigs (no.)	1					3					
Fowls											
Donkey (no.)											

3.

	Farmer 1	F-2	F-3	F-4	F-5	F-6	F-7
YAM							
Months Planted Yellow	F -A	F-A	F-Aug	Mar-Aug	Jan-Dec	Mar-Aug	Feb-Aug
Months Reaped (")	M-A	—	F-July	Ap.-July	J.D	Feb-Aug	Dec-Aug
Av. Yield (5.ton/ac)	5.0	3.5	3.5	3.0	4.0	4.0	4.0
Months Planted (Negro)	Feb-Apr.						
Months Reaped "	Dec-Mar						
Av. Yield "	(Yellow	3.0	4.0	4.5	4.0	2.0	4.0
Portion Sold to AMC	Small (1/4)						-
AMC Buying Price (Yellow	$14.00	$14.	$14.	$14.	$14.		
(Negro)							
Portion Sold to Higglers	Small (1/4)						ALL
Higglers Buying Price (Yellow)	$16.	$20	$20.	$20.	$20.		$20.
(Negro)	$	$22.			$22.		$24.
Portion Sold by Farmer	Most	NIL					
Av. Retail Price	$20.00			$30.			
Yam outlet (Consumer)	May Pen	Kgn.					
Transport Problem	Head & Donkey	Head & Donkey	None	Bad Road	Bad Road	Donkey	
Attitude to Marketing Coop	POS	Neg.	PoS.	None	None	POS	POS
Re: AMC	Low Price, sell to AMC of PLL	because		Payment sure	Take Surplus & Cash sure	Pay quickly	Low price and not in area
Labour Supply (Family-Fm) (employed-Em)	Fm-Em	Em	Em.	Em	Fm-Em	Em	Fm&Em
Yam used by Family each crop. (3 Months)	500lbs	700				800 lbs	

No. 4.

	Farmer							
	F-8	F-9	10	F-11	F-12	F-13	F-14	F-15
YAM								
Months Planted Yellow		Feb-July	Feb-Apr.	Feb-Aug	Feb-July	Mar-Sept	Feb-Aug	F-D
Months Reaped (")		Dec-July	Dec-Mar	Dec-Aug	Nov-July	Apr-Sept	Mar-July	F-D
Av. Yield (5.ton/ac)	4.0	3.5	3.0	3.0	3.5	5.0	4.0	3.0
Months Planted (Negro)								
Months Reaped								
Av. Yield	3.0	3.5		3.5	3.0		4.0	
Portion Sold to AMC	-	Small	-	-	-			
AMC buying price (Yellow)							$14	$16
(Negro)								
Portion Sold to Higglers	ALL		ALL		ALL	ALL		
Higglers Buying Price (Yellow)	$20	$20	$22	$20	$20	$20	$20	$20
(Negro)			$24	$24	$28			$24
Portion Sold by Farmer								
Av. Retail Price				$24				$20
Yam Outlet (Consumer)	Kgn.	May Pen &Kgn			May Pen & Kgn	Kgn	Porus& Kgn.	
Transport Problem			Bad Rd.	None	Bad Rd.	None	None	None
Attitude to Marketing Coop	POS	POS	POS	POS	POS	POS	POS	POS

Cont'd...

No. 5.

	F-16	F-17	F-18	F-19	Farmer 20	21
YAM						
Months Planted Yellow	Jan-Dec		Apr-Sept	Jan-Apr	Apr	Feb-Aug.
Months Reaped (")	Jan-Dec		Apr-Aug	Dec-Apr	Mar.	Dec-Aug.
Av. Yield (5.ton/ac.)	7.0	4.0	3.0	4.0	4.0	5.0
Months Planted (Negro)			Feb-Mar			
Months Reaped "			Feb-Mar			
Av. Yield "	6.0	4.0	2.5			4.5
Portion Sold to AMC	-	-				
AMC buying price (Yellow)	$14.	$16.				
(Negro)						
Portion sold to higglers.	-		ALL	-	ALL	ALL
Higglers Buying Price (Yellow)	$20	$20.	20	20	$22	$20
(Negro)	$24.					
Portion Sold by Farmer.				-		
Av. Retail Price		$20		$24.		
Yam Outlet (Consumer)	Christiana		Old Harbour Kingston	May Pen,& Old Harbour Kgn.	May Pen, Old Harbour & Kgn.	MoBay
Transport Problem	Bad Road		None	None	None	Bad Rd.

