

IICA  
PM-A2/JM-  
94-024



**IICA**



# **COST OF PRODUCTION OF FOOD CROPS**

**IICA-CIDIA**

**ST. JAMES**

**December 1994**

**IICA OFFICE IN JAMAICA**

**IICA**

## WHAT IS IICA?

**T**he Inter-American Institute for Cooperation on Agriculture (IICA) is the specialized agency for agriculture for the inter-American system. The Institute was founded on October 7, 1942 when the Council of Directors of the Pan American Union Approved the creation of the Inter-American Institute of Agricultural Sciences.

IICA was established as an institution for agricultural research and graduate training in tropical agriculture. In response to changing needs in the hemisphere, the Institute gradually evolved into an agency for technical cooperation and institutional strengthening in the field of agriculture. These changes were officially recognized through the ratification of a new Convention on December 8, 1980. The Institute's purposes under the new Convention are to encourage, facilitate and support cooperation among the 33 Member States, so as to better promote agricultural development and rural well-being.

With its broader and more flexible mandate and a new structure to facilitate direct participation by the Member States in activities of the Inter-American Board of Agriculture and the Executive Committee, the Institute now has a geographic reach that allows it to respond to needs for technical cooperation in all of its Member States.

The 1987-1993 Medium Term Plan, the policy document that sets IICA's priorities, stressed the reactivation of the agricultural sector as the key to economic growth. In support of this policy, the Institute is placing special emphasis on the support and promotion of actions to modernize agricultural technology and strengthen the processes of regional and sub-regional integration.

In order to attain these goals, the Institute is concentrating its actions on the following five programs:

- Agricultural Policy Analysis and Planning
- Technology Generation and Transfer
- Organization and Management for Rural Development
- Marketing and Agro-industry
- Animal Health and Plant Protection

These fields of action reflect the needs and priorities established by the Member States and delimit the areas in which IICA concentrates its efforts and technical capacity. They are the focus of IICA's human and financial resource allocations and shape its relationship with other international organizations.

To further reach its objectives of encouraging, promoting and supporting the efforts of the Member States in the area of agricultural and rural development, the Institute renders technical services aimed at strengthening national institutions involved in this sector and serves as a multinational body for cooperation among member countries. IICA also provides direct advisory services and consultancies, implements projects, and acts as a forum and vehicle for the exchange of ideas, experiences and cooperation between the countries, organizations and other entities active in the agricultural arena.

The contributions provided by the Member States and the ties IICA maintains with its seventeen Permanent Observer Countries and numerous international organizations provide the Institute with channels to direct its human and financial resources in support of agricultural development throughout the Americas.

The Member States of IICA are: Antigua and Barbuda, Argentina, Barbados, Belize, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Dominica, the Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, the United States of America, Uruguay and Venezuela.

The Permanent Observer Countries of IICA are: Arab Republic of Egypt, Austria, Belgium, European Communities, France, Germany, Hungary, Israel, Italy, Japan, Kingdom of the Netherlands, Portugal, Republic of Korea, Republic of Poland, Russian Federation, and Spain.

ISSN/0534-5391



**MINAG**



**ICA**



**COST OF PRODUCTION  
OF  
FOOD CROPS**

**ST. JAMES**

**Jose Tomás Mulleady  
Jamaica, W.I.**

**December 1994**

00008335 <sup>IICA</sup>  
IICA A2/JM-94-027

00000952

**MISCELLANEOUS PUBLICATION SERIES**  
**ISSN-0534-5391**  
**A2/JM-94/024**

**December 1994**  
**Kingston, Jamaica**

**"The views expressed in signed article are those of the  
author and do not necessarily reflect those of the  
Inter-American Institute for Cooperation on Agriculture."**

