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Ministry of Finance and Economic Development

Central Statistics Office

Agricultural Cost of Production Survey

2005

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Agricultural Cost of Production Survey 2005

CORRIGENDUM

1. “Beans- dried” and “Beans (dried)” to read as “Dried beans”
2. To add on list of CONTACT PERSONS

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3. “IC/GO” to read as “ratio of intermediate consumption over gross output” as already appeared on page 13, paragraph 7.
4. Pages 13, 28 & 40
“Cost B = Cost A + Rent on land (Rent paid on leased land or rental value of owned land) + Interest on working capital + Depreciation of machinery and equipment” to read as
“Cost B = Cost of inputs + Paid labour + Rent on land (Rent paid on leased land or rental value of owned land) + Interest on working capital + Depreciation of machinery and equipment.”
“Cost C = Cost B + Imputed family labour” to read as
“Cost C = Cost of inputs + Paid labour + Rent on land (Rent paid on leased land or rental value of owned land) + Interest on working capital + Depreciation of machinery and equipment + Imputed family labour (including planter)”

FOREWORD

The Agricultural Cost of Production Survey (ACOPS) was first of its kind to be conducted by the Central Statistics Office in 2005. The need for such a survey was felt in order to update the technical ratios used in the estimation of inputs for the agricultural sector and to fill in some of the data gaps.

In the island of Mauritius, the survey covered 11 foodcrops, three varieties of flowers, sugarcane, tea and tobacco while beans-dried, maize and onion were covered in Rodrigues. Fieldwork was conducted from January to December 2005 among a representative sample of 1,100 planters in the Island of Mauritius and 90 planters in Rodrigues.

Technical assistance was received from FAO. In particular, Dr U.C. Sud, expert in agricultural statistics, assisted the office in the design of the methodology, tabulation plan and sampling.

This report provides detailed information on the organisation and methodology of the survey and analysis of the results.

I would like to express my gratitude to the FAO for technical assistance and to the various organisations in Mauritius which have contributed valuable inputs for the organisation of this survey. My thanks go also to the respondents whose cooperation was vital for the success of the data collection exercise and to the field as well as office staff for their contribution.

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ACRONYMS

ACOPS	Agricultural Cost of Production Survey
AMB	Agricultural Marketing Board
APEXHOM	Association Professionnelle des Producteurs/Exportateurs de Produits Horticoles de Maurice
AREU	Agricultural Research and Extension Unit
CISD	Central Information System Division
FAO	Food and Agricultural Organisation
IMPS	Integrated Microcomputer Processing System
MCA	Mauritius Chamber of Agriculture
SIFB	Sugar Insurance Fund Board
SPWF	Small Planters Welfare Fund
TCDC	Technical Cooperation among Developing Countries
TCP	Technical Cooperation Project

TECHNICAL NOTES***Rounding of figures:***

It is to be noted that in some tables totals may not add up due to independent rounding of figures.

Regions:

<u>Agro-climatic zone</u>	<u>Corresponding districts</u>
North	Pamplemousses and Riviere du Rempart
East	Flacq and Moka
South	Grand Port and Savanne
Centre/West	Plaines Wilhems and Black River

Symbols:

–	: Nil
...	: Negligible

Abbreviations:

Rs	: Mauritius Rupees
No.	: Number
Ha	: hectare
Kg	: kilogramme
n.a	: not applicable

TECHNICAL NOTES (cont'd)***Conversion factors:***

(a) Average weight per unit of crop

<u>Crop</u>	<u>Average weight per unit (kg)</u>
Cabbage	1.09
Cauliflower	1.04
Cucumber	0.04

(b) Weight

1 tonne= 1000 kg

(c) Area

1 hectare = 2.36922 arpents

1 arpent = 100 perches

To convert kg per hectare into kg per arpent divide the figure by 2.36922 e.g a yield of 237 kg/ha works out to approximately 100 kg/arpent ($237 \div 2.36922$).

EXECUTIVE SUMMARY

The Central Statistics Office (CSO) conducted for the first time an Agricultural Cost of Production Survey (ACOPS) from January to December 2005 in the islands of Mauritius and Rodrigues. The Food and Agricultural Organisation of the United Nations (FAO) provided technical assistance.

The main objectives of ACOPS were to strengthen the data base relating to the various inputs which are used in the cultivation of crops; update the operation ratios used in the estimation of various inputs of the agricultural sector in order to reflect current cultivation practices; and provide accurate measures of unit cost of production.

The following crops were covered in the survey in the island of Mauritius: 11 foodcrops (beans, brinjal, cabbage, carrot, cauliflower, chillies-long, cucumber, onion, potato, pumpkin and tomato), 3 commercial crops (sugarcane, tea and tobacco) and flowers (anthurium, rose and gerbera) while beans-dried, maize and onion in the island of Rodrigues.

Cost of cultivation of a particular crop is defined as the sum total of material cost and physical input costs along with contribution of the other assets and resources of the planter used in raising the crop. The cost of cultivation is expressed in amount spent per unit area of land (for example amount spent to cultivate one hectare of potato) or amount spent per unit of produce (for example amount spent to produce 1 kg of potato).

The analysis of cost of production is based on the three cost concepts:

- Cost A = Cost of inputs + Paid labour
- Cost B = Cost A + Rent on land (Rent paid on leased land or rental value of owned land)+ Interest on working capital + Depreciation of machinery and equipment
- Cost C = Cost B + Imputed family labour

In the context of National Accounts, the relationship between cost of production and intermediate consumption is summarised as follows:

- Cost A = Intermediate consumption + Imputed cost of seeds/seedlings + Paid labour

The analysis of results is focused on the estimates of yield, hours of work, cost of production, average price received by planters, and operation ratio (the ratio of intermediate consumption over gross output).

Main findings for the island of Mauritius (Tables 1, 2 and 3)

Beans: The average yield of beans for the island worked out to 6,249 kg per hectare. The total hours of work per hectare for the complete cycle of beans worked out to 1,225 for the island. The cost of production per kg of beans, on the basis of cost C, worked out to Rs 13.99 for the island. The average price per kg of beans received by planters during the survey reference period worked out to Rs 18.99 for the island. The operation ratio (IC/GO) worked out to 30.1% for beans.

Brinjal: The average yield of brinjal for the island worked out to 19,946 kg per hectare. The total hours of work per hectare for the complete cycle of brinjal worked out to 1,767 for the island. The cost of production per kg of brinjal, on the basis of cost C, worked out to Rs 8.08 for the island. The average price per kg of brinjal received by planters during the survey reference period worked out to Rs 11.38 for the island. The operation ratio (IC/GO) worked out to 31.1% for brinjal.

Cabbage: The average yield of cabbage for the island worked out to 33,660 kg per hectare. The total hours of work per hectare for the complete cycle of cabbage worked out to 979 for the island. The cost of production per kg of cabbage, on the basis of cost C, worked out to Rs 3.18 for the island. The average price per kg of cabbage received by planters during the survey reference period worked out to Rs 5.56 for the island. The operation ratio (IC/GO) worked out to 27.1% for cabbage.

Carrot: The average yield of carrot for the island worked out to 19,839 kg per hectare. The total hours of work per hectare for the complete cycle of carrot worked out to 560 for the island. The cost of production per kg of carrot, on the basis of cost C, worked out to Rs 3.54 for the island. The average price per kg of carrot received by planters during the survey reference period worked out to Rs 6.46 for the island. The operation ratio (IC/GO) worked out to 26.5% for carrot.

Cauliflower: The average yield of cauliflower for the island worked out to 23,014 kg per hectare. The total hours of work per hectare for the complete cycle of cauliflower worked out to 1,373 for the island. The cost of production per kg of cauliflower, on the basis of cost C, worked out to Rs 5.56 for the island. The average price per kg of cauliflower received by planters during the survey reference period worked out to Rs 12.72 for the island. The operation ratio (IC/GO) worked out to 15.7% for cauliflower.

Chillies-long: The average yield of chillies-long for the island worked out to 6,043 kg per hectare. The total hours of work per hectare for the complete cycle of chillies-long worked out to 1,735 for the island. The cost of production per kg of chillies-long, on the basis of cost C, worked out to Rs 26.40 for the island. The average price per kg of chillies-long received by planters during the survey reference period worked out to Rs 44.42 for the island. The operation ratio (IC/GO) worked out to 24.8% for chillies-long.

Cucumber: The average yield of cucumber for the island worked out to 8,464 kg per hectare. The total hours of work per hectare for the complete cycle of cucumber worked out to 679 for the island. The cost of production per kg of cucumber, on the basis of cost C, worked out to Rs 7.94 for the island. The average price per kg of cucumber received by planters during the survey reference period worked out to Rs 17.99 for the island. The operation ratio (IC/GO) worked out to 18.6% for cucumber.

Onion: The average yield of onion for the island worked out to 17,675 kg per hectare. The total hours of work per hectare for the complete cycle of onion worked out to 1,202 for the island. The cost of production per kg of onion, on the basis of cost C, worked out to Rs 6.93 for the island. The average price per kg of onion received by planters during the survey reference period worked out to Rs 10.65 for the island. The operation ratio (IC/GO) worked out to 32.6% for onion.

Potato: The average yield of potato for the island worked out to 21,777 kg per hectare. The total hours of work per hectare for the complete cycle of potato worked out to 821 for the island. The cost of production per kg of potato, on the basis of cost C, worked out to Rs 7.76 for the island. The average price per kg of potato received by planters during the survey reference period worked out to Rs 12.49 for the island. The operation ratio (IC/GO) worked out to 47.8% for potato.

Pumpkin: The average yield of pumpkin for the island worked out to 17,675 kg per hectare. The total hours of work per hectare for the complete cycle of pumpkin worked out to 391 for the island. The cost of production per kg of pumpkin, on the basis of cost C, worked out to Rs 2.87 for the island. The average price per kg of pumpkin received by planters during the survey reference period worked out to Rs 7.65 for the island. The operation ratio (IC/GO) worked out to 18.5% for pumpkin.

Tomato: The average yield of tomato for the island worked out to 18,296 kg per hectare. The total hours of work per hectare for the complete cycle of tomato worked out to 1,431 for the island. The cost of production per kg of tomato, on the basis of cost C, worked out to Rs 5.90 for the island. The average price per kg of tomato received by planters during the survey reference period worked out to Rs 13.02 for the island. The operation ratio (IC/GO) worked out to 19.6% for tomato.

Tobacco-Amarello: The average yield of tobacco-Amarello for the island worked out to 962 kg per hectare. The total hours of work per hectare for the complete cycle of tobacco-Amarello worked out to 1,245 for the island. The cost to produce of one kg of tobacco-Amarello, on the basis of cost C, worked out to Rs 70.05 for the island. The average price per kg of tobacco-Amarello received by planters during the survey reference period worked out to Rs 54.70 for the island. The operation ratio (IC/GO) worked out to 40.1% for tobacco-Amarello.

Tobacco-Virginia: The average yield of tobacco-Virginia for the island worked out to 1,480 kg per hectare. The total hours of work per hectare for the complete cycle of tobacco-Virginia worked out to 1,434 for the island. The cost to produce of one kg of tobacco-Virginia, on the basis of cost C, worked out to Rs 79.31 for the island. The average price per kg of tobacco-Virginia received by planters during the survey reference period worked out to Rs 113.82 for the island. The operation ratio (IC/GO) worked out to 45.6% for tobacco-Virginia.

Sugarcane: The average yield of sugarcane for the island worked out to 63.8 tonnes per hectare. The total hours of work per hectare under sugarcane (ratoon) worked out to 383 for the island. The cost to produce of one tonne of sugarcane, on the basis of cost C, worked out to Rs 676 for the island. The average price per tonne of sugarcane received by planters during the survey reference period worked out to Rs 1,495 for the island. The operation ratio (IC/GO) worked out to 11.4% for sugarcane.

Tea: The average yield of tea for the island worked out to 13,070 kg per hectare. The total hours of work per hectare under tea worked out to 2,088 for the island. The average price per kg of tea received by planters during the survey reference period worked out to Rs 8.25 for the island. The operation ratio (IC/GO) worked out to 12.0% for tea.

Anthurium: The average yield of anthurium for the island worked out to 149,510 units per hectare. The total hours of work per hectare under anthurium worked out to 6,314 for the island. The average price per unit of anthurium received by growers during the survey reference period worked out to Rs 6.55 for the island. The operation ratio (IC/GO) worked out to 11.5% for anthurium.

Gerbera: The average yield of gerbera for the island worked out to 223,524 units per hectare. The total hours of work per hectare under gerbera worked out to 18,922 for the island. The average price per unit of gerbera received by growers during the survey reference period worked out to Rs 8.24 for the island. The operation ratio (IC/GO) worked out to 26.1% for gerbera.

Rose: The average yield of rose for the island worked out to 409,591 units per hectare. The total hours of work per hectare under anthurium worked out to 12,991 for the island. The average price per unit of rose received by growers during the survey reference period worked out to Rs 5.75 for the island. The operation ratio (IC/GO) worked out to 23.9% for rose.

Table 1 - Average yield, Hours of work, Cost of production and Average price received by planters - Foodcrops

	Beans	Brinjal	Cabbage	Carrot	Cauliflower	Chillies- long	Cucumber	Onion	Potato	Pumpkin	Tomato
Average yield (kg per hectare)	6,249	19,946	33,660	19,839	23,014	6,043	8,464	17,675	21,777	17,675	18,296
Hours of work (per hectare)	1,225	1,767	979	560	1,373	1,735	679	1,202	821	391	1,431
Cost of production per kg: Cost A (Rupees)	7.98	4.34	1.94	2.20	3.25	15.24	4.91	4.61	7.06	1.79	4.17
Cost of production per kg: Cost B (Rupees)	9.76	5.59	2.45	3.06	4.05	18.51	6.28	5.61	7.64	2.43	4.89
Cost of production per kg: Cost C (Rupees)	13.99	8.08	3.18	3.54	5.56	26.40	7.94	6.93	7.76	2.87	5.90
Average price received (Rupees per kg)	18.99	11.38	5.56	6.46	12.72	44.42	17.99	10.65	12.49	7.65	13.02

Table 2 - Average yield, Hours of work, Cost of production and Average price received by planters - Other crops

	Tobacco- Amarello	Tobacco- Virginia	Sugarcane ^{1,2,3}	Tea	Anthurium ⁴	Gerbera ⁴	Rose ⁴
Average yield (kg per hectare)	962	1,480	63.8	13,070	149,510	223,524	409,591
Hours of work (per hectare)	1,245	1,434	383	2,088	6,314	18,922	12,991
Cost of production per kg: Cost A (Rupees)	33.28	66.37	457	n.a	n.a	n.a	n.a
Cost of production per kg: Cost B (Rupees)	46.45	74.69	655	n.a	n.a	n.a	n.a
Cost of production per kg: Cost C (Rupees)	70.05	79.31	676	n.a	n.a	n.a	n.a
Average price received (Rupees per kg)	54.70	113.82	1,495	8.25	6.55	8.24	5.75

¹ "Ratoon" plantations only² excludes Miller planters³ All figures relate to 1 tonne of sugarcane⁴ Yield, cost and price relate to 1 unit

Table 3 - Cost Concepts and Intermediate Consumption by crop (per hectare)