Cont'd...

No. 6.

	F-16	F-17	F-18	F-19	Farmer 20	21
Attitude to Marketing Coop		POS.	POS.	POS.	POS.	POS.
Re: AMC	Sell because of PLL Loan.	Benefit to Loan	No AMC truck in area	No AMC truck		No donkey to AMC Depot.
Labour Supply (Family-Fm (employed-Em)	Em.		Em.	Em	Em	Fm&Em
Yam used by family each crop (3Mths.)			1000 lbs.	500 lbs.	200	500
Amt. Planted per hill	6	6	8	4	4	4 lbs.
Help Required	Loan better & price	Loan	Loan	Loan	Loan	Road $Loan
Estim. Cost of Production			$700	$500		$650
Estim. Sales from Yam (P/Ac)			$1200	$1600		$2000
Estim. Income			$500	900		$1350
Storage Life - Longest (weeks)	Negro (12)	Negro (12)	Lucea (12)	Lucea (12)		

No. 7.

	F-1	F-2	F-3	F-4	F-5	F-6	F-7
Amt. Planted per Hill	4 Lbs	5	4	4	3	3	7
Help Required	Export Mkt.	Loan	Loan	Loan	Loan	Loan & Terrace	Loan
Estim Cost of Production	$1400	800		$700	$1200	$400	$400
Estim. Sales from Yam (P/Ac)	$2000	1300		1500	$1600	$1600	$1600
Estim Income	$600	$500		$700	$400	$1200	$1200
Storage Life - Longest (weeks)	Negro (2)		Negro (12)	Sweet (12)	Lucea (12)	Lucea (1)	Negro

No. 8

Re: AMC	Low Price		Enough Higglers	Depot not near Farm	Not Near	Higgler give Loan	-	-
Labour Supply Family - Fm (employed-Em)	F-8 Em	F-9	F-10 Em.	F-11 Fm-Em	F-12 Fm & Em	F-13 Em	F-14 EM	F-15 Em
Yam used by Family each Crop (3 Months)	800	400	700				1000lbs	
Amt. Planted per hill	6	6	4	6	5 lbs	4	5	6 lbs
Help Required	Loan	Loan	Loan	Loans &Road	Loans & Training	Loan	Loan	Loan
Estim. Cost of Production	$700		$250	$400	$900	$600	$700	
Estim. Sales from Yam (P/AC)	$1600			$1200	$1300	$2000	$1400	
Estim. Income	$ 900			$ 800	$ 500	$1400	$200	
Storage Life - longest (weeks)	Sweet (C)	Lucea (12) Negro	Negro(3)	Lucea (12)	Lucea (8)	Lucea (12)		Neg. (12)

MARKETING SURVEY ON YAMS FROM ALLSIDES (MARCH-APRIL 1978)

DATA SHEET FOR HIGGLERS

Name .....

Age (Estimate) .....

1. Where do you buy most yams? .....

2. Where else do you buy yams? .....

   Why? .....

   .....

   What other kinds (varieties) do you buy? .....

   .....

3. What other crops do you buy? .....

   .....

   When? .....

   Is yam the crop you buy most during reaping time? .....

   Why? .....

4. Do you plant yams? .....

   Does your husband (or other close family)? .....

5. Who do you buy most of your yams from?

   (a) Farmer .....(b) AMC .....

   (c) Other Higgler .....