**INDEX**

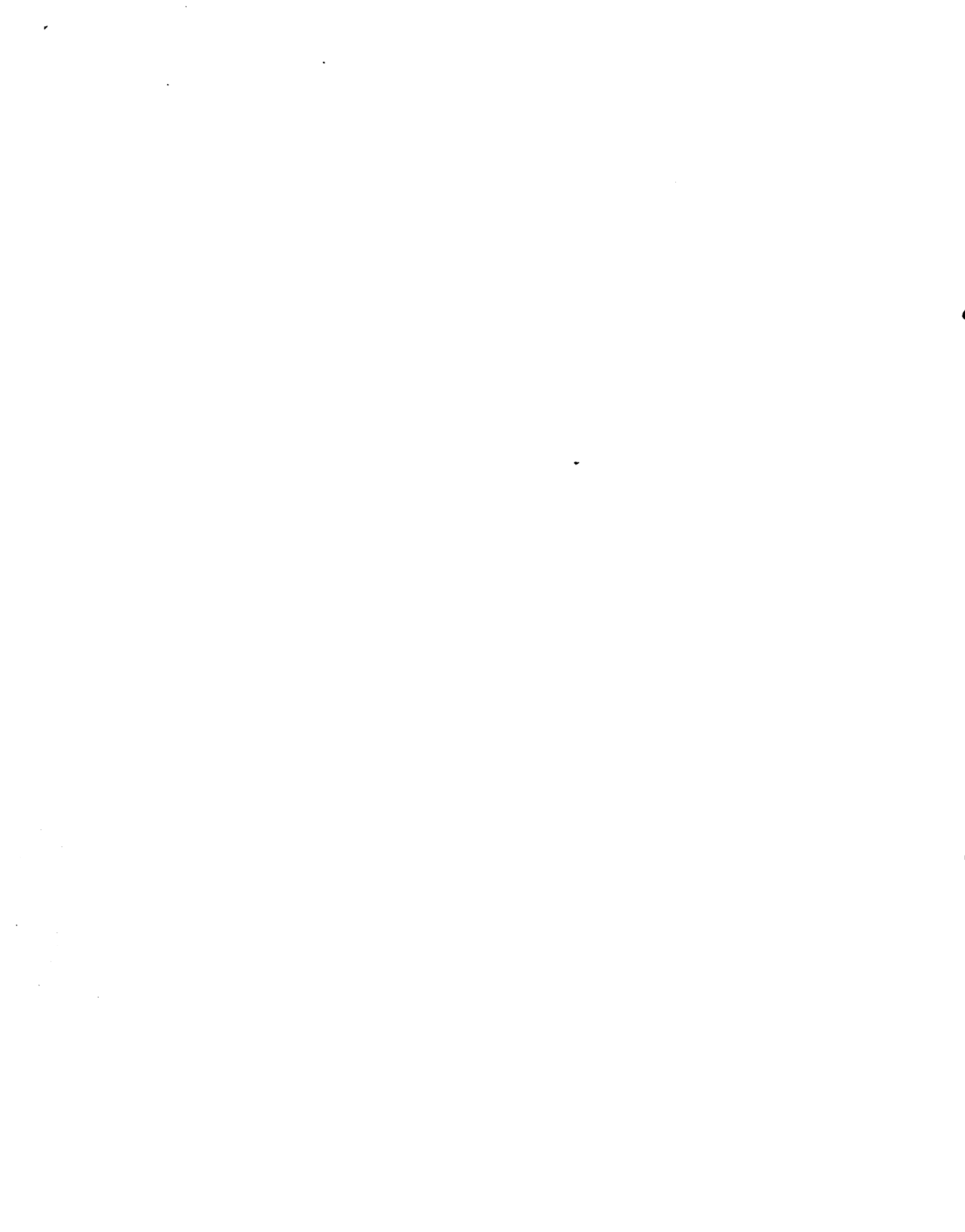
	<b>Page</b>
Presentation	1
Introduction	2
Definition of terms used	2

**IICA-CIDIA****GRAPHS**

Return for food crops	3
Cost components for food crops	4
Rate of return for food crops	5
Yield for food crops	6

**COST OF PRODUCTION TABLES**

Callaloo	7
Ordinary Corn	9
Negro Yam	11
Renta Yam	13
Sorrel	15
Sweet Yam	17
Tomato	19
Yellow Yam	21



## **PRESENTATION**

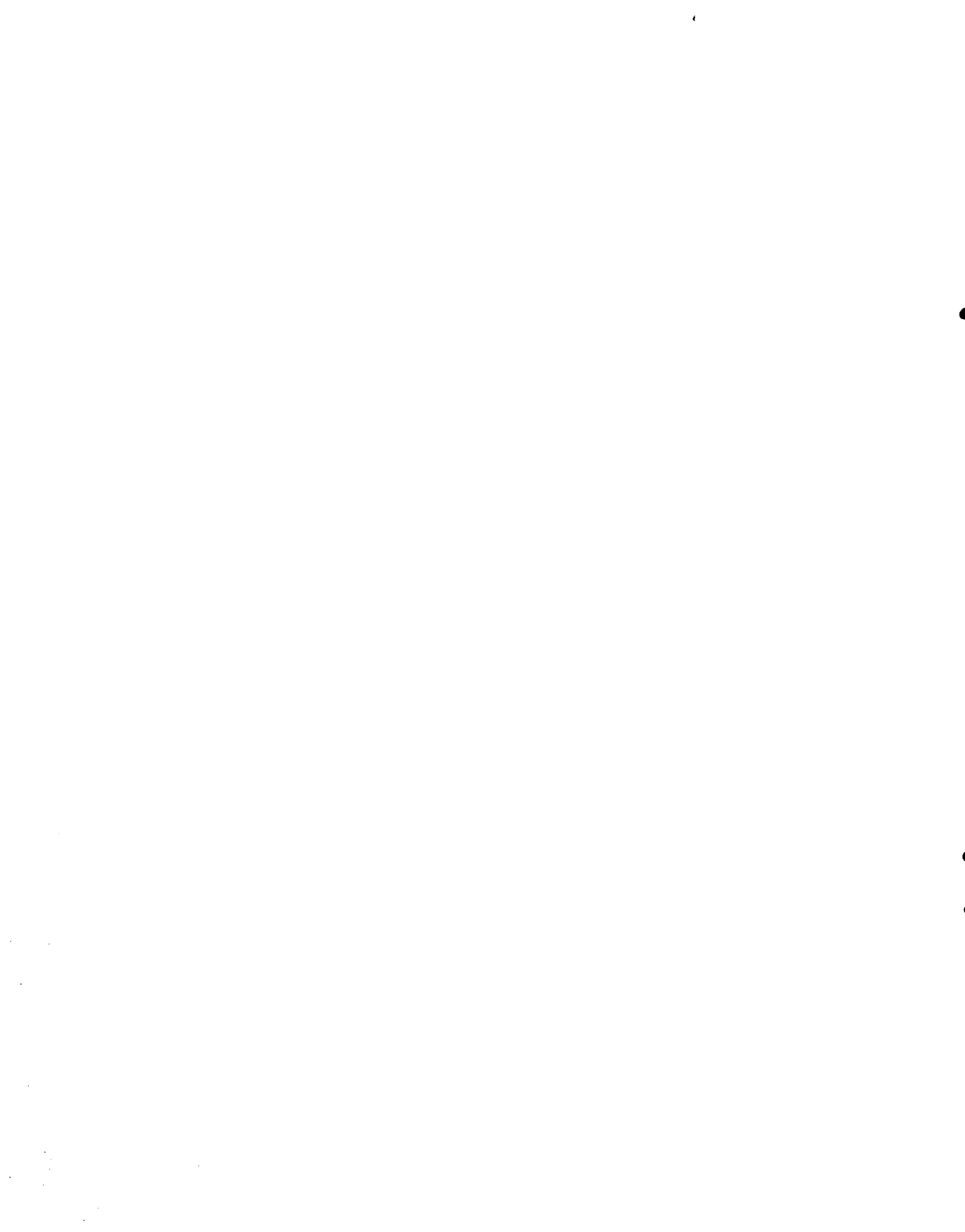
The IICA Office in Jamaica is pleased to make this publication available through its Miscellaneous Publications Series. The purpose of this cost of production and returns publication is to collaborate with those of you involved in activities in the agricultural sector.