Cost components	(Rupees)													
	Beans	Brinjal	Cabbage	Carrot	Cauliflower	Chillies-long	Cucumber	Onion	Potato	Pumpkin	Tomato	Tobacco-Amarello	Tobacco-Virginia	Sugarcane ^{1,2}
Land preparation	4,560	6,740	4,909	5,325	6,544	7,608	2,988	4,642	4,271	2,235	5,780	5,188	9,825	n.a
Seeds/seedlings (purchased)	8,607	7,071	14,979	7,068	465	7,707	2,051	21,131	83,041	1,697	4,489	-	-	n.a
Chemical fertilisers	6,816	10,258	7,304	3,791	7,998	8,806	5,763	7,005	14,122	4,758	10,175	5,102	10,350	6,060
Farm manure	1,342	3,646	7,576	7,104	12,675	3,402	2,391	6,462	231	3,190	2,105	1,810	1,757	37
Pesticides	9,524	30,206	9,470	6,062	11,958	30,511	9,821	15,825	21,120	8,444	17,042	4,121	6,609	3,005
Fuel and lubricant	3,420	6,931	5,073	3,946	4,127	3,936	3,511	5,352	3,470	3,100	3,824	1,880	41,401	544
Irrigation	945	4,172	918	84	1,494	3,236	1,181	225	322	399	1,775	2,294	1,534	169
Other	498	1,567	513	585	689	1,366	623	697	3,495	1,199	1,503	717	5,377	1,053
Intermediate consumption	35,712	70,591	50,742	33,965	45,950	66,572	28,329	61,339	130,072	25,022	46,693	21,112	76,853	10,868
Seeds/seedlings (imputed)	69	1,007	1,573	-	11,126	857	172	1,938	-	582	2,404	3,665	7,944	n.a
Paid labour	13,815	16,464	11,642	12,541	16,297	19,210	8,519	16,557	24,237	7,046	23,723	11,558	29,151	18,107
Cost A	49,596	88,062	63,957	46,506	73,373	86,639	37,020	79,834	154,309	32,650	72,820	36,335	113,948	28,975
Rent on land	4,888	11,606	7,619	8,128	9,795	13,577	6,098	8,505	7,593	8,253	7,497	11,716	9,270	10,173
Interest on working capital	816	1,451	1,064	767	1,206	1,424	613	1,308	2,517	534	1,194	606	1,947	487
Depreciation on fixed assets	4,865	11,961	7,617	8,333	7,148	4,672	4,035	5,968	2,406	3,368	3,660	2,041	3,068	1,922
Cost B	60,165	113,080	80,257	63,734	91,522	106,312	47,766	95,615	166,825	44,805	85,171	50,698	128,233	41,557
Family Labour	25,256	48,486	24,393	8,370	36,971	40,785	13,091	15,879	2,546	7,742	19,007	25,740	7,924	1,356
Cost C	85,421	161,566	104,650	72,104	128,493	147,097	60,857	111,494	169,371	52,547	104,178	76,438	136,157	42,913

¹ "Ratoon" plantations only² excludes Miller planters

Main findings for the island of Rodrigues (Tables 4 and 5)

Beans-dried: The average yield of beans (dried) for the island worked out to 920 kg per hectare. The total hours of work per hectare for the complete cycle of beans (dried) worked out to 1,116 for the island. The cost of production per kg of beans-dried, on the basis of cost C, worked out to Rs 25.89 for the island. The average price per kg of beans-dried received by planters during the survey reference period worked out to Rs 63.06 for the island. The operation ratio (IC/GO) worked out to 16.9% for beans-dried.

Maize: The average yield of maize for the island worked out to 1,659 kg per hectare. The total hours of work per hectare for the complete cycle of maize worked out to 663 for the island. The cost of production per kg of maize, on the basis of cost C, worked out to Rs 7.48 for the island. The average price per kg of maize received by planters during the survey reference period worked out to Rs 9.69 for the island. The operation ratio (IC/GO) worked out to 11.7% for maize.

Onion: The average yield of onion for the island worked out to 14,120 kg per hectare. The total hours of work per hectare for the complete cycle of onion worked out to 3,044 for the island. The cost of production per kg of onion, on the basis of cost C, worked out to Rs 6.05 for the island. The average price per kg of onion received by planters during the survey reference period worked out to Rs 9.41 for the island. The operation ratio (IC/GO) worked out to 14.4% for onion.

Table 4 - Average yield, Hours of work, Cost of production and Average price received by planters

(Rupees)

	Beans-dried	Maize	Onion
Average yield (kg per hectare)	920	1,659	14,120
Hours of work (per hectare)	1,116	663	3,044
Cost of production per kg: Cost A (Rupees)	14.22	2.06	2.78
Cost of production per kg: Cost B (Rupees)	14.98	2.18	2.95
Cost of production per kg: Cost C (Rupees)	25.89	7.48	6.05
Average price received (Rupees per kg)	63.06	9.69	9.41

**Table 5 - Cost Concepts and Intermediate Consumption by crop (per hectare)
(Rupees)**

Cost components	Beans-dried	Maize	Onion
Land preparation	3,152	786	986
Seeds/seedlings (purchased)	45	3	-
Chemical fertilisers	567	-	1,762
Farm manure	1,117	951	3,716
Pesticides	4,932	142	9,801
Fuel and lubricant	-	6	-
Irrigation	-	-	469
Other	-	-	2,423
Intermediate consumption	9,813	1,888	19,157
Seeds/seedlings (imputed)	4,262	103	12,029
Paid labour	5,278	2,091	8,305
Cost A	19,353	4,082	39,491
Rent on land	197	101	73
Interest on working capital	361	146	795
Depreciation on fixed assets	520	230	1,519
Cost B	20,431	4,559	41,878
Family Labour	15,468	13,432	43,818
Cost C	35,899	17,991	85,696

CHAPTER 1 – INTRODUCTION

1.1 Introduction

In order to assess the performance of the agricultural sector, a wide range of statistical information is required. Besides information on main output indicators (area harvested, yield and production), it is necessary to have up-to-date statistics on the cost of production and prices. Such statistics would improve the compilation of sectoral accounts for agriculture within the framework of national accounts.

To fill some of the data gaps in the agricultural statistics system, the Central Statistics Office conducted for the first time an Agricultural Cost of Production Survey (ACOPS) from January to December 2005 in the islands of Mauritius and Rodrigues.

1.2 Objectives

The main objectives of the Agricultural Cost of Production Survey were to:

- strengthen the data base relating to the various inputs which are used in the cultivation of crops;
- update the operation ratios used in the estimation of various inputs of the agricultural sector in order to reflect current cultivation practices; and
- provide accurate measures of unit cost of production.

1.3 Uses

In addition to strengthening the data base relating to various inputs which are used in the cultivation of crops, the survey also provides inputs for the formulation of agricultural price policies. The results will be used in the construction of indicators for monitoring the environment, food security and to improve various accounts related to agriculture and food balance sheet, among others.

1.4 Coverage

The survey was carried out both in the islands of Mauritius and Rodrigues.

1.4.1 Island of Mauritius

(a) Foodcrops

Based on usually high area harvested, the following 11 foodcrops were selected for investigation: beans, brinjal, cabbage, carrot, cauliflower, chillies-long, cucumber, onion, potato, pumpkin and tomato. The survey covered only planters cultivating an acreage of at least 0.04 hectare (or 10 perches) in any one of these crops.

(b) Commercial crops

Sugar

There are three categories of planters in the sugar industry, namely the millers, the metayers and the other planters. The millers are actually owners of sugar factories. They also own large areas of land within the factory area. Metayers lease land from miller planters. The planters are those who cultivate sugarcane on their own lands or on leased lands from other planters.

However, only plantations, excluding sugar estate holding, of size less than 10 hectares were covered.

Tea

Three types of planters are engaged in the cultivation of tea. These are members of cooperative societies, metayers and private planters cultivating their own lands. Tea planters cultivating at least 0.04 hectare were sampled.

Tobacco

Planters are engaged in the cultivation of two varieties of tobacco namely Amarello and Virginia. The survey covered both varieties.

(c) Flowers

The following three varieties of flowers which are highly commercialised have been covered: anthurium, rose and gerbera.

1.4.2 Island of Rodrigues

The survey covered three main crops grown in Rodrigues, namely beans-dried, maize and onion.

1.5 Legal authority and confidentiality

The Agricultural Cost of Production Survey was conducted according to the provisions of the *Statistics Act 2000*. The regulations were made by the Minister on 9 December 2004 and were published in the Government Gazette as Government Notice No. 210 of 2004.

The Statistics Act provides for an obligation on the planter/manager of the selected crop fields to furnish the required information according to the approved questionnaire and other survey documents. It also lays down strict rules for the CSO and its employees (including temporary ones) to ensure that all information collected are kept strictly confidential. All persons employed for the survey had to make a declaration of secrecy before a magistrate or the Director of Statistics. Furthermore, each field officer was provided with an identity card signed by the Director of Statistics, which authorised him/her to collect the required data. To safeguard the public against unauthorised persons, the field officers had to show their identity cards whenever requested to, during the fieldwork.

1.6 Technical Assistance from FAO

As it was the first time that CSO conducted such a survey, technical assistance was sought and received from the Food and Agricultural Organisation (FAO). In this connection, Dr. U.C.Sud, an expert of Technical Cooperation among Developing Countries (TCDC) in agricultural statistics was appointed to provide the technical assistance. Dr. Sud conducted two missions at the CSO.

During his first mission (15 February to 28 March 2004), Dr. Sud assisted CSO in

- (i) preparing a detailed workplan for the survey
- (ii) developing the survey methodology
- (iii) designing the questionnaire
- (iv) identifying priority issues and themes to be included in the statistical analysis and tabulation of data, and
- (v) training CSO staff on general concepts of a Cost of Production Survey

Dr. Sud conducted a second mission from 23 January to 6 February 2005 to, inter alia

- (i) review the results of the pilot survey
- (ii) finalise data collection methods
- (iii) finalise tabulation plan
- (iv) train relevant staff on estimation procedures
- (v) advise on other aspects of the survey

In addition, FAO sent two other missions during the course of the project. Mr. D.Ballayan, Statistician, visited CSO from 22 to 26 March 2004 to review the workplan and to provide technical advice and comments on the methodology. Mr. F.Ngopya, another FAO Statistician, came on mission from 27 March to 2 April 2005 to assess the progress of the field work.

CHAPTER 2: SURVEY ORGANISATION AND OPERATIONS

2.1 Office organisation

The Agricultural Statistics Unit of the CSO was responsible for the implementation of the survey. For this purpose, the unit was reinforced with five additional officers, namely one Senior Statistical Officer and four Clerical Officers.

The Clerical Officers were mainly responsible for the editing and coding of questionnaires, while the Statistician, assisted by the Senior Statistical Officer, was responsible for data analysis and report writing.

Data was captured by the Central Information Systems Division (CISD) of the Ministry of Information Technology and Telecommunications.

2.2 Field organisation

Fieldwork was carried out after office hours and especially during weekends or early mornings when it was more likely to meet the planters. The field operation was under the supervision of a Chief Supervisor. The other staff involved in the data collection process comprised one Senior Supervisor, five Supervisors (including one for Rodrigues) and 18 Interviewers (including 2 for Rodrigues).

2.3 Recruitment of field staff

All the field staff were recruited among government officers. The Chief Supervisor and the Senior Supervisor were appointed by the Public Service Commission on the recommendation of the Director of Statistics. As regards Supervisors and Interviewers, the Commission delegated its authority to the Director of Statistics for their recruitment. This was done on the advice of a departmental selection board according to pre-defined criteria as approved by the Commission. The selection criteria were:

- (a) Performance of field staff in previous censuses and surveys undertaken by the CSO, and
- (b) Place of residence.

2.4 Training of field staff

Intensive training of field staff was conducted by the Chief Supervisor and the Senior Supervisor. Each staff was provided with a detailed instruction manual.

Additionally, field staff attended a specialised training course on the “Basics of Agriculture”, conducted by staff of the Agricultural Research Extension Unit (AREU) to acquaint themselves with the different cultural practices of crops pertaining to the survey. This training helped field staff to collect reliable data. Each field staff was provided with the latest version of “Le Guide Agricole, 2004” whereby more details on cultural practices were available.

2.5 Duties of field staff

2.5.1 The Chief Supervisor

The Chief Supervisor was responsible for the planning and organisation of the fieldwork in respect of the survey. His duties involved:

- Conducting briefing and training sessions
- Sample field checks
- Sample editing of completed questionnaires
- Settling of difficult cases, non-response and dealing with any unforeseen problem

2.5.2 The Senior Supervisor

The Senior Supervisor assisted the Chief Supervisor in monitoring the implementation of field procedures and instructions so that control of fieldwork was efficient and timely. He was involved in:

- Supervising the work of 5 Supervisors and 18 Interviewers
- Conducting/attending briefing and training sessions
- Carrying out sample field checks and re-interviews during the survey
- Sample editing of completed questionnaires
- Settling of difficult cases, non-response and dealing with any unforeseen problem

2.5.3 The Supervisor

The Supervisor had to monitor the work of Interviewers to ensure that they follow the defined standard procedures and that the relevant and correct information was captured on field. Among his/her responsibilities were the following:

- Supervising the work of 4 to 5 Interviewers
- Attending briefing/training sessions with his/her team of Interviewers to ensure that they understand all relevant concepts and instructions
- Regulating the flow of all documents between the Senior Supervisor and the Interviewers
- Monitoring the identification of selected field/planters
- Ensuring that his/her interviewers adhere all along to the procedures prescribed for the survey, by accompanying them in some of their interviews
- Carrying out sample field checks and re-interviews during the survey
- Collecting and editing of completed questionnaires
- Dealing with queries and non-response and filling in of control documents
- Keeping record as directed for control of progress and quality of fieldwork (Diary of field activities and checks)
- Returning all edited and completed schedules to the Senior Supervisor

2.5.4 *The Interviewer*

The duties of the Interviewer consisted broadly of the following:

- Attending training/briefing sessions which aim at mastering concepts and procedures necessary for the good conduct of interviews and obtaining reliable and relevant data from planters
- Locating selected fields/planters for interviews
- Interviewing the planters, following the input and output of the selected crops and visiting the fields during the complete crop cycles
- Making callbacks for non contacts
- Editing of completed diaries and questionnaires
- Submitting completed schedules and other relevant documents to the Supervisor within the prescribed time limit

2.6 Calendar of activities

The various activities associated with ACOPS are displayed in Figure 1.

2.7 Survey cost

FAO contributed a sum of US\$ 49,000 (around Rs 1.4 million) which was meant to cover expenses of visiting experts.

The project value of the Agricultural Cost of Production Survey, excluding FAO contribution, was estimated at Rs 4.5 million while the actual expenses amounted to about Rs 4.3 million. A breakdown of the project value and the expenses incurred as at May 2007 is given in Box 1.

<i>Box 1: Project value and actual expenditure of ACOPS</i>		
<u>Particulars</u>	<u>Project value</u>	<u>Actual expenditure as at</u>
	<u>Rupees</u>	<u>May 2007</u>
	<u>Rupees</u>	<u>Rupees</u>
<i>1. Personnel expenses</i>	<i>2,990,000</i>	<i>3,508,792</i>
Office staff	810,000	706,402
Field staff	2,180,000	2,802,390
<i>2. Non-personnel expenses</i>	<i>1,510,000</i>	<i>760,457</i>
Travelling	424,000	618,928
Office requisites and stationery	110,000	18,400
Equipment and furniture	90,000	105,571
Printing	75,000	-
Publicity	50,000	-
Mission to Rodrigues	68,000	17,558
Contingencies	693,000	-

2.8 Publicity

The public was informed about the conduct of the survey through communiqués on radio and in the press. However, in view of the limited size of the sample, more emphasis was laid on direct contact with the selected planters to convince them about the importance of the survey.

CHAPTER 3: CONCEPTS AND DEFINITIONS

3.1 Agricultural holding: It is an economic unit of agricultural production under single management comprising all livestock kept and all land used wholly or partly for agricultural production purposes, without regard to title, legal form, or size.

For the purpose of the survey, a “holding” is defined as the total area available for crop production as reported by planters registered at Small Planters Welfare Fund (SPWF) in 2004.