   Why? .....

   How regular do you buy? .....

6. What price are you now paying for the different kinds?

   ..... Yam at $ ..... per 100 lbs

   ..... Yam at $ ..... per 100 lbs

   ..... Yam at $ ..... per 100 lbs

7. Where do you sell most yam? .....

.....

Why? .....

Where else do you sell? .....

.....

8. What days do you sell? .....

.....

How much yam do you sell for a week?

When market is good .....

When market is bad .....

9. What price you are now getting at market?

..... Yam at ..... cents/lb

..... Yam at ..... cents/lb

..... Yam at ..... Cents/lb

10. What do you think about AMC? .....

.....

11. How do you transport the yams from where you buy to where you sell?

.....

12. Do you think AMC should leave buying of yams to higglers alone?

.....

13. Do you have to store the yams after you buy it? .....

For how long? .....

How do you store it? .....

Which kind (variety) do you find store better? .....

.....

14. What do you think should be done to help higglers who deal in yams?

.....

.....

Table 18.

SUMMARY OF DATA FROM HIGGLERS.

No. 1.

	Higgler 1	H-2	H-3	H-4	H-5
Estim. Age & Sex	30- Male	25-Male	40-Male	20-Fem.	35-Fem.
Areas Purchased from: (In order of Importance*)	Allsides & Stettin	Allsides & Freeman's Hill	Chudleigh Christiana) or May Pen) AMC	Allsides & Stettin	Silent Hill AMC
Crops Purchased *	Yam Banana Coco	Yam Coco Irish Potato	Yam Cassava, Coco Orange, Cabbage	Yam Coco	Yam Banana, Coco Cassava, Red Peas
Yams Purchased *	Yellow yam Negro Lucea	Yellow Sweet Lucea	Renta Yellow White	Yellow Sweet Negro	Yellow Negro Renta
Reason for main variety	Plentiful	Plentiful	Sell quickly	Plentiful	High Supply & Demand
Higgler/Spouse or Child in yam Production	Yes	Yes	Yes	Yes	Yes
Supplier of yam	Farmer Family	Farmer Family	AMC Other Higgler	Farmer Family	Farmer Family & AMC
Regularity of supply	All Year	3 Months	All Year	All Year	All Year
Transport	Donkey& Truck	Donkey & Truck	Cart & Truck	Truck	Van
Location of Market	MoBay	Clarks Town	Christiana& May Pen	MoBay & Falmouth	Old Harbour
Why	Tradition	Near/Small Amt.	Quick Sales	High Demand	Quick Sales
Buying Days	Friday	Tuesday	Saturday	Friday	2 days
Market day	Sat	Wed.	Sat.	Sat.	1 week-day& Saturday
Amt. Sold at "good" market	700 lbs	200 lbs	300 lbs	500 lbs	200 lbs

	Higgler 6	H-7	H-8	H-9	H-10
Estim. Age & Sex	40-Fem.	35-male	40-Fem.	45-Male	30-Male
Areas Purchased from (In Order of importance*)	Chudleigh	Allsides Freeman's Hall	Wait-A-Bit Allsides	Allsides	Coleyville
Crops Purchased*	Banana, Coco Dasheen, Yam Peas, Carrot	Yam Banana Coco	Yam Banana	Yam Banana Coco	Banana, Yam, Dasheen
Yams Purchased*	Yellow White Negro	Yellow Negro Lucea	Yellow Negro	Yellow Negro	Yellow Negro
Reason for main variety	Consumer pre-ference	All year supply		Consumer pre-ference	
Higgler/Spouse or Child in yam production	Yes	Yes	Yes	Yes	No
Supplier of Yam	Farmer Family	Farmer Family	Farmer	Farmer Family	Farmer
Regularity of Supply	All Year	All Year		6 Mths. at Reaping	
Transport	Van	Donkey & Truck	Truck	Donkey & Truck	Own Van
Location of Market	Christiana	Kgn. & Old Harb.	Kgn.	Brown's Town	Spa. Twn.& Kgn
Why	Near	Can get every-thing to buy		Nearer	Sell Wholesale and retail
Buying Days		Friday	Thurs.	Friday	Thurs-Fri.
Market Day		Sat.	Fri & Sat.	Sat.	Friday
Amt. Sold at"good" market	100 lbs	600 lbs	1000 or more	400	Depend on Order