The basic information was generated in a joint effort between the Ministry of Agriculture Farm Management Section, Ministry of Agriculture Data Bank and Evaluation Division and IICA in 1990.

The data presented in this publication consist of an update of the cost of production information released in July 1991. The technical coefficients for the different labour operations and inputs have been converted to metric units per hectare. The cost and returns were estimated using 1994 prices.

We would like to thank the Planning and Policy Division, MINAG, for reviewing the cost data and for formulating improvements in the presentation of the results. We hope that you find the information useful in the implementation of your activities.

**Armando Reyes Pacheco**  
Representative





## **INTRODUCTION**

The costs presented in this publication correspond to the costs of labour and inputs directly used in the production of the crop (Variable cost). It is assumed in the cost estimates that all labour used in the production process is hired labour. Cost of depreciation (equipment, machinery, fences and buildings) and cost of capital invested in the farm operation (land, equipment, machinery) and other fixed cost are not included in the cost and return estimates.

## **DEFINITION OF TERMS USED**

**Gross Income:** is the crop yield per hectare times the farmgate price.

**Cost of Production:** is the sum of fixed plus variable costs incurred in the production of the crop; represents the value of all the resources that participate in the production process, including a return on the investment in land and capital and a return to farmer's labour.

**Cash Variable Costs:** costs that involve a direct cash expenditure<sup>1</sup>. Cost of labour and inputs used in the production and harvesting of the crop.

**Fixed Costs:** costs that will occur regardless of the level of production. They generally include depreciation and interest on investment in machinery, equipment, buildings, breeding livestock, and return on investment in land plus cash expenditures in insurance, administration expenses and taxes. The total amount of fixed cost depends on each farm total assets and is dependent on farm size.

**Management Return:** income in excess of all costs. The retribution to the farmer's time devoted to the management of the farm.