3.2 Planter (food crop): For the purpose of the survey, a planter is one cultivating at least 0.04 hectare (or 10 perches) of area under a crop.

3.3 Family labour: A person usually living in the planter’s household and involved in the field operations.

3.4 Crop cycle and Complete cycle: A crop cycle is defined as the duration of a crop from its plantation to the last harvest while a complete cycle extends from preparation of land to last harvest.

3.5 Cost of cultivation: Cost of cultivation of a particular crop is defined as the sum total of material cost and physical input costs along with contribution of the other assets and resources of the planter used in raising the crop. The cost of cultivation is expressed in amount spent per unit area of land (for example amount spent to cultivate one hectare of tomato) or amount spent per unit of produce (for example amount spent to produce 1 kg of tomato).

3.6 Cost concepts

All the inputs converted into money equivalent are added to work out the cost of cultivation. The three cost concepts that have been used for the analysis of the survey are shown in Box 2.

Box 2: Cost Concepts

Cost A = Cost of inputs + Paid labour

Cost B = Cost A + Rent on land (Rent paid on leased land or rental value of owned land)
+ Interest on working capital + Depreciation of machinery and equipment

Cost C = Cost B + Imputed family labour (including planter)

3.7 Cost component: Component of cost is the total or partial contribution of a material or physical input on contribution of the assets and resources towards the total cost.

For the field crops, the total cost of cultivation is divided under the following standardised heads, which are termed as components of cost. These are as follows:

- Seed/seedlings cost
- Manure cost
- Cost of chemical fertilisers
- Cost of pesticides
- Hired and permanent labour charges
- Cost of owned/hired machinery labour
- Cost of owned /hired irrigation
- Interest on working capital
- Depreciation of fixed assets
- Rent paid on leased land
- Rental value of owned land
- Value of family labour

3.8 An employer is a person who operates his or her economic enterprise or engages independently in a profession or trade, and hires one or more employees.

3.9 An employee is a person who works for a public or private employer and receives remuneration in wages, salary, commission, tips, piece-rates or pay in kind.

3.10 An own account worker is a person who operates his or her own economic enterprise or engages independently in a profession or trade, and hires no employees.

3.11 An unpaid (contributing) family worker is a person who works without pay in an economic enterprise operated by a related person usually living in the same household.

3.12 Basic Price is the amount receivable by the producer exclusive of taxes payable on products (e.g excise duty and Value Added Tax) and inclusive of subsidies receivable on products. The basic price of a crop is commonly known as its farm gate price.

3.13 Purchaser's Price is the amount payable by the purchaser. This includes trade margins realised by wholesalers and retailers (by definition, their output) as well as transport margins (that is, any transport charges paid separately by the purchaser). It also includes non-deductible VAT but excludes deductible VAT.

3.14 Gross output is the value on the market of goods and services produced, including work in progress and products for own use. Gross Output is valued at basic prices.

3.15 Intermediate consumption covers non-durable goods and services used up in production, including repairs and maintenance of the capital stock, research and development. Intermediate

consumption is valued at purchasers' prices. It is to be noted that the rental value of leased land is not included in intermediate consumption.

3.16 Value added at basic prices is equal to the gross output at basic prices less the value of intermediate consumption at purchasers' prices.

3.17 Wages and salaries in cash comprise all payments which employees receive in respect of their work, before deduction of employees' contributions to social security schemes. Payments such as refund of travelling of work, commissions, bonuses, overtime, and cost of living allowances are also included.

3.18 Payments in kind are goods and services provided to employees free of charge or at markedly reduced costs, which are clearly of direct benefit to the employees as consumers. Examples are food, drinks, clothing, accommodation or other commodities. The value of these commodities is estimated at their market prices.

3.19 Compensation of employees comprises all payments of wages and salaries by producers to their employees. Payments in kind and contributions to social security and to private pension fund, casualty insurance and similar schemes are also included.

CHAPTER 4: SURVEY DOCUMENTS

4.1 Introduction

Questionnaire design is one of the most important aspects of a survey since, no matter how best a sample survey is planned, the reliability of the results depends heavily on how efficient the questionnaires have been designed. The main documents used for the data collection consisted of a questionnaire and a diary. Copies of these documents are given in annex.

4.2 Technical Committee

A technical committee was set up to finalise the draft diary and questionnaire prepared by Dr. U.C.Sud. The committee comprised representatives from the CSO, Ministry of Finance and Economic Development, Ministry of Agriculture, AREU, SPWF, AMB, MCA, Tea Board, Tobacco Board, APEXHOM and CISD.

The final version of the questionnaire was approved by Government and gazetted in December 2004.

4.3 The questionnaire

The questionnaire was divided into nine sections dealing on the following topics:

- (1) Profile of holding
- (2) Family Labour
- (3) Paid employees
- (4) Farm structures and fixed stock articles
- (5) Acquisition of machinery and other fixed assets during past 12 months
- (6) Summary of operations
- (7) Summary of running and maintenance expenses of farm machinery and transport equipment
- (8) Summary of production and disposal
- (9) Summary of economic data

4.4 The diary

In order to reduce errors due to memory lapse, a Diary (D1) was provided to each planter to record in details the inputs and costs incurred for the daily operations starting from land preparation up to complete harvest of the selected crop. Production and receipt were also recorded.

CHAPTER 5: SAMPLING DESIGN

5.1 Introduction

Ideally information should have been sought from all planters cultivating the selected crops. However this would be very time consuming and resource demanding. Fortunately, appropriate sampling techniques are available to enable researchers to draw valid conclusions based on a sample of observations.

5.2 Sample size

5.2.1 *Island of Mauritius*

The initial sample size for foodcrops in the Island of Mauritius was 975 fields distributed among the various crops as follows: beans (100), brinjal (80), cabbage (90), carrot (70), cauliflower (85), chillies-long (85), cucumber (100), onion (80), potato (85), pumpkin (100) and tomato (100).

For commercial crops it was decided to survey 40 sugar plantations, 30 tea plantations and 30 tobacco plantations.

In the case of flowers the initial sample included 25 plantations.

Following the passage of cyclone “Hennie” in the last week of March 2005, 122 sampled plots were severely affected and had to be removed from the sample through lack of complete data on inputs and final output. Furthermore, 23 food crops and 13 tobacco plantations were not surveyed because the field operations started too late during the reference period. Three selected flower plantations were abandoned.

Mr. Francois Ngopya, FAO Statistician, proposed to replace the damaged plots by extending the survey for a period of three months from January to March 2006, in order to maintain the initial sample size for higher precision of the results and to ensure adequate representation of all seasonal crops in the sample. However, this proposal could not be retained through lack of funds.

The analysis of the survey was thus based on data from 830 fields planted with foodcrops, 40 sugar cane plantations, 30 tea plantations, 17 tobacco plantations and 22 flower plantations.

The foodcrops plantations were distributed as follows: beans (100), brinjal (70), cabbage (78), carrot (56), cauliflower (62), chillies-long (67), cucumber (81), onion (67), potato (71), pumpkin (80) and tomato (98).

5.2.2 *Island of Rodrigues*

The initial sample for Rodrigues comprised 30 plantations of each of the three main crops, namely beans, maize and onion.

However, following the passage of cyclone “Juliet” in April 2005, 15 of the maize plots surveyed were severely damaged and had to be discarded from the survey.

5.3 Sampling technique

The sampling design adopted for foodcrops and sugar cane was a stratified uni-stage random sampling. The Island of Mauritius was divided into four agro-climatic zones as strata, namely North, East, South and Centre/West. In Rodrigues, the regions were grouped into five extension zones as strata, namely Citronelle, La Ferme, Marechal, St. Gabriel and Trefles.

Within each zone, a random sample of fields was selected with probability proportionate to size of holding/plantation.

In the case of tea, the planters were stratified into three categories, namely individual (free planter), metayers and cooperatives. Within each stratum, 10 planters were selected with probability proportional to size.

The sample design for tobacco was a stratified uni-stage sampling with two varieties of tobacco, namely Amarello (air cured) and Virginia (flue cured) as strata. The Amarello variety is grown once a year while Virginia is planted and harvested twice a year. Random samples of 10 planters for Amarello and 20 planters for Virginia were selected with probability proportional to the size of the plantation.

Anthurium, Gerbera and Rose were the three varieties of flowers covered in the survey. In the case of Anthurium, a random sample of 10 growers was selected from the list of such growers. However, as regards Gerbera and Rose, no sampling frames were available and thus 10 planters of each type were identified through direct contact with flower growers.

5.4 Sampling frames

5.4.1 *Island of Mauritius*

Foodcrops: A list of planters was obtained from Small Planters Welfare Fund (SPWF). The list contained the following details:

- (a) The name and residential address of planter
- (b) The addresses of the different plots together with the total extent of land under foodcrops cultivation
- (c) The specialisation crop and other crops usually grown up to a maximum of 6

From this list separate frames were constructed for each of the 11 surveyed foodcrops on the basis of the specialisation crop.

Sugarcane: The frame was obtained from Sugar Insurance Fund Board (SIFB) with the following details:

- (a) Name and residential address of planter (owner planter or metayer) registered for the 2004 crop year
- (b) Factory area(s) of plot(s)
- (c) Extent under cane registered

A sugarcane planter can have one or more parcels of land in same locality or at different localities. Furthermore a planter with more than one plot usually does not keep separate accounts for each plantation and the same applies for the employees, inputs and assets. As area was a criterion for qualifying a planter for the survey, a grouping of the plots under a single planter was done.

Tea: The frame for tea planters was obtained from Tea Board. The Tea Board provided three lists: (i) “Cooperatives” tea planters, (ii) “Free” tea planters and (iii) “Metayer” tea planters with the following details:

- (a) Name and residential address of planter
- (b) Area under tea cultivation
- (c) Region of plot
- (d) For “Cooperative” planters the name of the cooperative society was given and for “Metayers”, the name of the tea estate was available.

Tobacco: The Tobacco Board provided three lists: (i) Amarello, (ii) Virginia-first season and (iii) Virginia-second season planters with the following details:

- (a) Name and residential address of planter
- (b) Area to be planted
- (c) Probable locality of plantation

Flowers: A frame for Anthurium planters was obtained from the “Plant Pathology Division” of the Ministry of Agriculture with the following details:

- (a) Name of planter
- (b) Locality of plantation

It is to be noted that no frame was available for growers of rose and gerbera.

5.4.2 Island of Rodrigues

The frame for planters was obtained from the “Commission for Agriculture” of Rodrigues with the following details:

- (a) Name and residential address of planter
- (b) Crops grown and animals reared
- (c) Location of farm
- (d) Farm size

CHAPTER 6: DATA COLLECTION AND PROCESSING

6.1 Field operations

6.1.1 Identification phase

Fieldwork started in January 2005. The Interviewers were provided with a list of selected planters/plantations, which they were to identify on the field. For each plot they had to fill in an identification schedule. If a planter could not be located, he was replaced by another planter with same profile of plantation. Each planter was asked to give an approximate date of start of preparatory plantation for the crop he was a selected for.

The identification exercise was essential mainly for planning of the data collection and attaining the desired sample size.

6.1.2 Data collection

Interviewers contacted the identified plantations which were to start soon and provided each of the planters with a Diary (D1) in which they had to record all field operations during the whole crop cycle. Thereafter the Interviewers, under close supervision of their immediate supervisors, visited the units at least twice a week to verify the records kept by the planters. To ensure consistency in the data collection process and standardisation of field procedures, both supervisors and Senior/Chief supervisors undertook reinterviews of samples of units. Diaries were edited on field and collected from the planters. The relevant data collected were consolidated and transferred to the questionnaire (ACOPS 1).

6.2 Data processing

The completed questionnaires were subjected to further editing and coding at the office by a team of trained editors and coders. The coded questionnaires were thereafter sent to the Central Information System Division (CISD) for data capture. Data cleaning was done by CSO staff. The CISD also worked on the tabulation programs. The softwares used for the data processing were the Integrated Microcomputer Processing Systems (IMPS) developed by the US Bureau of Census and the Statistical Package for Social Sciences (SPSS).

6.3 Data collection method

Data were collected from planters through personal contacts. This was considered the most appropriate method for the following reasons:

- (a) Planters usually do not keep records of their transactions. Keeping of records of daily field operations was thus closely monitored by the interviewers during the complete cycle.
- (b) The correct and uniform interpretation of concepts and definitions is crucial for the compilation of cost concepts and national accounts statistics. Any misinterpretation is bound to have an effect on the compiled data. In order to ensure that such misinterpretation is minimised, interviewers were given a thorough training for the data collection exercise.

CHAPTER 7: PROCEDURE FOR EVALUATION OF COST COMPONENTS

All the cost components have been converted into money value. Procedures for the evaluation on major components are as follows:

7.1 Seeds/seedlings: Cost attributed to seed is calculated on the basis of rate of purchase and quantity used. In case seeds are home produced the cost is evaluated at prevailing market rate. Cost on account of seedlings is worked out at the rate of purchase or cost of raising the nursery.

7.2 Manure: This is calculated using the prevailing market price in the locality.

7.3 Chemical fertiliser is valued at the purchase price including transport charges if purchased in bulk.

7.4 Pesticides are evaluated at the purchase price.

7.5 Owned/hired machinery labour: The owned machinery labour was charged on the basis of operational expenditure per hour while hired machinery labour is valued at the rate of hire charges.

7.6 Hired and permanent labour charge: Estimated on the basis of hours worked on the field and wages paid for such work.

7.7 Cost of owned/hired irrigation is calculated on the basis of actual amount paid or on the basis of operational cost per hour in case of own source of irrigation.

7.8 Interest on working capital consists of the paid up components form the working capital. If a planter uses savings to pay for operating inputs, this is considered as economic cost because the savings could have earned a return in another use. The operating interest used for this survey was the average savings rate of around 5% in year 2005. This rate was applied to the working capital for the duration of the crop.

7.9 Rent on land is estimated on the basis of actual rent paid or converted into money value if rent is paid in kind.

7.10 Rental value of owned land: The rental value of owned land of a plantation in a particular zone was imputed for the period of the crop using an estimate of average rent paid for that zone.

7.11 Family labour: Unpaid family labour (including planter) hours are valued using an estimate of the average wages earned by paid employees in the particular zone of the plantation.

7.12 Owned machinery charge is imputed on the basis of cost of maintenance of farm machinery, which includes diesel, electricity, lubricants, depreciation, repairs and other maintenance expenses.

7.13 Payments in kind: These are evaluated at the prices prevailing at the time such payments are made.

7.14 Paid-out costs comprise:

- Hired labour (human and machinery)
- Maintenance expenses on machinery
- Expenses on material inputs such as seed (home produced and purchased), fertiliser, manure (owned and purchased), pesticides and irrigation.
- Depreciation of implements and farm buildings (such as machine sheds, storage sheds)
- Rent paid on land
- Interest on working capital

7.15 Imputed costs comprise:

- Value of family labour
- Managerial input of planter and unpaid family worker
- Rental value of owned land
- Interest on owned fixed capital, for which the farmer does not incur any cash expenses

CHAPTER 8: QUALITY ASSURANCE

8.1 Introduction

Every sample survey is subject to two types of errors, namely sampling errors and non-sampling errors.

8.2 Sources of non-sampling errors and controls

Non-Sampling errors arise from various sources. In contrast to sampling errors, these errors are difficult to measure but are usually reduced by putting in place quality controls at various stages of the survey. Below are the possible sources of non-sampling errors in ACOPS together with the respective controls.