No. 3

	Higgler 1	H-2	H-3	H-4	H-5
Amt. Sold at "bad" market	700 lbs at low price	200 low price	300 low price	500 low price	200 at low price
Farm-gate price (yellow)	$20 per 00 lb	$20 ?	$20 (AMC W/S)	$20	$20
(per 100 lb = hb) (Negro)	$26 " Hb	$25	$20 (Renta)	$26	$25
Retail price (yellow	$20 ? per hb	$20 ?	$25	$25	$25
(per. hb) (negro)	$30	$25	$25	$30	$25
* Cost of Purchase & Transp. etc	$175	$45	$63	$120	$48
* Tot. Sales	$163	$50	$75	$133	$50
Income earned	-$ 12	$ 5	12	$13	$ 2

(* Cost and Sales calculated using approx. 2/3 main variety and 1/3 other variety, plus transportation, and 1 day hired labour, plus lunch etc. for over 300 lbs of yam marketed. Calculations based on main variety for less than 300 lbs Details of transportation rates and other expenses in text.)

No. 4

	Higgler 6	H-7	H-8	H-9	H-10
Amt. Sold at "bad" Market	75 lbs	550 lbs	400 at low price		
Farm-gate price (yellow)	$18	$20	$20	$20	$20
(per 100 lb = hb) (Negro)	$22	$24		$24	
Retail price (yellow)	$25	$20?	$25	$20?	$24 W/S
(per. hb) (Negro)		$20?			
* Cost of Purchase & Transp. etc	$20		$220	$90	
* Tot. Sales	$25	?	$250	$80	
Income earned	$ 5	?	30	$10	?

	Higgler 1	H-2	H-3	H-4	H-5
Length of Storage	1 day	1 day	None	1 day	1 day
Variety Store best.	Negro	Negro		Negro	White
Re: AMC	Help higgler, but not farmer.	Helpful	Profitable to higgler Good Coop.	Help consumer Bad for Farmer	Good marketing system
AMC Cont. buy yams	Yes	Yes	Yes	No	Yes
Help needed	Better roads	Govt. trucks for cheaper transport			
Remarks	suspect farm-gate in cwt.	Suspect Farmer-Higgler	Suspect other employment		

Note:- 1. Most higglers gain added income from other produce taken to market.

2. A portion of their produce is got directly from their family- farm, reducing cost of purchasing produce and trading only part-time

3. Income represents about 2 days pay for those marketing over 300 lbs and 1 day for less based on time needed to procure and sell load.

No. 6

	Higgler 6	H-7	H-8	H-9	H-10
Length of Storage			None		
Variety store best.					
Re; AMC	Good market	Help poor		Pay low price	Help farmer, but dump food
AMC cont. buy yams	Yes	Yes			
Help needed	AMC should buy more to sell to higglers	more feeder roads		More feeder roads	
Remarks	Seem to also buy from AMC according demand			farmer-higgler	Has other employment

MARKETING SURVEY ON YAMS FROM ALLSIDES (MARCH-APRIL 1978)

DATA SHEET FOR CONSUMERS

Name: .....

Age (Estimate) .....

1. Where do you buy most yams? .....

.....

2. What kind (variety) of yam do you buy most? .....

.....

Why?.....

.....

3. What other kinds do you buy? .....

.....

Which kind does your family like most? .....

.....

4. About how much yam do you buy each week? .....

Why? .....

.....