**Return to Farmer's Capital and Management:** is gross income minus cash variable costs.

**Variable Cost per Unit:** cash variable cost divided by yield per hectare.

**Gross Income per 1 Dollar Invested in Variable Cost:** Gross income divided by total cash variable cost.

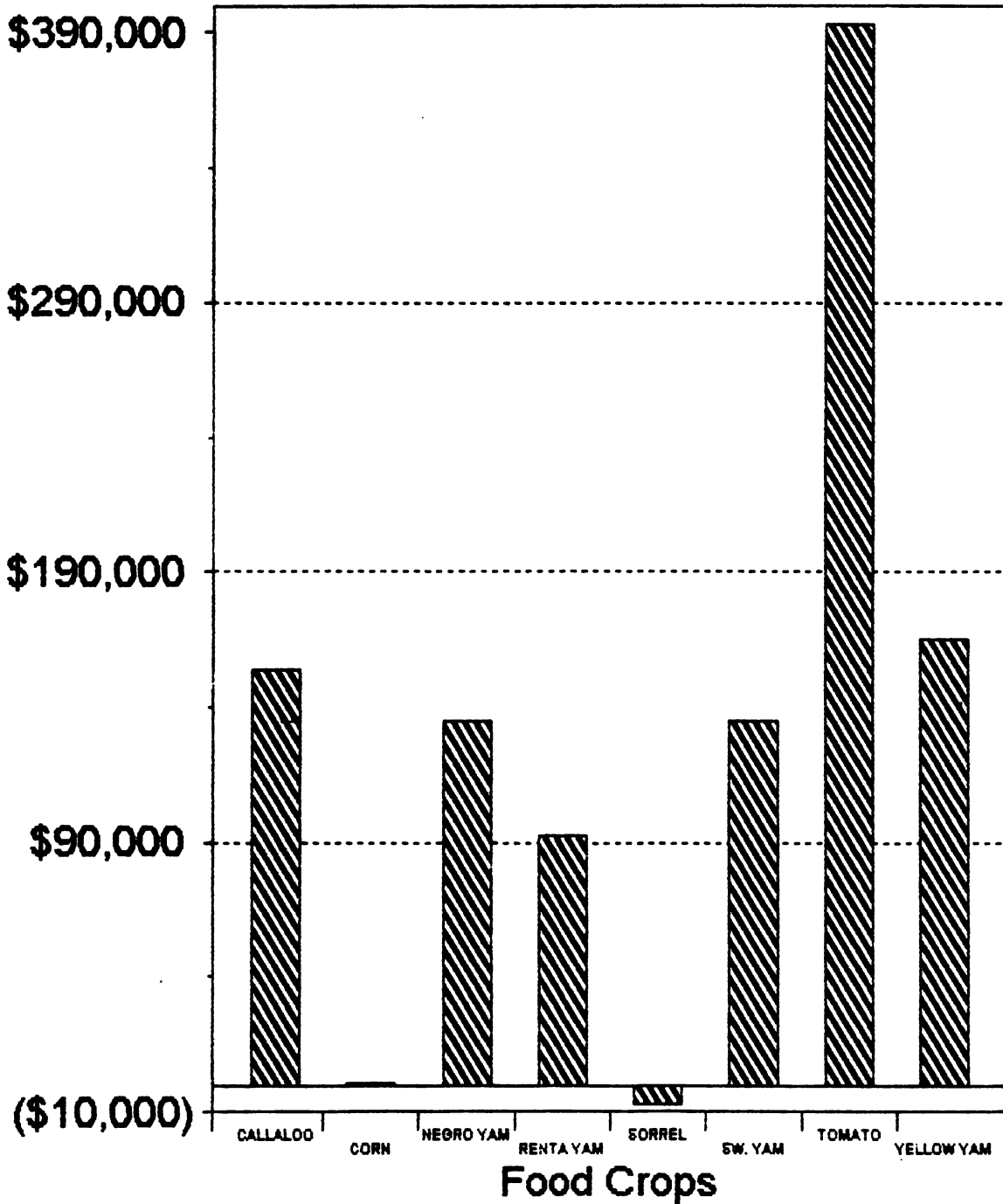
---

<sup>1</sup> It does not include the interest (opportunity cost) on the cash used in the production process (retribution to the investment in operating capital).

# RETURN PER HECTARE

( Gross Inc. minus Cash Var. Cost )

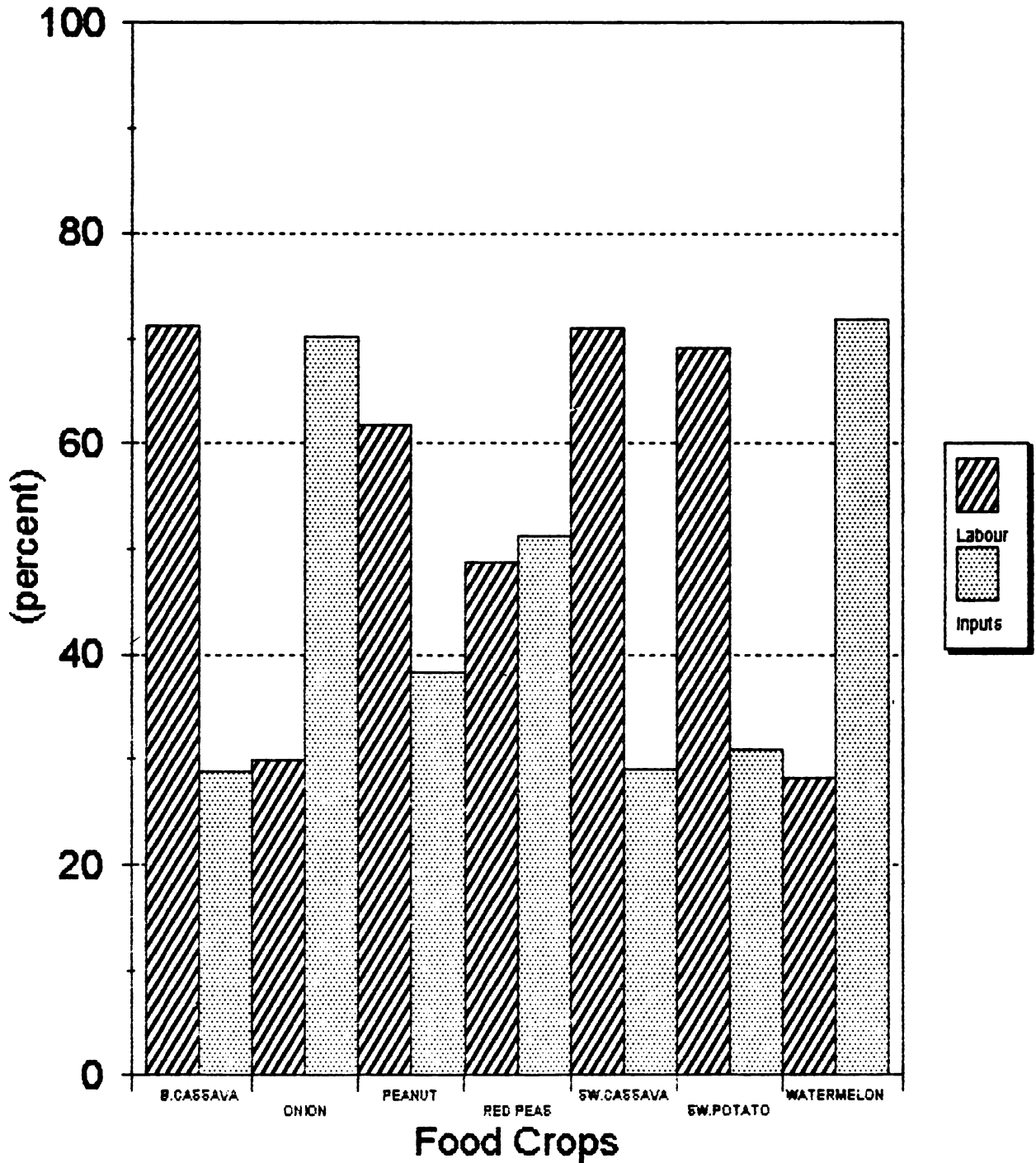
## ST. JAMES



# COST COMPONENTS PER HECTARE

(in percentage)