8.2.1 *Questionnaire design*

Sources of errors in the design of a questionnaire are mainly irrelevancy of the topics, layout of the questionnaire, wordings including ambiguous and vague words and phrases, non-exhaustiveness of precoded answers and so on. The above possible errors were minimised with the support of the representatives of the Technical Committee, which comprised professional statisticians at the CSO and other technicians from the main stakeholders. The relevancy of the topics to the users was ensured by taking on board views of the Technical Committee. Also the draft version of the questionnaire was subjected to pilot testing to detect any other imperfections.

8.2.2 *Data collection*

During the data collection stage possible sources of errors are non-response, interviewer's bias, planter's bias, lack of understanding of concepts and definitions by both planters and/or fieldstaff, lack of supervision on field, errors of recording in the schedules etc.

The above were reduced by:

- (a) providing interviewers with measuring tapes to measure fields with the assistance of their respective supervisors
- (b) Providing field staff with a diary in which they had to fill in their itineraries, problems encountered and solutions thereof. This was used as a monitoring tool by the supervisory staff
- (c) Interviewers being accompanied by their immediate supervisors during their first few interviews
- (d) Reinterviews being carried out on a sample of selected units by the supervisory staff
- (e) Additional consistency checks being carried out at office level where outliers were flagged and reported to supervisory staff for call backs if necessary.

8.2.3 Data processing

Editors and coders at the office were subjected to an intensive training by the statistician in charge of ACOPS unit. The officer in charge of the day-to-day running of the unit verified the questionnaires ensuring consistency in the editing and coding process. At the data processing stage, after data capture, computer edit consisting of checks on totals, range checks and other consistency checks were carried out. The supervisor went through the validation reports and gave instructions to the coders for appropriate actions.

8.2.4 Sampling frame

Ideally the sampling frame should be equal to the population covered by a survey. However, this is rarely the case in practice. In the case of ACOPS only planters registered with SPWF have been considered.

CHAPTER 9 – ANALYSIS OF RESULTS (Cost concepts)

9.1 ANALYTICAL APPROACH

The first part of this chapter gives a description of the profile of selected holdings while the second part provides an analysis of results. The analysis for foodcrops, sugarcane and tobacco focuses on the following aspects:

(i) Estimates of yield, Hours of work and Cost of Production: The analysis of cost of production is based on the three cost concepts as mentioned on page 28 in Chapter 3. These cost concepts are:

Cost A = Cost of inputs + Paid labour

Cost B = Cost A + Rent on land (Rent paid on leased land or rental value of owned land) + Interest on working capital + Depreciation of machinery and equipment

Cost C = Cost B + Imputed family labour.

(ii) Estimates of Average Price received by planters: The average price per kg received by planters for a given crop is obtained by dividing its gross value of production (or gross output) by its average yield (in kg). The gross value of production includes the receipt from sale, the imputed value of production based on the prevailing price at the end of the crop cycle and the imputed value of quantity used for own consumption.

9.2 RESULTS OF THE SURVEY – ISLAND OF MAURITIUS

9.2.1 FOODCROPS

9.2.1.1 Profile of holdings

(a) Surveyed crops by zone

From Table 6 which shows the distribution of the surveyed foodcrop plantations by agro-climatic zones, it is noted that brinjal, chillies and tomato were least represented in the central and western parts of the island and this is in line with the current cultivation practice in the island. Carrot plantations were concentrated in central and western regions while cabbage and cauliflower were mostly concentrated in central, western and eastern regions.

Table 6 – Number and percentage of fields surveyed by crop and zone

Crop	North		East		South		Centre/ West		Total
	No	%	No	%	No	%	No	%	No
Beans	26	26.0	30	30.0	33	33.0	11	11.0	100
Brinjal	25	35.7	23	32.9	18	25.7	4	5.7	70
Cabbage	7	9.0	37	47.4	11	14.1	23	29.5	78
Carrot	11	19.7	6	10.7	6	10.7	33	58.9	56
Cauliflower	9	14.5	28	45.2	3	4.8	22	35.5	62
Chillies-long	32	47.7	28	41.8	6	9.0	1	1.5	67
Cucumber	22	27.2	23	28.4	21	25.9	15	18.5	81
Onion	7	10.4	17	25.4	15	22.4	28	41.8	67
Potato	13	18.2	18	25.4	22	31.0	18	25.4	71
Pumpkin	9	11.3	36	45.0	20	25.0	15	18.7	80
Tomato	31	31.6	26	26.5	32	32.7	9	9.2	98
Total	192	23.1	272	32.8	187	22.5	179	21.6	830

(b) Ownership of land

The majority of the planters (63%) were growing foodcrops on leased land, 32% on their own land while the remaining 5% were availing themselves of land obtained free (Table 7). The highest annual rent paid for one hectare of leased land was registered in Centre/West (Rs 25,094) followed by the East (Rs 22,931), North (Rs 22,675), and South (Rs 17,851).

Table 7 – Percentage distribution of selected fields by ownership of land

Ownership of land	%
Leased	62.5
Owned	32.3
Free (parents)	3.1
Free (other)	2.1
Total	100.0

(c) Mechanisation of field operations

Table 8 shows that mechanisation was used extensively for land preparation in the case of carrot (88%), potato (86%), onion (75%) and cauliflower (74%). Brinjal was the crop for which planters used the least mechanisation for land preparation (36%).

However, mechanisation was not common among the planters for harvest. In fact only 18% of potato planters have reported using mechanised facilities for this operation.

Table 8 – Percentage of fields by crop with mechanised operation for land preparation

Crop	% of fields
Beans	44.1
Brinjal	36.1
Cabbage	60.0
Carrot	87.5
Cauliflower	73.8
Chillies	56.1
Cucumber	45.3
Onion	74.6
Potato	85.9
Pumpkin	-
Tomato	55.7

(d) Length of crop cycle

Table 9 summarises the crop cycle of each selected crop with the minimum and maximum values, mean and standard deviation. On the average brinjal and chillies-long have the longest cycles with length of 241 and 211 days respectively. The shortest cycle (80 days) has been recorded for beans.

Table 9 – Length of crop cycle

Crop	n	Minimum	Maximum	Mean	Std. Deviation
		(Days)			
Beans	100	41	115	80.2	15.7
Brinjal	70	113	335	241.4	46.6
Cabbage	78	64	143	95.0	17.6
Carrot	56	63	125	102.7	14.3
Cauliflower	62	63	146	101.0	19.3
Chillies-long	67	116	323	211.4	43.7
Cucumber	81	47	142	90.4	19.0
Onion	67	73	143	110.5	17.8
Potato	71	68	144	104.3	15.8
Pumpkin	80	58	190	118.5	20.6
Tomato	98	78	173	124.8	19.8

n=sample size

(e) Membership to Agricultural Association

It is to be noted that all the selected planters were registered with the Small Planters Welfare Fund. Out of the 830 planters, 10% were members of cooperative societies while 3% were either affiliated to Young Farmers Club or Agricultural Youth Club (Table 10).

Table 10 – Percentage distribution of planters by membership to Agricultural Association

Agricultural Association	%
Cooperative Society	10.2
Young Farmers Club/ Agricultural Youth Club	2.7
None	87.1
Total	100.0

(f) Points of purchase of inputs

Table 11 gives a broad picture of the different points of purchase of selected inputs.

Organic fertilisers, commonly known as manure, are produced by poultry and cow breeders. Most of the planters (81%) purchased their organic fertilisers from wholesalers while the remaining 19% produced their own or obtained them free from relatives or friends.

Chemical fertilisers were mostly (80%) bought from retailers, followed by cooperative societies (15%), and the remaining 5% from wholesalers.

Retail shops were the main point of purchase (80%) for pesticides, comprising herbicides, fungicides and insecticides. Another 14% of the planters procured these items from cooperative societies and the remaining 6% from wholesalers.

Seeds, including seedlings, were available at different sources. The points of purchase being retailers (52%), Agricultural Marketing Board (9%), Cooperative societies (7%) and wholesalers (2%). The remaining 30% of planters produced their own seeds/seedlings.

Table 11 – Percentage distribution of planters by point of purchase of selected inputs

Point of purchase	Organic Fertilisers (%)	Chemical Fertilisers (%)	Pesticides (%)	Seeds (%)
Wholesaler	81.1	5.2	6.0	2.0
Retailer	-	80.0	80.2	51.9
Cooperative Society	-	14.8	13.8	7.1
Agricultural Marketing Board	-	-	-	9.4
Home produced or obtained free	18.9	-	-	29.6
Total	100.0	100.0	100.0	100.0

(g) Irrigation System

Out of 830 planters, 37% were using overhead irrigation in their fields, 4% were using surface irrigation and another 4%, drip irrigation. It is worth noting that 28% of planters were still using the traditional watering cans to irrigate their fields. Some 27% of selected fields were not irrigated (Table 12).

Table 12 – Percentage distribution of selected fields by Irrigation System used

Irrigation System	%
Overhead	36.6
Surface	4.2
Drip	4.1
Other	28.5
None (rainfed)	26.6
Total	100.0

(h) Source of water supply

From Table 13, it is observed that the major source of water supply was the Central Water Authority. Some 34% of the planters availed themselves of water from rivers or canals, while 21% depended on the Irrigation Authority. Other sources were borehole (7%), well (5%) and spring (2%).

Table 13 – Percentage distribution of irrigated fields by source of water supply

Source of water supply	%
CWA	31.8
Borehole	6.7
Well	4.9
River	24.0
Canal	10.0
Spring	1.6
Irrigation Authority	21.0
Total	100.0

9.2.1.2 Profile of planters

(a) Age and sex

The sampled planters were predominantly male (95%). Nearly 60% were aged between 40 to 59 years. Only 7% (all of them males) were below 30 years of age, while 14 % were aged 60 years and over (14% males, 2% females). The mean age works out to 46.0 years for males and 45.7 years for females.

Table 14 – Percentage distribution of planters by age and sex

Age group (years)	Male (%)	Female (%)	Both sexes (%)
15-29	7.0	-	6.6
30-39	19.0	31.7	19.6
40-49	36.0	26.8	35.6
50-59	24.0	39.0	24.7
60 and over	14.0	2.5	13.5
Total	100.0	100.0	100.0

(b) Marital status

Male planters were predominantly married (91%). However, among the females, 71% were married while the remaining 29% were either, widowed, divorced or separated.

Table 15 – Percentage distribution of planters by marital status and sex

Marital status	Male (%)	Female (%)	Both sexes (%)
Married	91.0	70.7	90.0
Widowed, divorced or separated	0.8	29.3	2.2
Single	8.2	-	7.8
Total	100.0	100.0	100.0

(c) Educational attainment

From Table 16, it is observed that 4% of the planters had either never been to school or studied only at pre-primary level. Another 43% have studied up to primary level, with 32% having achieved the Certificate of Primary Education. Nearly 50% had followed secondary education with 22% not attaining School Certificate level (SC), 24% passing the SC and the remaining 4% passing the Higher School Certificate. A small proportion (3%), all of whom were male planters, had even achieved a diploma or degree.

Analysis by sex shows that female planters were of a lower education background than the males. For instance, only 37% had followed secondary education compared to 50% among males.

Table 16 – Percentage distribution of planters by educational attainment and sex

Educational attainment	Male (%)	Female (%)	Both sexes (%)
Nil and Pre-primary	3.3	12.2	3.7
Primary			
Below CPE	10.5	26.8	11.3
Passed CPE	32.4	24.4	32.0
Secondary			
Below SC	21.9	17.1	21.7
Passed SC	24.1	19.5	23.9
Passed HSC	4.1	-	3.9
Tertiary			
Diploma/Degree	3.7	-	3.5
Total	100.0	100.0	100.0

(d) Employment status

The majority (85%) of the planters interviewed were employers engaging paid employees to work on their plantations. The remaining 15% were own account workers cultivating their land either alone or with the assistance of members of their households. There is not much difference between the employment status of male planters and female ones.

Table 17 – Percentage distribution of planters by employment status and sex

Employment Status	Male (%)	Female (%)	Both sexes (%)
Own account worker	15.2	17.1	15.3
Employer	84.8	82.9	84.7
Total	100.0	100.0	100.0

(e) Occupation

Out of the 830 planters surveyed, 598 (72%) worked on a full-time basis in their fields while the remaining 232 (28%) worked on a part-time basis and had another job as their main occupation. Among the part-time planters, 38% were engaged in elementary occupations, 15% were service workers and shop sales workers, 12% working as plant and machine operators and assemblers and 10% as technicians and associate professionals. More details are given in Table 18 below.

Table 18 – Percentage distribution of planters by occupation group and sex

ISCO ¹ Major occupational group	Occupation group	Male		Female		Both sexes	
		No.	%	No.	%	No.	%
1	Legislators, senior officials and managers	7	3.1	-	-	7	3.0
2	Professionals	7	3.1	-	-	7	3.0
3	Technicians and associate professionals	24	10.5	-	-	24	10.3
4	Clerks	9	3.9	-	-	9	3.9
5	Service workers and shop sales workers	35	15.3	-	-	35	15.1
6	Skilled agricultural and fishery workers	18	7.9	1	25.0	19	8.2
7	Craft and related trade workers	15	6.6	-	-	15	6.5
8	Plant and machine operators and assemblers	28	12.3	-	-	28	12.1
9	Elementary occupations	85	37.3	3	75.0	88	37.9
	Total	228	100.0	4	100.0	232	100.0

¹ International Standard Classification of Occupations

9.2.1.3 Profile of family labour (excluding planter)

A total of 636 family members (excluding the planters) were working on the 830 foodcrop plantations selected for the study, giving a mean of 0.8 member per plantation. 55% of family members were males and 45% females and nearly all of them (98%) were working without pay in the family enterprise.

(a) Age and sex

From Table 19, it is observed that about 57% of the family members working on the plantations were aged 40 years and over and the mean age works out to 41.9 years. Analysis by sex shows that female family workers were on the average older than the male counterparts. In fact nearly 72% females were aged 40 years and over compared to 44% males. The mean age of female planters was 46.5 years compared to 38.1 years for males.

Table 19 – Distribution of family labour (excluding planter) by age and sex

Age group (years)	Male (%)	Female (%)	Both sexes (%)
15-29	36.1	5.9	22.4
30-39	20.3	21.8	21.0
40-49	18.3	29.8	23.5
50-59	9.5	27.3	17.6
60 & over	15.8	15.2	15.5
Total	100.0	100.0	100.0

(b) Marital status

Among the family members assisting on the plantations, 74% were married, 20% were single and the remaining 6% were either widowed, or divorced or separated. It is to be noted that male contributing family workers included a significant proportion of single persons (35%) compared to only 2% among females.

Table 20 – Percentage distribution of family labour (excluding planter) by marital status and sex

Marital status	Male (%)	Female (%)	Both sexes (%)
Married	62.9	86.5	73.6
Widowed, divorced or separated	2.0	11.1	6.1
Single	35.1	2.4	20.3
Total	100.0	100.0	100.0

(c) Educational attainment

From Table 21, it is observed that 46% of the family labour had followed post primary education. The male workers had achieved higher educational background than the females with nearly 58% of them having followed secondary education compared to 29% females. Among the males, 26% have passed the School Certificate and 8% the Higher School Certificate. Corresponding figures for females were 12% and less than 1%.

**Table 21 – Percentage distribution of family labour (excluding planter)
by educational attainment and sex**

Educational attainment	Male (%)	Female (%)	Both sexes (%)
Nil and Pre-primary	5.7	19.1	11.8
Primary			
Below CPE	12.4	17.0	14.5
Passed CPE	21.0	35.1	27.4
Secondary			
Below SC	24.7	17.0	21.2
Passed SC	25.6	11.5	19.2
Passed HSC	8.0	0.3	4.5
Tertiary			
Diploma/Degree	2.6	-	1.4
Total	100.0	100.0	100.0

(d) Occupation

Among the 636 contributing family workers, 459 (72%) worked on a full-time basis in their family enterprise while the remaining 177 (28%) worked on a part-time basis and had another job as their main occupation. Among the part-time contributing family workers, around 26% were employed as service workers and shop sales workers, 23% were engaged in elementary occupations and 15% working as plant and machine operators and assemblers. Among the males, 24% were service workers and shop sales workers, 23% engaged in elementary occupations, 12% were technicians and associate professionals and 10% involved in craft and related trade. As far as the females were concerned, the majority (44%) were service workers and shop sales workers and another 22% were engaged in elementary occupations (Table 22).