5. How many big people and how many children do you have at home?

..... Adults ..... Children

6. Do you find that the amount of yam you buy is enough to satisfy them?

.....

Why don't you buy more yams and less rice? .....

.....

About how much rice do you buy each week? .....

7. If you had the money, would your family prefer to eat more yams and less rice? .....

Why? .....

8. What price do you pay for yams now?

..... Yam ..... cents per lb

..... Yam .....cents per lb

..... Yam .....cents per lb

9. What faults do you find with the yams you have to buy sometimes?

.....

10. What faults do you find with the persons who sell you yam?

.....

What faults do you find with the place where you buy yam?

.....

11. Do you buy yam according to grades or quality etc?

.....

12. Where do you prefer to buy yam? Higglers on Roadside .....

Supermarket ..... Market ..... AMC .....

Why? .....

.....

No. 1

Table 19.

SUMMARY OF DATA FROM CONSUMERS

	Consumer 1	C-2	C-3	C-4	C-5	C-6
Estimated Ages & Sex	30 Female	25-Fem.	30-Fem.	35-Fem.	40-	45-Male
Location of Home	Stettin		Christiana	Stettin		Stettin
Place yam purchased	Falmouth Market	Christiana mkt.	Christiana Market	Falmouth	Christiana market	Christiana market
Distance Home-mkt. (mls)	26 miles			26		11
Main Variety Purchased	Sweet yam	Negro	Yellow	Sweet yam	Yellow	Yellow
Reason	Good flavour	Gummy (soft with fine texture)	Family like it	Soft & nice taste	Family like it	Gummy and nice
Other varieties purchased	Yellow	Yellow	Negro	Renta	Sweet	Negro
	Renta	Renta	Sweet	Renta	Renta	Lucea
Size of family	2Ad. +3Ch.	3A +6Ch.	2A +4Ch.	2A +3Ch.	3A +4Ch	2A + 2Ch
Amt. of yam purchased /wk	35 lbs	30 lbs	20 lbs	30 lbs	25 lbs	36 lbs
Adequate?	Yes	No	No	Yes	Yes	Yes
Yams purchased & prices						
Yellow	20 ¢ per lb	25 ¢	20 ¢	20 ¢	20 ¢	20 ¢
Negro	25 ¢	30 ¢	25 ¢	30 ¢		
Lucea						30
Sweet	30 ¢		30 ¢	30 ¢	30 ¢	
Renta		20 ¢		20 ¢	20 ¢	25 ¢
Cost of main variety / wk	$10.50	$9.00	$4.	$9.	$5.	$7.20

	C-7	C-8	C-9	C-10	C-11	C-12
Estimated Age & Sex	40-Male	50-Fem.	50-Fem.	25-Fem.	35-Fem.	30-Fem.
Location of Home	Stettin	Stettin	Bannister	Kingston	Kingston	
Place yam purchased	Christiana Market	Christiana Market	Old Harbour Market	Papine Market	Coronation Mkt and AMC Shop	Coronation Market
Distance Home-Mkt. (mls)		10	3 miles	2 miles		
Main Variety Purchased	Sweet	Yellow	Yellow	Yellow	Yellow	Yellow
Reason	family like it	Prefer it	Prefer it		Available most times	Hard and starchy
Other varieties purchased	Yellow	Sweet yam	Lucea	White yam	Renta	Tau
Size of family	2A + 4Ch.	4A + 6Ch.	4A + 2Ch	4A + 2Ch	2A +4Ch	3A +1Child
Amt. of yam purchased/wk.	18 lbs	26 lbs	6 lbs	4 lbs	4 lbs	7 lbs
Adequate	Yess	Yess	Yess	Yess	Yess	No
Yams purchased & prices						
Yellow	20 ¢	25 ¢	35 ¢	40 ¢	35 ¢	50 ¢
Negro	20 ¢	30 ¢				
Lucea			30 ¢			40 ¢
Sweet	30 ¢	30 ¢				
Renta						40 ¢
Cost of main variety /wk.	$5.40	$6.50	$2.10	$1.60	$1.40	$3.50