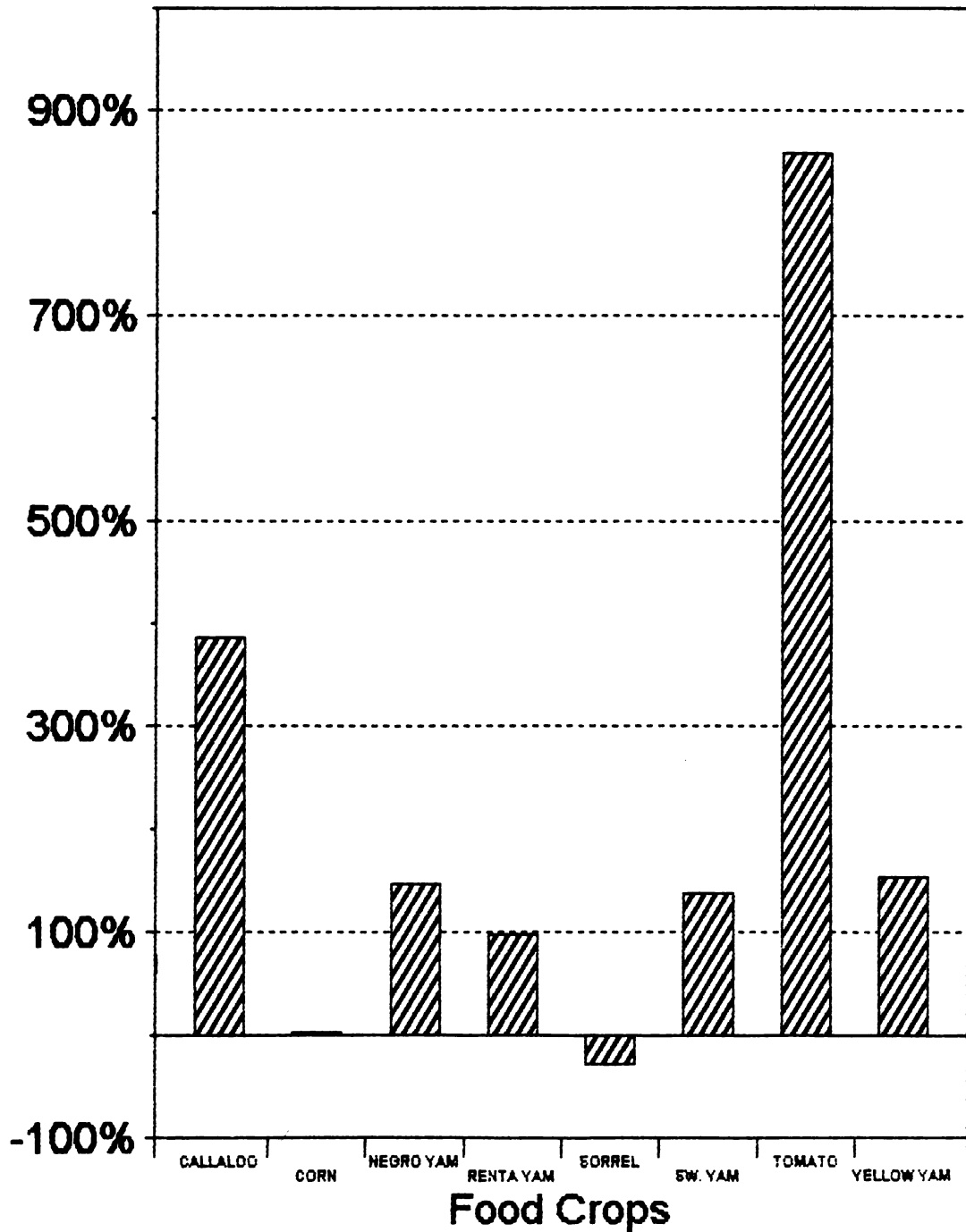
## ST. JAMES



# RATE OF RETURN PER HECTARE

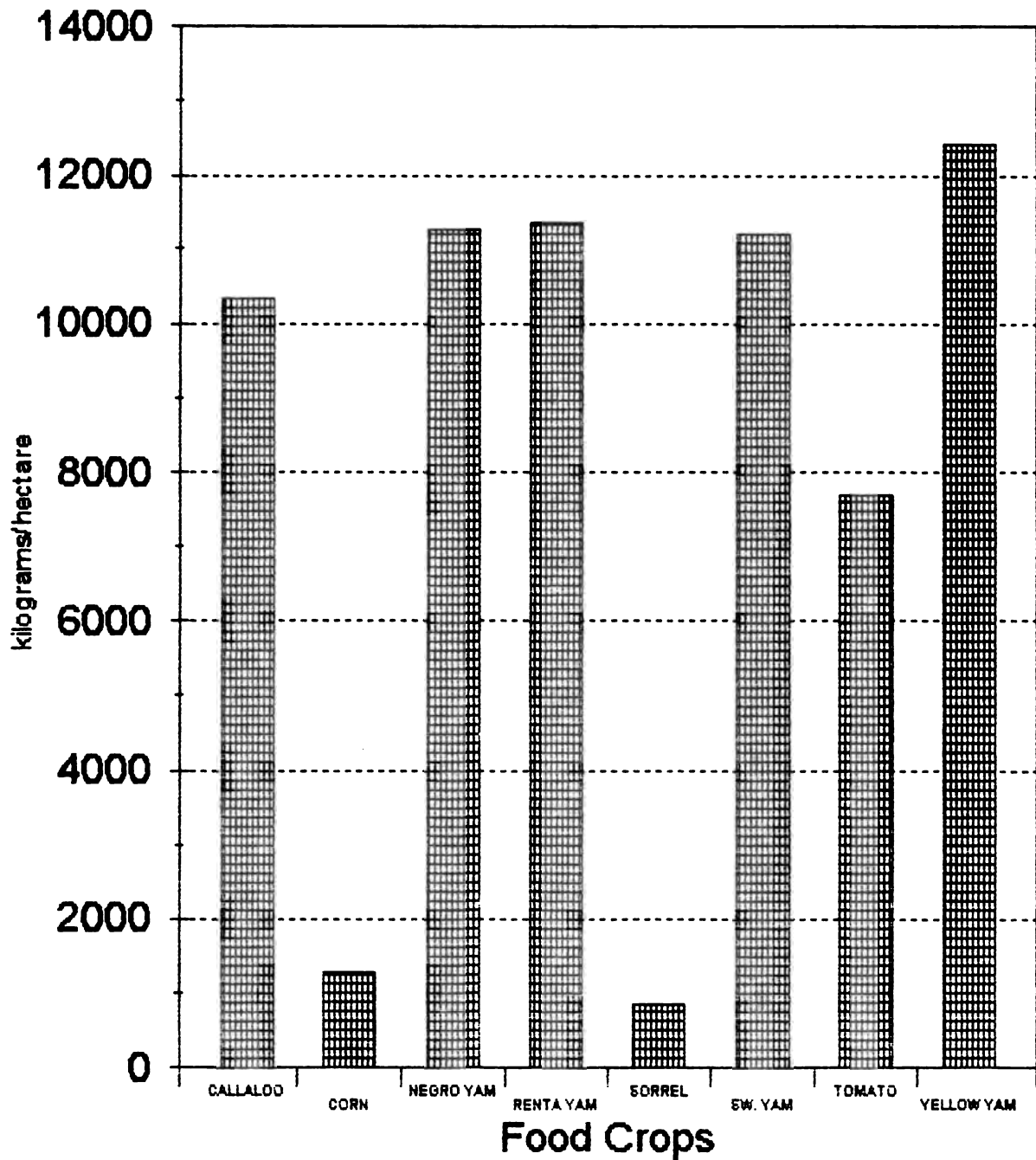
(% return on investment in var. cost )

## ST. JAMES



# YIELD PER HECTARE

## ST. JAMES



COST OF PRODUCTION

AREA: 1 Hectare

PARISH:

ST. JAMES

CROP:

CALLALOO

	UNIT	YIELD/ QUANTITY	PRICE	TOTAL
A. GROSS INCOME	KG	10348.8	\$18.71	\$193,626.05

VARIABLE COST

Labour Cost

Land Clearing	MAN DAYS	24.7	\$175.00	\$4,322.50
Forking	MAN DAYS	49.4	\$175.00	\$8,645.00
Refining				\$0.00
Trenching	MAN DAYS	24.7	\$175.00	\$4,322.50
Ridging				\$0.00
Lining				\$0.00
Prep.pl.material				\$0.00
Digging mounds				\$0.00
Digging holes				\$0.00
Heading plants				\$0.00
Planting(direct)				\$0.00
Nursery Charge	MAN DAYS	4.94	\$175.00	\$864.50
Planting(not direct)				\$0.00
Transplanting	MAN DAYS	9.88	\$175.00	\$1,729.00
Supplying				\$0.00
Herbicide Appl.				\$0.00
Weed and mould				\$0.00
Weeding	MAN DAYS	24.7	\$175.00	\$4,322.50
Fert.applic.	MAN DAYS	2.47	\$175.00	\$432.25
Spreading mulch				\$0.00
Staking and tying yam				\$0.00
Staking tomato				\$0.00
Pesticide Appl.	MAN DAYS	4.94	\$175.00	\$864.50
Irrigate field				\$0.00
Irrigate sprinkle				\$0.00