Table 22 – Distribution of family labour (excluding planter) by occupation and sex

ISCO ¹ Major occupational group	Occupation group	Male		Female		Both sexes	
		No.	%	No.	%	No.	%
1	Legislators, senior officials and managers;	1	0.6	-	-	1	0.6
2	Professionals	7	4.4	-	-	7	4.0
3	Technicians and associate professionals	19	11.9	3	16.7	22	12.4
4	Clerks	8	5.0	-	-	8	4.5
5	Service workers and shop sales workers	38	23.9	8	44.4	46	26.0
6	Skilled agricultural and fishery workers	9	5.7	1	5.6	10	5.6
7	Craft and related trade workers	16	10.1	-	-	16	9.0
8	Plant and Machine Operators and Assemblers	24	15.1	2	11.1	26	14.7
9	Elementary occupations	37	23.3	4	22.2	41	23.2
	Total	159	100.0	18	100.0	177	100.0

¹ International Standard Classification of Occupations

9.2.1.4 Estimates of yield, hours of work, cost of production and average price received by planters for beans

(a) Estimated yield

The average yield of beans for the island worked out to 6,249 kg per hectare (ha). At zone level, the yield was highest in the Centre or Western part of the island with a figure of 7,976 kg per hectare while the Eastern region registered the lowest yield of 5,378 kg per hectare (Table 23).

Table 23 – Yield of beans by zone

Region	Yield (Kg/ha)
North	6,809
East	5,378
South	6,320
Centre/West	7,976
Island of Mauritius	6,249

(b) Hours of work for beans – per hectare (Table 24)

The total hours of work per hectare for the complete cycle of beans worked out to 1,225 for the island. Analysis by field operation shows that “harvesting” was the most (44%) labour intensive activity among all the field operations.

Analysis by type of labour shows that beans planters used mostly (47%) hired labour. They contributed about 35% of the labour requirements and their family members who were not paid 18%.

Analysis by sex reveals that male and female labour were nearly equally represented. However, for “pesticides application” and “irrigation” male labour represented 99% and 94% respectively. On the other hand, female labour was predominant for “harvesting” (66%) and “other operations” (60%).

Table 24 – Hours of work by field operation per hectare under beans

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	28	3	31	33	35	68	6	2	8	67	40	107	8.7
Planting	22	1	23	4	58	62	6	8	14	32	67	99	8.1
Fertilisers application	37	3	40	5	30	35	6	4	10	48	37	85	6.9
Pesticides application	100	2	102	15	-	15	22	-	22	137	2	139	11.3
Irrigation	53	3	56	1	1	2	19	1	20	73	5	78	6.4
Harvesting	114	9	123	12	288	300	58	59	117	184	356	540	44.1
Other operations	46	3	49	13	88	101	13	14	27	72	105	177	14.5
ALL OPERATIONS	400	24	424	83	500	583	130	88	218	613	612	1,225	100.0
%	32.7	1.9	34.6	6.8	40.8	47.6	10.6	7.2	17.8	50.1	49.9	100.0	

(c) Estimated cost of production of beans– per hectare (Table 25)

Cost A: The cost of production per hectare for beans, on the basis of cost A, worked out to Rs 49,596 for the island. At zone level, the lowest cost (Rs 37,586) was observed in the East whereas the highest cost (Rs 59,724) was noted in the North.

Cost B: The cost of production per hectare for beans, on the basis of cost B, worked out to Rs 60,165 for the island. At zone level, the lowest cost (Rs 46,112) was observed in the East whereas the highest cost (Rs 75,055) was noted in the Centre/West.

Cost C: The cost of production per hectare for beans, on the basis of cost C, worked out to Rs 85,421 for the island. At zone level, the lowest cost (Rs 70,426) was observed in the East whereas the highest cost (Rs 105,127) was noted in the Centre/West.

Table 25 – Cost of main components per hectare under beans by zone**(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	6,219	3,162	4,821	5,638	4,560
Labour	15,109	10,703	15,974	15,682	13,815
Seeds/seedlings	9,650	7,293	9,561	8,987	8,676
Chemical fertilisers	7,168	5,907	7,746	6,448	6,816
Farm manure	787	2,149	740	1,404	1,342
Pesticides	13,773	6,436	9,670	12,169	9,524
Fuel and lubricant	4,352	1,624	3,540	7,756	3,420
Irrigation	1,513	91	1,481	1,232	945
Other	1,153	221	580	-	498
Cost A	59,724	37,586	54,113	59,316	49,596
Rent on land	5,118	5,149	4,771	3,889	4,888
Interest on working capital	982	617	889	986	816
Depreciation of fixed assets	4,665	2,760	5,485	10,864	4,865
Cost B	70,489	46,112	65,258	75,055	60,165
Family Labour	31,212	24,314	21,302	30,072	25,256
Cost C	101,701	70,426	86,560	105,127	85,421

Based on Cost C concept, the major cost components for beans for the island were labour (paid + imputed) with 46%, followed by 11% for pesticides, 10% for seeds and 10% for manure and chemical fertilisers.

(d) Estimated cost of production – per kg of beans (Table 26)

Cost A: The cost of production per kg of beans, on the basis of cost A, worked out to Rs 7.98 for the island. At zone level, the lowest cost (Rs 6.08) was observed in the East whereas the highest cost (Rs 9.29) was noted in the South.

Cost B: The cost of production per kg of beans, on the basis of cost B, worked out to Rs 9.76 for the island, with the lowest cost (Rs 7.74) in the East and the highest cost (Rs 11.24) in the South.

Cost C: The cost of production per kg of beans, on the basis of cost C, worked out to Rs 13.99 for the island. At zone level, the lowest cost (Rs 12.52) was observed in the East whereas the highest cost (Rs 14.84) was noted in the South.

Table 26 – Cost of main components per kg of beans by zone**(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	0.96	0.60	0.73	0.73	0.74
Labour	2.05	1.37	2.75	2.42	2.11
Seeds/seedlings	1.39	1.28	1.54	1.10	1.37
Chemical fertilisers	1.01	0.85	1.38	0.86	1.06
Farm manure	0.12	0.38	0.16	0.24	0.23
Pesticides	1.99	1.22	1.75	1.57	1.62
Fuel and lubricant	0.68	0.32	0.60	1.05	0.59
Irrigation	0.25	0.02	0.26	0.18	0.17
Other	0.18	0.04	0.12	-	0.09
Cost A	8.63	6.08	9.29	8.15	7.98
Rent on land	0.74	0.93	0.78	0.47	0.78
Interest on working capital	0.14	0.10	0.15	0.13	0.13
Depreciation of fixed assets	0.63	0.63	1.02	1.49	0.87
Cost B	10.14	7.74	11.24	10.24	9.76
Family Labour	4.60	4.78	3.60	3.74	4.23
Cost C	14.74	12.52	14.84	13.98	13.99

(e) Estimated average price received by planters (Table 27)

The average price per kg of beans, received by planters, during the survey reference period, worked out to Rs 18.99 for the island. The prices for each zone were as follows: North (Rs19.96), East (Rs18.46), South (Rs19.55) and Centre/West (Rs17.97).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 27 – Cost of production and average price received per kg by planters for beans by zone**(Rupees)**

	North	East	South	Centre/ West	Island of Mauritius
Cost of production per kg: Cost A	8.63	6.08	9.29	8.15	7.98
Cost of production per kg: Cost B	10.14	7.74	11.24	10.24	9.76
Cost of production per kg: Cost C	14.74	12.52	14.84	13.98	13.99
Average price received per kg	19.96	18.46	19.55	17.97	18.99

9.2.1.5 Estimates of yield, hours of work, cost of production and average price received by planters for brinjal

(a) Estimated yield

The average yield of brinjal for the island worked out to 19,946 kg per hectare. At zone level, the yield was highest in the Centre or the Western part of the island with a figure of 23,491 kg per hectare while the Southern region registered the lowest yield of 17,260 kg per hectare (Table 28).

Table 28 – Yield of brinjal by zone

Region	Yield (Kg/ha)
North	19,469
East	21,495
South	17,260
Centre/West	23,491
Island of Mauritius	19,946

(b) Hours of work for brinjal – per hectare (Table 29)

The total hours of work per hectare for the complete cycle of brinjal worked out to 1,767 for the island. Analysis by field operation shows that “harvesting” was the most (40%) labour intensive activity among all the field operations.

Analysis by type of labour shows that, brinjal planters contributed mostly (48%) in terms of labour requirements, while hired labour was 34% and, their family members who were not paid 18%.

Analysis by sex reveals that male labour, representing 63% of the total labour requirements, was predominant in most operations, except for “harvesting” and “other operations” where female labour were slightly higher.

Table 29 – Hours of work by field operation per hectare under brinjal

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	37	3	40	63	31	94	6	4	10	106	38	144	8.1
Planting	28	...	28	10	45	55	4	10	14	42	55	97	5.5
Fertilisers application	64	7	71	4	25	29	16	8	24	84	40	124	7.0
Pesticides application	214	-	214	28	-	28	47	-	47	289	-	289	16.3
Irrigation	119	28	147	2	14	16	6	-	6	127	42	169	9.6
Harvesting	248	18	266	26	233	259	65	111	176	339	362	701	39.7
Other operations	75	9	84	20	102	122	23	14	37	118	125	243	13.8
ALL OPERATIONS	785	65	850	153	450	603	167	147	314	1,105	662	1,767	100.0
%	44.4	3.7	48.1	8.7	25.5	34.1	9.5	8.3	17.8	62.5	37.5	100.0	

(c) Estimated cost of production – per hectare under brinjal (Table 30)

Cost A: The cost of production per hectare for brinjal, on the basis of cost A, worked out to Rs 88,062 for the island. The lowest cost (Rs 78,234) was observed in the East and the highest cost (Rs 106,397) was noted in the Centre/West.

Cost B: On the basis of the Cost B concept, it costs Rs 113,080 to cultivate one hectare of brinjal in Mauritius. At zone level, the lowest cost (Rs 98,703) was observed in the East whereas the highest cost (Rs 156,538) was noted in the Centre/West.

Cost C: The cost of production per hectare for brinjal, on the basis of cost C, worked out to Rs 161,566 for the island. At zone level, the lowest cost (Rs 146,709) was observed in the South whereas the highest cost (Rs 187,821) was noted in the Centre/West.

Table 30 – Cost of main components per hectare under brinjal by zone

(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	10,005	5,548	2,681	3,581	6,740
Labour	17,396	9,441	19,966	34,090	16,464
Seeds/seedlings	8,250	7,388	8,582	8,250	8,078
Chemical fertilisers	9,526	12,004	10,088	7,110	10,258
Farm manure	678	6,029	6,561	2,250	3,646
Pesticides	32,769	30,742	24,275	32,303	30,206
Fuel and lubricant	6,981	5,157	7,963	12,413	6,931
Irrigation	6,253	1,646	3,644	2,900	4,172
Other	2,372	279	1,271	3,500	1,567
Cost A	94,230	78,234	85,031	106,397	88,062
Rent on land	14,071	9,301	8,270	19,400	11,606
Interest on working capital	1,562	1,278	1,394	1,763	1,451
Depreciation of fixed assets	10,226	9,890	14,444	28,978	11,961
Cost B	120,089	98,703	109,139	156,538	113,080
Family Labour	46,718	62,647	37,570	31,283	48,486
Cost C	166,807	161,350	146,709	187,821	161,566

Based on Cost C concept, the major cost components for brinjal for the island were labour (paid + imputed) with 40%, followed by 19% for pesticides, 9% for manure and chemical fertilisers and 5% for seeds.

(d) Estimated cost of production – per kg of brinjal (Table 31)

Cost A: The cost of production per kg of brinjal, on the basis of cost A, worked out to Rs 4.34 for the island. It is most expensive to produce one kg of brinjal in the North (Rs 4.84) and least expensive in the East (Rs 3.65).

Cost B: The cost of production per kg of brinjal, on the basis of cost B, worked out to Rs 5.59 for the island, with the lowest cost (Rs 4.63) in the East and the highest cost (Rs 7.01) in the Centre/West.

Cost C: The cost of production per kg of brinjal, on the basis of cost C, worked out to Rs 8.08 for the island. At zone level, the lowest cost (Rs 7.47) was observed in the East whereas the highest cost (Rs 8.72) was noted in the North.

Table 31 – Cost of main components per kg of brinjal by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	0.50	0.28	0.13	0.14	0.34
Labour	0.69	0.51	1.01	1.72	0.74
Seeds/seedlings	0.36	0.36	0.44	0.32	0.37
Chemical fertilisers	0.48	0.50	0.46	0.32	0.48
Farm manure	0.02	0.21	0.27	0.12	0.14
Pesticides	1.78	1.52	1.33	1.41	1.59
Fuel and lubricant	0.42	0.18	0.49	0.35	0.34
Irrigation	0.43	0.08	0.16	0.15	0.24
Other	0.16	0.01	0.13	0.18	0.10
Cost A	4.84	3.65	4.42	4.71	4.34
Rent on land	0.74	0.41	0.20	0.94	0.54
Interest on working capital	0.08	0.06	0.07	0.08	0.07
Depreciation of fixed assets	0.52	0.51	0.98	1.28	0.64
Cost B	6.18	4.63	5.67	7.01	5.59
Family Labour	2.54	2.84	2.19	0.99	2.49
Cost C	8.72	7.47	7.86	8.00	8.08

(e) Estimated average price received by planters (Table 32)

The average price per kg of brinjal received by planters during the survey reference period worked out to Rs 11.38 for the island. The prices for each zone were as follows: North (Rs 12.40), East (Rs 9.41), South (Rs 12.30) and Centre/West (Rs 11.23).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 32 – Cost of production and average price received per kg by planters for brinjal by zone
(Rupees)

	North	East	South	Centre/ West	Island of Mauritius
Cost of production per kg: Cost A	4.84	3.65	4.42	4.71	4.34
Cost of production per kg: Cost B	6.18	4.63	5.67	7.01	5.59
Cost of production per kg: Cost C	8.72	7.47	7.86	8.00	8.08
Average price received per kg	12.40	9.41	12.30	11.23	11.38

9.2.1.6 Estimates of yield, hours of work, cost of production and average price received by planters for cabbage

(a) Estimated yield

The average yield of cabbage for the island worked out to 33,660 kg per hectare. At zone level, the yield was highest in the Centre or Western part of the island with a figure of 37,174 kg per hectare while the Southern region registered the lowest yield of 27,570 kg per hectare (Table 33).

Table 33 – Yield of cabbage by zone

Region	Yield (Kg/ha)
North	29,065
East	30,761
South	27,570
Centre/West	37,174
Island of Mauritius	33,660

(b) Hours of work for cabbage – per hectare (Table 34)

The total hours of work per hectare for the complete cycle of cabbage worked out to 979 for the island. Analysis by field operation shows that “harvesting” was the most (31%) labour intensive activity among all the field operations.

Analysis by type of labour shows that, cabbage planters contributed mostly (49%) in terms of labour requirements, while hired labour was 42% and their family members who were not paid 9%.

Analysis by sex reveals that male labour, representing almost 72% of the total labour requirements, was predominant in most operations, except for “fertiliser application” where female labour was 60%.