No. 3

	Consumer 1	C-2	C-3	C-4	C-5	C-6
Amt. of rice purchased/wk	6 lbs	10 lbs	10 lbs	6 lbs	8 lbs	6 lbs
Cost of rice at 35 ¢ per lb.	$2.10	$3.50	$3.50	$2.10	$2.80	$2.10
Cost of 25% rice to yams substit.	$1.80	$3.00	$2.00	$1.80	$1.60	$1.20
Change in cost of rice equivalent	86%	86%	57%	86%	57%	57%
Preference-more yam and less rice	Yes	No	Yes	Yes	Yes	No
Why?	Prefer yam	Like rice	Prefer yam (but rice cheaper)	Like yam	Like yam & Rice	Like rice too
How yams are graded	Damaged yam cheaper	Damaged yams cheaper	damaged yams cheaper	Bad yams cheaper	Bad yams cheaper	
Faults with yam	Springing (or sprouting (or nematode tubes infected) yams	Springing and hollow	damaged sometimes	not good especially	damaged sometimes	Springing yams
Faults with place yam purchased	None	None	Very crowded	None	Far from home	
Faults with yam dealer	weigh yam too exactly	None	None	Try to sell good and bad yams together	None	None

	Consumer 7	C-8	C-9	C-10	C-11	C-12
Amt. of rice purchased/wk	8 lbs	6 lbs	7 lbs	6 lbs	8 lbs	2 lbs
Cost of rice at 35 ¢ per lb	$2.80	$2.10	$2.45	$2.10	$2.80	$0.70
Cost of 25% rice to yam substit.	$1.80	$1.50	$2.45	$2.40	$2.80	$1.00
Change in cost of rice equa-	86%	71%	100%	114%	100%	142%
Preference-more yam & less rice	No	Yes	No	No	No	
Why	Rice swells and share more	Prefer yam	Prefer rice		Prefer rice but hard to get	
How yams are graded?	Bruised or damaged yams cheaper	test hollow yam by know-ing it	Buy only yams that look good		Buys yams that look good	No grading
Faults with yam	Stale (not fresh)	Springing and burnt yams	Springing			Springing yam hard to cook.
Faults with yam dealer	None	None	Higglers some-times miserable	None	None	None
Faults with place yam purchased	Very crowded	Very crow-ed	Needs covering	Some parts smell bad	None	Most times market dirty

No. 5.

	Consumer 7	C-8	C-9	C-10	C-11	C-12
(Place)- preference to purchase yam	AMC	Market	Market	Market	AMC & Market	Market
Reasons	Price reasonable but supply not always plentiful	Cheaper and fresher food always available	Prices more reasonable	Food fresh & wider variety	Location & availability	Yam fresher and cheaper

No. 6

	Consumer 1	C-2	C-3	C-4	C-5	C-6
(Place)-preference to purchase yam	Market	Market	Market	Market	Market	AMC
Reasons	Cheaper yams available esp. when yams plentiful	Cheaper yams available	Cheaper yams and greater choice of yam and higglers.	Cheaper yams available esp. in the the evening	Cheaper yams available esp. when plentiful	Price always reasonable

* Yam loss from peeling approx. 14% approx 2 ozs per lb.
* Energy in 14 ozs yam 16 ozs rice approx. 360 : 1650 Cals.
Yam contains approx. 70% H_2O vs milled white rice approx. 12% H_2O
* Ref: Food composition Tables - by CFNI; only data for yampie available.

16

BOTANICAL NAMES OF MAIN YAM VARIETIES GROWN IN JAMAICA

Negro -	
Lucea -	Dioscorea rotunda
Yellow -	" "
Tau -	Dioscorea cayenensis
White -	" "
Renta -	Dioscorea alata
Sweet -	" "
St Vincent -	" "
	" "

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