Harvesting	MAN DAYS	4.94	\$175.00	\$864.50

B. TOTAL LABOUR      MAN DAYS      150.67      \$26,367.25

PARISH:

ST. JAMES

CROP:

ORDINARY CORN

Input Cost	UNIT	QUANTITY	PRICE	TOTAL
Seeds	KG	22.4	\$24.21	\$542.30
Heads				\$0.00
Cutting				\$0.00
Suckers				\$0.00
Seedlings				\$0.00
Sets				\$0.00
NPK(Mixed)	CWT	9.88	\$488.90	\$5,030.33
Ammonium Sulphate				\$0.00
Organic Manure				\$0.00
Hectares of Mulch				\$0.00
Trucks of Mulch				\$0.00
Herb. Emul. conc.				\$0.00
Herb. wet. powder				\$0.00
Insect. emul. conc.				\$0.00
Insect. wet. powder	KG	11.2	\$176.79	\$1,980.00
Fungic. emul. conc.				\$0.00
Fungic. wet. powder				\$0.00
Stickers				\$0.00
Stakes				\$0.00
Slug Bait				\$0.00
 C. TOTAL INPUTS				 \$7,552.64
 D. TOT. VAR. COST (B+C)				 \$30,894.14
 E. RETURN TO FARMER'S CAPITAL & MGMNT. (A-D)				 \$505.27
 F. VARIABLE COST/UNIT (D/YIELD)				 \$23.82
 SUMMARY =====				
Gross Income				\$31,399.40
Total Labour				\$23,341.50
Total Inputs				\$7,552.64
 Return (A-D)				 \$505.27
 Cost Components				
Labour %				75.55
Input %				24.45
 Return on Investment in Cash Variable Cost %				 1.64
 G/Income per \$ Invested in Var. Cost (A/D)				 \$1.02