Table 34 – Hours of work by field operation per hectare under cabbage

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	19	1	20	25	14	39	5	1	6	49	16	65	6.6
Planting	41	...	41	21	64	85	8	4	12	70	68	138	14.1
Fertilisers application	31	1	32	12	68	80	4	2	6	47	71	118	12.0
Pesticides application	107	1	108	23	1	24	4	-	4	134	2	136	13.9
Irrigation	70	...	70	-	-	-	11	...	11	81	-	81	8.3
Harvesting	172	1	173	46	49	95	34	5	39	252	55	307	31.4
Other operations	32	1	33	32	62	94	5	2	7	69	65	134	13.7
ALL OPERATIONS	472	5	477	159	258	417	71	14	85	702	277	979	100.0
%	48.2	0.5	48.7	16.2	26.4	42.6	7.3	1.4	8.7	71.7	28.3	100.0	

(c) Estimated cost of production – per hectare (Table 35)

Cost A: The cost of production per hectare for cabbage, on the basis of cost A, worked out to Rs 63,957 for the island. At zone level, the lowest cost (Rs 57,332) was observed in the South whereas the highest cost (Rs 75,756) was noted in the North.

Cost B: The cost of production per hectare for cabbage, on the basis of cost B, worked out to Rs 80,257 for the island. At zone level, the lowest cost (Rs 65,754) was observed in the South whereas the highest cost (Rs 88,222) was noted in the North.

Cost C: The cost of production per hectare for cabbage, on the basis of cost C, worked out to Rs 104,650 for the island. At zone level, the lowest cost (Rs 89,167) was observed in the South whereas the highest cost (Rs 128,044) was noted in the North.

**Table 35 – Cost of main components per hectare under cabbage by zone
(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	11,946	5,367	5,357	2,967	4,909
Labour	15,015	13,836	8,768	9,728	11,642
Seeds/seedlings	14,604	17,224	14,068	17,004	16,552
Chemical fertilisers	6,567	8,364	9,980	5,702	7,304
Farm manure	7,677	5,263	1,731	11,368	7,576
Pesticides	12,618	9,848	10,970	8,074	9,470
Fuel and lubricant	2,024	3,244	2,821	8,023	5,073
Irrigation	5,122	96	2,697	361	918
Other	183	923	940	72	513
Cost A	75,756	64,165	57,332	63,299	63,957
Rent on land	5,520	8,127	4,162	8,529	7,619
Interest on working capital	1,245	1,052	943	1,075	1,064
Depreciation of fixed assets	5,701	7,828	3,317	9,006	7,617
Cost B	88,222	81,172	65,754	81,909	80,257
Family Labour	39,822	27,926	23,413	18,316	24,393
Cost C	128,044	109,098	89,167	100,225	104,650

Based on Cost C concept, the major cost components for cabbage for the island were labour (paid + imputed) with 34%, followed by 16% for seeds/seedlings, 14% for manure and chemical fertilisers and 9% for pesticides.

(d) Estimated cost of production – per kg of cabbage (Table 36)

Cost A: The cost of production per kg of cabbage, on the basis of cost A, worked out to Rs 1.94 for the island. At zone level, the lowest cost (Rs 1.71) was observed in the Centre/West whereas the highest cost (Rs 2.61) was noted in the North.

Cost B: The cost of production per kg of cabbage, on the basis of cost B, worked out to Rs 2.45 for the island. At zone level, the lowest cost (Rs 2.21) was observed in the Centre/West whereas the highest cost (Rs 3.04) was noted in the North.

Cost C: The cost of production per kg of cabbage, on the basis of cost C, worked out to Rs 3.18 for the island. At zone level, the lowest cost (Rs 2.70) was observed in the Centre/West whereas the highest cost (Rs 4.41) was noted in the North.

Table 36 – Cost of main components per kg of cabbage by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	0.42	0.19	0.18	0.08	0.15
Labour	0.52	0.54	0.31	0.26	0.36
Seeds/seedlings	0.50	0.60	0.56	0.46	0.51
Chemical fertilisers	0.23	0.25	0.28	0.15	0.19
Farm manure	0.26	0.16	0.11	0.31	0.25
Pesticides	0.43	0.29	0.35	0.22	0.26
Fuel and lubricant	0.07	0.14	0.13	0.22	0.18
Irrigation	0.18	-	0.12	0.01	0.03
Other	-	0.04	0.01	-	0.01
Cost A	2.61	2.21	2.05	1.71	1.94
Rent on land	0.19	0.27	0.23	0.23	0.24
Interest on working capital	0.04	0.04	0.03	0.03	0.03
Depreciation of fixed assets	0.20	0.25	0.18	0.24	0.24
Cost B	3.04	2.77	2.49	2.21	2.45
Family Labour	1.37	0.90	1.17	0.49	0.73
Cost C	4.41	3.67	3.66	2.70	3.18

(e) Estimated average price received by planters (Table 37)

The average price per kg of cabbage received by planters during the survey reference period worked out to Rs 5.56 for the island. The prices for each zone were as follows: North (Rs 6.46), East (Rs 5.58), South (Rs 5.35) and Centre/West (Rs 4.98).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 37 – Cost of production and average price received per kg by planters for cabbage by zone
(Rupees)

	North	East	South	Centre/ West	Island of Mauritius
Cost of production per kg: Cost A	2.61	2.21	2.05	1.71	1.94
Cost of production per kg: Cost B	3.04	2.77	2.49	2.21	2.45
Cost of production per kg: Cost C	4.41	3.67	3.66	2.70	3.18
Average price received per kg	6.46	5.58	5.35	4.98	5.56

9.2.1.7 Estimates of yield, hours of work, cost of production and average price received by planters for carrot

(a) Estimated yield

The average yield of carrot for the island worked out to 19,839 kg per hectare (ha). At zone level, the yield was highest in the Centre or Western part of the island with a figure of 22,287 kg per hectare while the Eastern region registered the lowest yield of 13,571 kg per hectare (Table 38).

Table 38 – Yield of carrot by zone

Region	Yield (Kg/ha)
North	17,633
East	13,571
South	21,722
Centre/West	22,287
Island of Mauritius	19,839

(b) Hours of work for carrot – per hectare (Table 39)

The total hours of work per hectare for the complete cycle of carrot worked out to 560 for the island. Analysis by field operation shows that “harvesting” was the most (52%) labour intensive activity among all the field operations.

Analysis by type of labour shows that carrot planters used mostly (61%) hired labour. They contributed about 31% of the labour requirements and their family members who were not paid 8%.

Analysis by sex reveals that male labour was slightly higher (53%) than female labour.

Table 39 – Hours of work by field operation per hectare under carrot

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	12	3	15	9	18	27	10	4	14	31	25	56	10.0
Planting	13	1	14	12	13	25	1	1	2	26	15	41	7.2
Fertilisers application	15	1	16	8	28	36	2	1	3	25	30	55	9.9
Pesticides application	33	6	39	7	-	7	1		1	41	6	47	8.4
Irrigation	13	-	13	-	-	-	...	-	...	13	-	13	2.4
Harvesting	62	4	66	73	132	205	14	9	23	149	145	294	52.4
Other operations	6	5	11	4	35	39	3	1	4	13	41	54	9.7
ALL OPERATIONS	154	20	174	113	226	339	31	16	47	298	262	560	100.0
%	27.5	3.6	31.1	20.2	40.3	60.5	5.5	2.9	8.4	53.2	46.8	100.0	

(c) Estimated cost of production – per hectare (Table 40)

Cost A: The cost of production per hectare for carrot, on the basis of cost A, worked out to Rs 46,506 for the island. At zone level, the lowest cost (Rs 41,571) was observed in the East whereas the highest cost (Rs 59,902) was noted in the North.

Cost B: The cost of production per hectare for carrot, on the basis of cost B, worked out to Rs 63,734 for the island. At zone level, the lowest cost (Rs 58,258) was observed in the Centre/West whereas the highest cost (Rs 77,979) was noted in the North.

Cost C: The cost of production per hectare for carrot, on the basis of cost C, worked out to Rs 72,104 for the island. At zone level, the lowest cost (Rs 67,805) was observed in the Centre/West whereas the highest cost (Rs 86,995) was noted in the North.

Table 40 – Cost of main components per hectare under carrot by zone**(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	8,892	7,742	8,311	3,374	5,325
Labour	15,204	11,050	12,417	12,130	12,541
Seeds/seedlings	7,652	7,758	6,069	6,757	7,068
Chemical fertilisers	7,503	4,007	5,781	2,459	3,791
Farm manure	7,781	4,909	3,236	7,726	7,104
Pesticides	6,748	4,696	5,392	6,263	6,062
Fuel and lubricant	5,063	1,409	7,944	4,054	3,946
Irrigation	-	-	1,942	23	84
Other	1,059	-	2,709	471	585
Cost A	59,902	41,571	53,801	43,257	46,506
Rent on land	7,197	12,786	2,200	7,496	8,128
Interest on working capital	983	699	883	711	767
Depreciation of fixed assets	9,897	3,202	10,792	9,107	8,333
Cost B	77,979	58,258	67,676	60,571	63,734
Family Labour	9,016	11,564	9,372	7,234	8,370
Cost C	86,995	69,822	77,048	67,805	72,104

Based on Cost C concept, the major cost components for carrot for the island were labour (paid + imputed) with 29%, followed by 15% for manure and chemical fertilisers, 10% for seeds and 8% for pesticides.

(d) Estimated cost of production – per kg of carrot (Table 41)

Cost A: The cost of production per kg of carrot, on the basis of cost A, worked out to Rs 2.20 for the island. At zone level, the lowest cost (Rs 1.90) was observed in the Centre/West whereas the highest cost (Rs 3.06) was noted in the East.

Cost B: The cost of production per kg of carrot, on the basis of cost B, worked out to Rs 3.06 for the island. At zone level, the lowest cost (Rs 2.64) was observed in the Centre/West whereas the highest cost (Rs 4.29) was noted in the East.

Cost C: The cost of production per kg of carrot, on the basis of cost C, worked out to Rs 3.54 for the island. At zone level, the lowest cost (Rs 2.99) was observed in the Centre/West whereas the highest cost (Rs 5.14) was noted in the East.

Table 41 – Cost of main components per kg of carrot by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	0.51	0.57	0.37	0.16	0.26
Labour	0.66	0.81	0.64	0.48	0.56
Seeds/seedlings	0.32	0.57	0.28	0.30	0.34
Chemical fertilisers	0.41	0.30	0.25	0.12	0.18
Farm manure	0.24	0.36	0.14	0.35	0.33
Pesticides	0.34	0.35	0.23	0.29	0.30
Fuel and lubricant	0.39	0.10	0.41	0.20	0.21
Irrigation	-	-	0.06	-	...
Other	0.11	-	0.14	-	0.02
Cost A	2.98	3.06	2.52	1.90	2.20
Rent on land	0.44	0.94	0.09	0.35	0.44
Interest on working capital	0.05	0.05	0.04	0.03	0.04
Depreciation of fixed assets	0.67	0.24	0.55	0.36	0.38
Cost B	4.14	4.29	3.20	2.64	3.06
Family Labour	0.94	0.85	0.34	0.35	0.48
Cost C	5.08	5.14	3.54	2.99	3.54

(e) Estimated average price received by planters

The average price per kg of carrot received by planters during the survey reference period worked out to Rs 6.46 for the island. The prices for each zone were as follows: North (Rs 7.80), East (Rs 5.58), South (Rs 6.23) and Centre/West (Rs 5.81).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 42 – Cost of production and average price received per kg by planters for carrot by zone
(Rupees)

	North	East	South	Centre/West	Island of Mauritius
Cost of production per kg: Cost A	2.98	3.06	2.52	1.90	2.20
Cost of production per kg: Cost B	4.14	4.29	3.20	2.64	3.06
Cost of production per kg: Cost C	5.08	5.14	3.54	2.99	3.54
Average price received per kg	7.80	5.58	6.23	5.81	6.46

9.2.1.8 Estimates of yield, hours of work, cost of production and average price received by planters for cauliflower

(a) Estimated yield

The average yield of cauliflower for the island worked out to 23,014 kg per hectare. At zone level, the yield was highest in the Centre or Western part of the island with a figure of 24,511 kg per hectare while the Eastern region registered the lowest yield of 21,670 kg per hectare (Table 43).

Table 43 – Yield of cauliflower by zone

Region	Yield (Kg/ha)
North	21,815
East	21,670
South	22,241
Centre/West	24,511
Island of Mauritius	23,014

(b) Hours of work for cauliflower – per hectare (Table 44)

The total hours of work per hectare for the complete cycle of cauliflower worked out to 1,373 for the island. Analysis by field operation shows that “harvesting” was the most (22%) labour intensive activity among all the field operations.

Analysis by type of labour shows that cauliflower planters contributed mostly (47%) in terms of labour requirements while hired labour was 40% and their family members who were not paid 13%.

Analysis by sex reveals that male labour, representing 71% of the total labour requirements, was predominant in most operations, except for “other operations” where female labour was 58%.

Table 44 – Hours of work by field operation per hectare under cauliflower

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	20	-	20	34	6	40	6	1	7	60	7	67	4.9
Planting	67	2	69	90	53	143	11	14	25	168	69	237	17.2
Fertilisers application	61	3	64	35	108	143	15	5	20	111	116	227	16.5
Pesticides application	133	6	139	21	2	23	24	-	24	178	8	186	13.6
Irrigation	126	6	132	2	8	10	5	-	5	133	14	147	10.7
Harvesting	161	10	171	33	15	48	49	30	79	243	55	298	21.7
Other operations	43	2	45	34	112	146	11	9	20	88	123	211	15.4
ALL OPERATIONS	611	29	640	249	304	553	121	59	180	981	392	1,373	100.0
<i>%</i>	<i>44.5</i>	<i>2.1</i>	<i>46.6</i>	<i>18.1</i>	<i>22.2</i>	<i>40.3</i>	<i>8.8</i>	<i>4.3</i>	<i>13.1</i>	<i>71.4</i>	<i>28.6</i>	<i>100.0</i>	

(c) Estimated cost of production – per hectare (Table 45)

Cost A: The cost of production per hectare for cauliflower, on the basis of cost A, worked out to Rs 73,373 for the island. At zone level, the lowest cost (Rs 58,595) was observed in the South whereas the highest cost (Rs 77,566) was noted in the North.

Cost B: The cost of production per hectare for cauliflower, on the basis of cost B, worked out to Rs 91,522 for the island. At zone level, the lowest cost (Rs 68,959) was observed in the South whereas the highest cost (Rs 95,549) was noted in the Centre/West.

Cost C: The cost of production per hectare for cauliflower, on the basis of cost C, worked out to Rs 128,493 for the island. At zone level, the lowest cost (Rs 97,986) was observed in the South whereas the highest cost (Rs 139,346) was noted in the Centre/West.

**Table 45 – Cost of main components per hectare under cauliflower by zone
(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	11,715	5,460	6,000	6,174	6,544
Labour	12,542	14,907	7,159	19,290	16,297
Seeds/seedlings	11,315	11,056	13,432	12,050	11,591
Chemical fertilisers	11,967	8,633	6,645	6,384	7,998
Farm manure	7,348	14,651	5,909	12,745	12,675
Pesticides	13,826	10,415	13,186	12,820	11,958
Fuel and lubricant	5,066	3,408	2,864	4,635	4,127
Irrigation	3,787	222	1,241	2,082	1,494
Other	-	751	2,159	721	689
Cost A	77,566	69,503	58,595	76,901	73,373
Rent on land	6,138	10,002	3,664	11,037	9,795
Interest on working capital	1,270	1,142	959	1,266	1,206
Depreciation of fixed assets	9,649	7,363	5,741	6,345	7,148
Cost B	94,623	88,010	68,959	95,549	91,522
Family Labour	36,897	30,241	29,027	43,797	36,971
Cost C	131,520	118,251	97,986	139,346	128,493

Based on Cost C concept, the major cost components for cauliflower for the island were labour (paid + imputed) with 41%, followed by 16% for manure and chemical fertilisers, 9% for pesticides and 9% for seeds/seedlings.