COST OF PRODUCTION

AREA: 1 Hectare  
PARISH:

ST. JAMES

CROP:

SORREL

	UNIT	YIELD/ QUANTITY	PRICE	TOTAL
A. GROSS INCOME	KG	854.56	\$25.00	\$21,364.00
VARIABLE COST				
Labour Cost				
Land Clearing	MAN DAYS	24.7	\$175.00	\$4,322.50
Forking	MAN DAYS	29.64	\$175.00	\$5,187.00
Refining				\$0.00
Trenching				\$0.00
Ridging				\$0.00
Lining				\$0.00
Prep.pl.material				\$0.00
Digging mounds				\$0.00
Digging holes				\$0.00
Heading plants				\$0.00
Planting(direct)	MAN DAYS	24.7	\$175.00	\$4,322.50
Nursery Charge				\$0.00
Planting(not direct)				\$0.00
Transplanting				\$0.00
Supplying				\$0.00
Herbicide Appl.				\$0.00
Weed and mould				\$0.00
Weeding	MAN DAYS	12.35	\$175.00	\$2,161.25
Fert.applic.	MAN DAYS	4.94	\$175.00	\$864.50
Spreading mulch				\$0.00
Staking and tying yam				\$0.00
Staking tomato				\$0.00
Pesticide Appl.	MAN DAYS	9.88	\$175.00	\$1,729.00
Irrigate field				\$0.00
Irrigate sprinkle				\$0.00
Harvesting	MAN DAYS	12.35	\$175.00	\$2,161.25
B. TOTAL LABOUR	MAN DAYS	118.56		\$20,748.00



PARISH: ST. JAMES  
CROP: SORREL

Input Cost	UNIT	QUANTITY	PRICE	TOTAL
Seeds				\$0.00
Heads				\$0.00
Cutting				\$0.00
Suckers				\$0.00
Seedlings				\$0.00
Sets				\$0.00
NPK(Mixed)	CWT	9.88	\$488.90	\$5,030.33
Ammonium Sulphate				\$0.00
Organic Manure				\$0.00
Hectares of Mulch				\$0.00
Trucks of Mulch				\$0.00
Herb.Emul.conc.				\$0.00
Herb.wet.powder				\$0.00
Insect.emul.conc.	LITRES	4.67324	\$400.00	\$1,869.30
Insect.wet.powder				\$0.00
Fungic.emul.conc.				\$0.00
Fungic.wet.powder	KG	13.44	\$107.41	\$1,443.56
Stickers				\$0.00
Stakes				\$0.00
Slug Bait				\$0.00
C. TOTAL INPUTS				\$8,343.19
D. TOT. VAR. COST (B+C)				\$29,091.19
E. RETURN TO FARMER'S CAPITAL & MGMNT. (A-D)				(\$7,727.19)
F. VARIABLE COST/UNIT (D/YIELD)				\$34.04
SUMMARY				
=====				
Gross Income				\$21,364.00
Total Labour				\$20,748.00
Total Inputs				\$8,343.19
Return (A-D)				(\$7,727.19)
Cost Components				
Labour %				71.32
Input %				28.68
Return on Investment in Cash Variable Cost %				-26.56
G/Income per \$ Invested in Var. Cost (A/D)				\$0.73

COST OF PRODUCTION

AREA: 1 Hectare

PARISH:

ST. JAMES

CROP:

SWEET YAM

	UNIT	YIELD/ QUANTITY	PRICE	TOTAL
A. GROSS INCOME	KG	11200	\$20.87	\$233,744.00
VARIABLE COST				
Labour Cost				
Land Clearing	MAN DAYS	24.7	\$175.00	\$4,322.50
Forking				\$0.00
Refining				\$0.00
Trenching				\$0.00
Ridging				\$0.00
Lining				\$0.00
Prep.pl.material				\$0.00
Digging mounds	MAN DAYS	61.75	\$175.00	\$10,806.25
Digging holes				\$0.00
Heading plants	MAN DAYS	14.82	\$175.00	\$2,593.50
Planting(direct)	MAN DAYS	12.35	\$175.00	\$2,161.25
Nursery Charge				\$0.00
Planting(not direct)				\$0.00
Transplanting				\$0.00
Supplying				\$0.00
Herbicide Appl.				\$0.00
Weed and mould	MAN DAYS	29.64	\$175.00	\$5,187.00
Weeding				\$0.00
Fert.applic.	MAN DAYS	4.94	\$175.00	\$864.50
Spreading mulch				\$0.00
Staking and tying yam	MAN DAYS	37.05	\$175.00	\$6,483.75
Staking tomato				\$0.00
Pesticide Appl.				\$0.00
Irrigate field				\$0.00
Irrigate sprinkle				\$0.00
Harvesting	MAN DAYS	24.7	\$175.00	\$4,322.50
B. TOTAL LABOUR	MAN DAYS	209.95		\$36,741.25