(d) Estimated cost of production – per kg of cauliflower (Table 46)

Cost A: The cost of production per kg of cauliflower, on the basis of cost A, worked out to Rs 3.25 for the island. At zone level, the lowest cost (Rs 2.64) was observed in the South whereas the highest cost (Rs 3.54) was noted in the North.

Cost B: The cost of production per kg of cauliflower, on the basis of cost B, worked out to Rs 4.05 for the island. At zone level, the lowest cost (Rs 3.10) was observed in the South whereas the highest cost (Rs 4.33) was noted in the North.

Cost C: The cost of production per kg of cauliflower, on the basis of cost C, worked out to Rs 5.56 for the island. At zone level, the lowest cost (Rs 4.41) was observed in the South whereas the highest cost (Rs 5.70) was noted in the North and in the Centre/West.

Table 46 – Cost of main components per kg of cauliflower by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	0.57	0.26	0.27	0.25	0.30
Labour	0.61	0.72	0.32	0.80	0.74
Seeds/seedlings	0.51	0.52	0.60	0.51	0.52
Chemical fertilisers	0.53	0.42	0.30	0.26	0.35
Farm manure	0.29	0.68	0.27	0.52	0.54
Pesticides	0.64	0.44	0.59	0.52	0.51
Fuel and lubricant	0.22	0.17	0.13	0.19	0.19
Irrigation	0.17	0.01	0.06	0.09	0.07
Other	-	0.05	0.10	0.02	0.03
Cost A	3.54	3.27	2.64	3.16	3.25
Rent on land	0.28	0.49	0.16	0.45	0.44
Interest on working capital	0.06	0.05	0.04	0.05	0.05
Depreciation of fixed assets	0.45	0.32	0.26	0.27	0.31
Cost B	4.33	4.13	3.10	3.93	4.05
Family Labour	1.37	1.22	1.31	1.77	1.51
Cost C	5.70	5.35	4.41	5.70	5.56

(e) Estimated average price received by planters

The average price per kg of cauliflower received by planters during the survey reference period worked out to Rs 12.72 for the island. The prices for each zone were as follows: North (Rs 14.30), East (Rs 12.38), South (Rs 12.80) and Centre/West (Rs 11.18).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 47 – Cost of production and average price received per kg by planters for cauliflower by zone
(Rupees)

	North	East	South	Centre/West	Island of Mauritius
Cost of production per kg: Cost A	3.54	3.27	2.64	3.16	3.25
Cost of production per kg: Cost B	4.33	4.13	3.10	3.93	4.05
Cost of production per kg: Cost C	5.70	5.35	4.41	5.70	5.56
Average price received per kg	14.30	12.38	12.80	11.18	12.72

9.2.1.9 Estimates of yield, hours of work, cost of production and average price received by planters for chillies-long

(a) Estimated yield

The average yield of chillies-long for the island worked out to 6,043 kg per hectare. At zone level, the yield was highest in the Eastern part of the island with a figure of 6,556 kg per hectare while the Southern region registered the lowest yield of 3,059 kg per hectare (Table 48).

Table 48 – Yield of chillies-long by zone

Region	Yield (Kg/ha)
North	4,647
East	6,556
South	3,059
Centre/West	5,938
Island of Mauritius	6,043

(b) Hours of work for chillies-long – per hectare (Table 49)

The total hours of work per hectare for the complete cycle of chillies-long worked out to 1,735 for the island. Analysis by field operation shows that “harvesting” was the most (40%) labour intensive activity among all the field operations.

Analysis by type of labour shows that chillies-long planters used mostly (44%) hired labour. They contributed about 39% of the labour requirements and their family members who were not paid 18%.

Analysis by sex reveals that male labour, representing almost 55% of the total labour requirements, was predominant for “planting” and “pesticides application”. However, for “harvesting” and “other operations” the contributions of female labour were 60% and 70% respectively.

Table 49 – Hours of work by field operation per hectare under chillies-long

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	42	2	44	74	27	101	13	8	21	129	37	166	9.5
Planting	33	2	35	12	49	61	14	16	30	59	67	126	7.2
Fertilisers application	56	1	57	5	29	34	18	8	26	79	38	117	6.8
Pesticides application	170	2	172	23	-	23	29	-	29	222	2	224	13.0
Irrigation	81	4	85	2	2	4	-	5	5	83	11	94	5.4
Harvesting	206	15	221	11	313	324	65	89	154	282	417	699	40.3
Other operations	52	7	59	21	188	209	21	20	41	94	215	309	17.8
ALL OPERATIONS	640	33	673	148	608	756	160	146	306	948	787	1,735	100.0
%	36.9	1.9	38.8	8.5	35.1	43.6	9.2	8.4	17.6	54.6	45.4	100.0	

(c) Estimated cost of production – per hectare (Table 50)

Cost A: The cost of production per hectare for chillies-long, on the basis of cost A, worked out to Rs 86,639 for the island. At zone level, the lowest cost (Rs 67,769) was observed in the South whereas the highest cost (Rs 93,872) was noted in the North.

Cost B: The cost of production per hectare for chillies-long, on the basis of cost B, worked out to Rs 106,312 for the island. At zone level, the lowest cost (Rs 89,127) was observed in the South whereas the highest cost (Rs 114,176) was noted in the North.

Cost C: The cost of production per hectare for chillies-long, on the basis of cost C, worked out to Rs 147,097 for the island. At zone level, the lowest cost (Rs 112,201) was observed in the South whereas the highest cost (Rs 154,241) was noted in the North.

**Table 50 – Cost of main components per hectare under chillies-long by zone
(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	7,723	7,876	4,972	1,900	7,608
Labour	19,382	19,910	10,449	26,238	19,210
Seeds/seedlings	6,460	10,657	9,691	7,500	8,564
Chemical fertilisers	9,884	7,893	7,412	5,063	8,806
Farm manure	1,820	5,270	2,018	-	3,402
Pesticides	33,849	28,073	21,907	25,050	30,511
Fuel and lubricant	6,096	1,214	7,868	4,825	3,936
Irrigation	6,278	308	1,391	-	3,236
Other	2,380	219	2,061	1,875	1,366
Cost A	93,872	81,420	67,769	72,451	86,639
Rent on land	13,383	13,873	12,718	13,913	13,577
Interest on working capital	1,543	1,338	1,126	1,188	1,424
Depreciation of fixed assets	5,378	3,583	7,514	6,413	4,672
Cost B	114,176	100,214	89,127	93,965	106,312
Family Labour	40,065	43,737	23,074	28,488	40,785
Cost C	154,241	143,951	112,201	122,453	147,097

Based on Cost C concept, the major cost components for chillies-long for the island were labour (paid + imputed) with 41%, followed by 21% for pesticides, 8% for manure and chemical fertilisers and 6% for seeds/seedlings.

(d) Estimated cost of production – per kg of chillies-long (Table 51)

Cost A: The cost of production per kg of chillies-long, on the basis of cost A, worked out to Rs 15.24 for the island. At zone level, the lowest cost (Rs 11.74) was observed in the East whereas the highest cost (Rs 19.82) was noted in the North.

Cost B: The cost of production per kg of chillies-long, on the basis of cost B, worked out to Rs 18.51 for the island. At zone level, the lowest cost (Rs 14.46) was observed in the East whereas the highest cost (Rs 23.71) was noted in the North.

Cost C: The cost of production per kg of chillies-long, on the basis of cost C, worked out to Rs 26.40 for the island. At zone level, the lowest cost (Rs 20.06) was observed in the East whereas the highest cost (Rs 34.70) was noted in the South.

Table 51 – Cost of main components per kg of chillies-long by zone

(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	1.54	1.14	2.52	0.32	1.33
Labour	3.42	3.32	2.60	4.42	3.36
Seeds/seedlings	1.40	1.70	1.71	1.26	1.57
Chemical fertilisers	2.26	1.10	2.29	0.85	1.61
Farm manure	0.29	0.65	0.62	-	0.49
Pesticides	7.66	3.72	4.59	4.22	5.37
Fuel and lubricant	1.30	0.03	2.14	0.81	0.62
Irrigation	1.82	0.03	0.89	-	0.79
Other	0.13	0.05	0.34	0.32	0.10
Cost A	19.82	11.74	17.70	12.20	15.24
Rent on land	2.92	2.07	3.26	2.34	2.46
Interest on working capital	0.33	0.19	0.29	0.20	0.25
Depreciation of fixed assets	0.64	0.46	1.33	1.08	0.56
Cost B	23.71	14.46	22.58	15.82	18.51
Family Labour	10.79	5.60	12.12	4.80	7.89
Cost C	34.50	20.06	34.70	20.62	26.40

(e) Estimated average price received by planters

The average price per kg of chillies-long received by planters during the survey reference period worked out to Rs 44.42 for the island. The prices for each zone were as follows: North (Rs 43.40), East (Rs 39.11), South (Rs 52.60) and Centre/West (Rs 45.35).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 52 – Cost of production and average price received per kg by planters for chillies-long by zone

(Rupees)

	North	East	South	Centre/ West	Island of Mauritius
Cost of production per kg: Cost A	19.82	11.74	17.70	12.20	15.24
Cost of production per kg: Cost B	23.71	14.46	22.58	15.82	18.51
Cost of production per kg: Cost C	34.50	20.06	34.70	20.62	26.40
Average price received per kg	43.40	39.11	52.60	45.35	44.42

9.2.1.10 Estimates of yield, hours of work, cost of production and average price received by planters for cucumber

(a) Estimated yield

The average yield of cucumber for the island worked out to 8,464 kg per hectare. At zone level, the yield was highest in the Northern part of the island with a figure of 9,664 kg per hectare while the Eastern region registered the lowest yield of 6,641 kg per hectare (Table 53).

Table 53 – Yield of cucumber by zone

Region	Yield (Kg/ha)
North	9,664
East	6,641
South	8,578
Centre/West	8,463
Island of Mauritius	8,464

(b) Hours of work for cucumber – per hectare (Table 54)

The total hours of work per hectare for the complete cycle of cucumber worked out to 679 for the island. Analysis by field operation shows that “harvesting” was the most (33%) labour intensive activity among all the field operations.

Analysis by type of labour shows that cucumber planters used mostly (52%) hired labour. They contributed about 38% of the labour requirements and their family members who were not paid 10%.

Analysis by sex reveals that male labour, representing almost 60% of the total labour requirements, was predominant in most operations.

Table 54 – Hours of work by field operation per hectare under cucumber

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	13	-	13	20	11	31	3	1	4	36	12	48	7.0
Planting	11	-	11	4	29	33	3	3	6	18	32	50	7.4
Fertilisers application	30	-	30	14	34	48	4	2	6	48	36	84	12.4
Pesticides application	59	-	59	30	-	30	8	-	8	97	-	97	14.3
Irrigation	48	-	48	1	15	16	9	1	10	58	16	74	10.9
Harvesting	77	-	77	24	95	119	17	11	28	118	106	224	33.0
Other operations	17	-	17	9	68	77	3	5	8	29	73	102	15.0
ALL OPERATIONS	255	-	255	102	252	354	47	23	70	404	275	679	100.0
%	37.6	-	37.6	15.0	37.1	52.1	6.9	3.4	10.3	59.5	40.5	100.0	

(c) Estimated cost of production – per hectare (Table 55)

Cost A: The cost of production per hectare for cucumber, on the basis of cost A, worked out to Rs 37,020 for the island. At zone level, the lowest cost (Rs 27,785) was observed in the Centre/West whereas the highest cost (Rs 45,275) was noted in the South.

Cost B: The cost of production per hectare for cucumber, on the basis of cost B, worked out to Rs 47,766 for the island. At zone level, the lowest cost (Rs 38,044) was observed in the Centre/West whereas the highest cost (Rs 56,301) was noted in the South.

Cost C: The cost of production per hectare for cucumber, on the basis of cost C, worked out to Rs 60,857 for the island. At zone level, the lowest cost (Rs 46,783) was observed in the Centre/West whereas the highest cost (Rs 71,618) was noted in the North.

Table 55 – Cost of main components per hectare under cucumber by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	4,384	2,381	3,738	1,333	2,988
Labour	9,699	8,547	10,065	5,417	8,519
Seeds/seedlings	1,902	2,538	2,563	1,806	2,223
Chemical fertilisers	6,770	4,715	7,608	3,857	5,763
Farm manure	1,244	3,333	1,632	3,360	2,391
Pesticides	10,514	9,475	11,511	7,565	9,821
Fuel and lubricant	3,835	1,786	4,621	4,046	3,511
Irrigation	1,787	90	2,551	312	1,181
Other	1,316	97	986	89	623
Cost A	41,451	32,962	45,275	27,785	37,020
Rent on land	7,853	6,064	5,111	5,285	6,098
Interest on working capital	682	538	762	460	613
Depreciation of fixed assets	3,562	3,063	5,153	4,514	4,035
Cost B	53,548	42,627	56,301	38,044	47,766
Family Labour	18,070	12,194	12,988	8,739	13,091
Cost C	71,618	54,821	69,289	46,783	60,857

Based on Cost C concept, the major cost components for cucumber for the island were labour (paid + imputed) with 36%, followed by 16% for pesticides, 13% for manure and chemical fertilisers and 4% for seeds.

(d) Estimated cost of production – per kg of cucumber (Table 56)

Cost A: The cost of production per kg of cucumber, on the basis of cost A, worked out to Rs 4.91 for the island. At zone level, the lowest cost (Rs 4.10) was observed in the Centre/West whereas the highest cost (Rs 5.61) was noted in the East.

Cost B: The cost of production per kg of cucumber, on the basis of cost B, worked out to Rs 6.28 for the island. At zone level, the lowest cost (Rs 5.58) was observed in the Centre/West whereas the highest cost (Rs 6.97) was noted in the East.

Cost C: The cost of production per kg of cucumber, on the basis of cost C, worked out to Rs 7.94 for the island. At zone level, the lowest cost (Rs 7.16) was observed in the Centre/West whereas the highest cost (Rs 8.82) was noted in the East.

Table 56 – Cost of main components per kg of cucumber by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	0.49	0.19	0.47	0.22	0.39
Labour	1.14	1.61	1.19	0.84	1.18
Seeds/seedlings	0.20	0.42	0.30	0.22	0.27
Chemical fertilisers	0.70	0.97	0.92	0.46	0.77
Farm manure	0.15	0.57	0.16	0.62	0.31
Fuel and lubricant	0.34	0.20	0.60	0.52	0.42
Pesticides	1.10	1.65	1.41	1.13	1.30
Irrigation	0.18	-	0.29	0.07	0.16
Other	0.17	-	0.15	0.02	0.11
Cost A	4.47	5.61	5.49	4.10	4.91
Rent on land	0.88	0.86	0.60	0.71	0.76
Interest on working capital	0.07	0.09	0.09	0.07	0.08
Depreciation of fixed assets	0.37	0.41	0.68	0.70	0.53
Cost B	5.79	6.97	6.86	5.58	6.28
Family Labour	1.70	1.85	1.56	1.58	1.66
Cost C	7.49	8.82	8.42	7.16	7.94

(e) Estimated average price received by planters

The average price per kg of cucumber received by planters during the survey reference period worked out to Rs 17.99 for the island. The prices for each zone were as follows: North (Rs 18.49), East (Rs 20.36), South (Rs 17.03) and Centre/West (Rs 16.01).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 57 – Cost of production and average price received per kg by planters for cucumber by zone
(Rupees)

	North	East	South	Centre/West	Island of Mauritius
Cost of production per kg: Cost A	4.47	5.61	5.49	4.10	4.91
Cost of production per kg: Cost B	5.79	6.97	6.86	5.58	6.28
Cost of production per kg: Cost C	7.49	8.82	8.42	7.16	7.94
Average price received per kg	18.49	20.36	17.03	16.01	17.99

9.2.1.11 Estimates of yield, hours of work, cost of production and average price received by planters for onion

(a) Estimated yield

The average yield of onion for the island worked out to 17,675 kg per hectare. At zone level, the yield was highest in the Northern part of the island with a figure of 25,954 kg per hectare while the Southern region registered the lowest yield of 7,432 kg per hectare (Table 58).