PARISH: ST. JAMES

CROP: SWEET YAM

Input Cost	UNIT	QUANTITY	PRICE	TOTAL
Seeds				\$0.00
Heads	KG	4480	\$6.00	\$26,880.00
Cutting				\$0.00
Suckers				\$0.00
Seedlings				\$0.00
Sets				\$0.00
NPK(Mixed)	CWT	22.23	\$448.90	\$10,439.05
Ammonium Sulphate				\$0.00
Organic Manure				\$0.00
Hectares of Mulch				\$0.00
Trucks of Mulch				\$0.00
Herb.Emul.conc.				\$0.00
Herb.wet.powder				\$0.00
Insect.emul.conc.				\$0.00
Insect.wet.powder				\$0.00
Fungic.emul.conc.				\$0.00
Fungic.wet.powder				\$0.00
Stickers				\$0.00
Stakes	EACH	2470	\$10.00	\$24,700.00
Slug Bait				\$0.00
<b>C. TOTAL INPUTS</b>				<b>\$62,019.05</b>
<b>D. TOT. VAR. COST (B+C)</b>				<b>\$98,760.30</b>
<b>E. RETURN TO FARMER'S CAPITAL &amp; MGMNT. (A-D)</b>				<b>\$134,983.70</b>
<b>F. VARIABLE COST/UNIT (D/YIELD)</b>				<b>\$8.82</b>
<b>SUMMARY</b>				
=====				
Gross Income				\$233,744.00
Total Labour				\$36,741.25
Total Inputs				\$62,019.05
Return (A-D)				\$134,983.70
<b>Cost Components</b>				
Labour %				37.20
Input %				62.80
Return on Investment in Cash Variable Cost %				136.68
G/Income per \$ Invested in Var. Cost (A/D)				\$2.37

COST OF PRODUCTION

AREA: 1 Hectare  
PARISH:

ST. JAMES

CROP:

YELLOW YAM

	UNIT	YIELD/ QUANTITY	PRICE	TOTAL
A. GROSS INCOME	KG	12415.2	\$21.90	\$271,892.88
VARIABLE COST				
Labour Cost				
Land Clearing	MAN DAYS	24.7	\$175.00	\$4,322.50
Forking				\$0.00
Refining				\$0.00
Trenching	MAN DAYS	12.35	\$175.00	\$2,161.25
Ridging				\$0.00
Lining				\$0.00
Prep.pl.material	MAN DAYS	2.47	\$175.00	\$432.25
Digging mounds	MAN DAYS	61.75	\$175.00	\$10,806.25
Digging holes				\$0.00
Heading plants	MAN DAYS	2.47	\$175.00	\$432.25
Planting(direct)	MAN DAYS	4.94	\$175.00	\$864.50
Nursery Charge				\$0.00
Planting(not direct)				\$0.00
Transplanting				\$0.00
Supplying				\$0.00
Herbicide Appl.				\$0.00
Weed and mould	MAN DAYS	24.7	\$175.00	\$4,322.50
Weeding				\$0.00
Fert.applic.	MAN DAYS	4.94	\$175.00	\$864.50
Spreading mulch				\$0.00
Staking and tying yam	MAN DAYS	37.05	\$175.00	\$6,483.75
Staking tomato				\$0.00
Pesticide Appl.				\$0.00
Irrigate field				\$0.00
Irrigate sprinkle				\$0.00
Harvesting	MAN DAYS	37.05	\$175.00	\$6,483.75
B. TOTAL LABOUR	MAN DAYS	212.42		\$37,173.50

PARISH: ST. JAMES

CROP: TOMATO

Input Cost	UNIT	QUANTITY	PRICE	TOTAL
Seeds	KG	0.28	\$1,310.40	\$366.91
Heads				\$0.00
Cutting				\$0.00
Suckers				\$0.00
Seedlings				\$0.00
Sets				\$0.00
NPK(Mixed)	CWT	14.82	\$448.90	\$6,952.70
Ammonium Sulphate				\$0.00
Organic Manure				\$0.00
Hectares of Mulch				\$0.00
Trucks of Mulch				\$0.00
Herb.Emul.conc.				\$0.00
Herb.wet.powder				\$0.00
Insect.emul.conc.				\$0.00
Insect.wet.powder	KG	33.6	\$60.00	\$2,016.00
Fungic.emul.conc.				\$0.00
Fungic.wet.powder	KG	33.6	\$107.41	\$3,608.91
Stickers				\$0.00
Stakes				\$0.00
Slug Bait				\$0.00
 C. TOTAL INPUTS				 \$12,944.52
 D. TOT. VAR. COST (B+C)				 \$45,795.52
 E. RETURN TO FARMER'S CAPITAL & MGMNT. (A-D)				 \$392,915.20
 F. VARIABLE COST/UNIT (D/YIELD)				 \$5.96
 SUMMARY =====				
Gross Income				\$438,710.72
Total Labour				\$32,851.00
Total Inputs				\$12,944.52
Return (A-D)				\$392,915.20
 Cost Components				
Labour %				71.73
Input %				28.27
Return on Investment in Cash Variable Cost %				857.98
G/Income per \$ Invested in Var. Cost (A/D)				\$9.58





INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE  
11 Fairway Avenue, Kingston 5, P.O. Box 349 Kingston 6. Tel.: (809) 927-6462, 927-4837  
FAX: 809 927-6933, Cable: IICAJA