Table 58 – Yield of onion by zone

Region	Yield (Kg/ha)
North	25,954
East	17,452
South	7,432
Centre/West	18,559
Island of Mauritius	17,675

(b) Hours of work for onion – per hectare (Table 59)

The total hours of work per hectare for the complete cycle of onion worked out to 1,202 for the island. Analysis by field operation shows that “harvesting” was the most (22%) labour intensive activity among all the field operations.

Analysis by type of labour shows that onion planters used mostly (55%) hired labour. They contributed about 38% of the labour requirements and their family members who were not paid 7%.

Analysis by sex reveals that male labour, representing almost 54% of the total labour requirements, was predominant for “land preparation”, “pesticides application” and “irrigation”. However, for “harvesting” and “other operations” the contributions of female labour were 61% and 81% respectively.

Table 59 – Hours of work by field operation per hectare under onion

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	41	4	45	62	19	81	10	4	14	113	27	140	11.7
Planting	30	5	35	11	126	137	5	8	13	46	139	185	15.4
Fertilisers application	34	6	40	41	74	115	2	5	7	77	85	162	13.4
Pesticides application	112	5	117	24	-	24	6	-	6	142	5	147	12.3
Irrigation	124	6	130	1	10	11	10	3	13	135	19	154	12.8
Harvesting	63	5	68	30	142	172	11	16	27	104	163	267	22.2
Other operations	22	3	25	4	110	114	2	6	8	28	119	147	12.2
ALL OPERATIONS	426	34	460	173	481	654	46	42	88	645	557	1,202	100.0
%	35.4	2.9	38.3	14.4	40	54.4	3.8	3.5	7.3	53.7	46.3	100.0	

(c) Estimated cost of production – per hectare (Table 60)

Cost A: The cost of production per hectare for onion, on the basis of cost A, worked out to Rs 79,834 for the island. At zone level, the lowest cost (Rs 55,716) was observed in the South whereas the highest cost (Rs 84,922) was noted in the North.

Cost B: The cost of production per hectare for onion, on the basis of cost B, worked out to Rs 95,615 for the island. At zone level, the lowest cost (Rs 66,531) was observed in the South whereas the highest cost (Rs 101,909) was noted in the North.

Cost C: The cost of production per hectare for onion, on the basis of cost C, worked out to Rs 111,494 for the island. At zone level, the lowest cost (Rs 98,068) was observed in the South whereas the highest cost (Rs 129,306) was noted in the North.

Table 60 – Cost of main components per hectare under onion by zone**(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	11,441	7,673	6,180	3,212	4,642
Labour	16,781	9,452	10,086	18,907	16,557
Seeds/seedlings	19,544	20,628	19,265	24,521	23,069
Chemical fertilisers	11,237	8,876	7,567	6,192	7,005
Farm manure	2,982	9,063	1,770	7,265	6,462
Pesticides	18,151	20,534	9,364	16,069	15,825
Fuel and lubricant	3,479	3,155	624	6,782	5,352
Irrigation	395	1,738	42	-	225
Other	912	807	818	636	697
Cost A	84,922	81,926	55,716	83,584	79,834
Rent on land	8,022	2,529	7,942	9,621	8,505
Interest on working capital	1,404	1,347	916	1,367	1,308
Depreciation of fixed assets	7,561	2,876	1,957	7,074	5,968
Cost B	101,909	88,678	66,531	101,646	95,615
Family Labour	27,397	27,377	31,537	9,956	15,879
Cost C	129,306	116,055	98,068	111,602	111,494

Based on Cost C concept, the major cost components for onion for the island were labour (paid + imputed) with 29%, followed by 21% for seeds, 14% for pesticides and 12% for manure and chemical fertilisers.

(d) Estimated cost of production – per kg of onion (Table 61)

Cost A: The cost of production per kg of onion, on the basis of cost A, worked out to Rs 4.61 for the island. At zone level, the lowest cost (Rs 3.26) was observed in the North whereas the highest cost (Rs 7.70) was noted in the South.

Cost B: The cost of production per kg of onion, on the basis of cost B, worked out to Rs 5.61 for the island, with the lowest cost (Rs 3.92) in the North and the highest cost (Rs 9.17) in the South.

Cost C: The cost of production per kg of onion, on the basis of cost C, worked out to Rs 6.93 for the island. At zone level, the lowest cost (Rs 4.96) was observed in the North whereas the highest cost (Rs 13.75) was noted in the South.

Table 61 – Cost of main components per kg of onion by zone

(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	0.43	0.45	0.87	0.19	0.35
Labour	0.66	0.55	1.44	1.31	1.05
Seeds/seedlings	0.75	1.18	2.58	0.91	1.10
Chemical fertilisers	0.43	0.51	0.99	0.27	0.41
Farm manure	0.10	0.52	0.27	0.39	0.36
Pesticides	0.70	1.17	1.35	0.91	0.97
Fuel and lubricant	0.14	0.18	0.07	0.42	0.29
Irrigation	0.01	0.10	0.01	-	0.02
Other	0.04	0.04	0.12	0.06	0.06
Cost A	3.26	4.70	7.70	4.46	4.61
Rent on land	0.31	0.14	1.06	0.56	0.48
Interest on working capital	0.05	0.08	0.13	0.07	0.08
Depreciation of fixed assets	0.30	0.15	0.28	0.62	0.44
Cost B	3.92	5.07	9.17	5.71	5.61
Family Labour	1.04	1.54	4.58	0.74	1.32
Cost C	4.96	6.61	13.75	6.45	6.93

(e) Estimated average price received by planters

The average price per kg of onion received by planters during the survey reference period worked out to Rs 10.65 for the island. The prices for each zone were as follows: North (Rs 7.70), East (Rs 12.63), South (Rs 15.84) and Centre/West (Rs 7.28).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 62 – Cost of production and average price received per kg by planters for onion by zone
(Rupees)

	North	East	South	Centre/ West	Island of Mauritius
Cost of production per kg: Cost A	3.26	4.70	7.70	4.46	4.61
Cost of production per kg: Cost B	3.92	5.07	9.17	5.71	5.61
Cost of production per kg: Cost C	4.96	6.61	13.75	6.45	6.93
Average price received per kg	7.70	12.63	15.84	7.28	10.65

9.2.1.12 Estimates of yield, hours of work, cost of production and average price received by planters for potato

(a) Estimated yield

The average yield of potato for the island worked out to 21,777 kg per hectare (ha). At zone level, the yield was highest in the Southern part of the island with a figure of 22,373 kg per hectare while the Eastern region registered the lowest yield of 19,406 kg per hectare (Table 63).

Table 63 – Yield of potato by zone

Region	Yield (Kg/ha)
North	21,501
East	19,406
South	22,373
Centre/West	22,237
Island of Mauritius	21,777

(b) Hours of work for potato – per hectare (Table 64)

The total hours of work per hectare for the complete cycle of potato worked out to 821 for the island. Analysis by field operation shows that “harvesting” was the most (47%) labour intensive activity among all the field operations.

Analysis by type of labour shows that potato planters used mostly (93%) hired labour. They contributed about 6% of the labour requirements and their family members who were not paid only 1%.

Analysis by sex reveals that female labour, representing almost 66% of the total labour requirements, was predominant in most operations, except for “pesticides application” where male labour was extensively (93%) used.

Table 64 – Hours of work by field operation per hectare under potato

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	1	-	1	6	16	22	...	-	...	7	16	23	2.7
Planting	2	-	2	6	64	70	1	-	1	9	64	73	9.0
Fertilisers application	6	...	6	10	43	53	...	1	1	16	44	60	7.3
Pesticides application	18	-	18	81	7	88	1	-	1	100	7	107	13.0
Irrigation	1	-	1	12	12	24	-	-	-	13	12	25	3.0
Harvesting	14	...	14	65	303	368	3	3	6	82	306	388	47.3
Other operations	6	...	6	29	109	138	1	-	1	36	109	145	17.7
ALL OPERATIONS	48	...	48	209	554	763	6	4	10	263	558	821	100.0
%	5.9	...	5.9	25.3	67.6	92.9	0.7	0.4	1.2	32.0	65.7	100.0	

(b) Estimated cost of production – per hectare (Table 65)

Cost A: The cost of production per hectare for potato, on the basis of cost A, worked out to Rs 154,309 for the island. The lowest cost (Rs 133,463) was observed in the Centre/West and the highest cost (Rs 165,098) was noted in the South.

Cost B: The cost of production per hectare for potato, on the basis of cost B, worked out to Rs 166,825 for the island. At zone level, the lowest cost (Rs 147,813) was observed in the Centre/West whereas the highest cost (Rs 176,287) was noted in the South.

Cost C: The cost of production per hectare for potato, on the basis of cost C, worked out to Rs 169,371 for the island. At zone level, the lowest cost (Rs 153,123) was observed in the Centre/West whereas the highest cost (Rs 179,163) was noted in the East.

Table 65 – Cost of main components per hectare under potato by zone**(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	2,419	2,104	6,033	2,768	4,271
Labour	20,246	25,204	27,140	19,187	24,237
Seeds/seedlings	88,928	82,979	83,023	79,712	83,041
Chemical fertilisers	12,411	16,245	16,146	8,988	14,122
Farm manure	94	316	-	783	231
Pesticides	14,410	25,020	23,211	17,506	21,120
Fuel and lubricant	2,677	3,075	3,374	4,420	3,470
Irrigation	1,559	-	220	63	322
Other	1,288	2,144	5,951	36	3,495
Cost A	144,032	157,087	165,098	133,463	154,309
Rent on land	6,896	9,510	7,107	7,802	7,593
Interest on working capital	2,423	2,582	2,670	2,175	2,517
Depreciation of Fixed Assets	1,469	3,673	1,412	4,373	2,406
Cost B	154,820	172,852	176,287	147,813	166,825
Family Labour	2,894	6,311	139	5,310	2,546
Cost C	157,714	179,163	176,426	153,123	169,371

Based on Cost C concept, the major cost components for potato for the island were 49% for seeds, followed by labour (paid + imputed) with 16%, 12% for pesticides and 8% for manure and chemical fertilisers.

(c) Estimated cost of production – per kg of potato (Table 66)

Cost A: The cost of production per kg of potato, on the basis of cost A, worked out to Rs 7.06 for the island. At zone level, the lowest cost (Rs 5.99) was observed in the Centre/West whereas the highest cost (Rs 8.14) was noted in the East.

Cost B: The cost of production per kg of potato, on the basis of cost B, worked out to Rs 7.64 for the island. At zone level, the lowest cost (Rs 6.61) was observed in the Centre/West whereas the highest cost (Rs 8.95) was noted in the East.

Cost C: The cost of production per kg of potato, on the basis of cost C, worked out to Rs 7.76 for the island. At zone level, the lowest cost (Rs 6.83) was observed in the Centre/West whereas the highest cost (Rs 9.30) was noted in the East.

Table 66 – Cost of main components per kg of potato by zone

(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	0.10	0.12	0.25	0.11	0.18
Labour	0.98	1.34	1.29	0.88	1.16
Seeds/seedlings	4.19	4.25	3.71	3.58	3.81
Chemical fertilisers	0.56	0.84	0.71	0.40	0.63
Farm manure	0.01	0.02	-	0.04	0.01
Pesticides	0.61	1.30	0.99	0.79	0.93
Fuel and lubricant	0.12	0.16	0.16	0.19	0.16
Irrigation	0.07	-	0.01	-	0.02
Other	0.02	0.11	0.28	-	0.16
Cost A	6.66	8.14	7.40	5.99	7.06
Rent on land	0.32	0.50	0.33	0.33	0.35
Interest on working capital	0.11	0.13	0.12	0.10	0.12
Depreciation of fixed assets	0.05	0.18	0.07	0.19	0.11
Cost B	7.14	8.95	7.92	6.61	7.64
Family Labour	0.11	0.35	-	0.22	0.12
Cost C	7.25	9.30	7.92	6.83	7.76

(d) Estimated average price received by planters

The average price per kg of potato received by planters during the survey reference period worked out to Rs 12.49 for the island. The prices for each zone were as follows: North (Rs 12.79), East (Rs 12.96), South (Rs 12.27) and Centre/West (Rs 11.95).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 67 – Cost of production and average price received per kg by planters for potato by zone

(Rupees)

	North	East	South	Centre/West	Island of Mauritius
Cost of production per kg: Cost A	6.66	8.14	7.40	5.99	7.06
Cost of production per kg: Cost B	7.14	8.95	7.92	6.61	7.64
Cost of production per kg: Cost C	7.25	9.30	7.92	6.83	7.76
Average price received per kg	12.79	12.96	12.27	11.95	12.49

9.2.1.13 Estimates of yield, hours of work, cost of production and average price received by planters for pumpkin

(a) Estimated yield

The average yield of pumpkin for the island worked out to 17,675 kg per hectare. At zone level, the yield was highest in the Central or Western part of the island with a figure of 23,351 kg per hectare while the Southern region registered the lowest yield of 12,475 kg per hectare (Table 68).

Table 68 – Yield of pumpkin by zone

Region	Yield (Kg/ha)
North	17,750
East	17,771
South	12,475
Centre/West	23,351
Island of Mauritius	17,675

(b) Hours of work for pumpkin – per hectare (Table 69)

The total hours of work per hectare for the complete cycle of pumpkin worked out to 391 for the island. Analysis by field operation shows that “harvesting” was the most (31%) labour intensive activity among all the field operations.

Analysis by type of labour shows that pumpkin planters used mostly (53%) hired labour. They contributed about 42% of the labour requirements and their family members who were not paid 5%.

Analysis by sex reveals that male labour, representing 70% of the total labour requirements, was predominant in most operations, except for “other operations” where female labour was almost 67%.

Table 69 – Hours of work by field operation per hectare under pumpkin

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	6	1	7	18	3	21	2	-	2	26	4	30	7.7
Planting	7	...	7	4	15	19	1	2	3	12	17	29	7.4
Fertilisers application	14	1	15	10	23	33	1	1	2	25	25	50	12.8
Pesticides application	48	1	49	20	-	20	4	...	4	72	1	73	18.7
Irrigation	16	3	19	3	6	9	1	-	1	20	9	29	7.4
Harvesting	53	2	55	44	20	64	2	2	4	99	24	123	31.4
Other operations	11	1	12	8	34	42	-	3	3	19	38	57	14.6
ALL OPERATIONS	155	9	164	107	101	208	11	8	19	273	118	391	100.0
%	39.6	2.3	41.9	27.4	25.8	53.2	2.8	2.1	4.9	69.8	30.2	100.0	

(c) Estimated cost of production – per hectare (Table 70)

Cost A: The cost of production per hectare for pumpkin, on the basis of cost A, worked out to Rs 32,650 for the island. At zone level, the lowest cost (Rs 27,828) was observed in the Centre/West whereas the highest cost (Rs 35,704) was noted in the East.

Cost B: The cost of production per hectare for pumpkin, on the basis of cost B, worked out to Rs 44,805 for the island. At zone level, the lowest cost (Rs 36,206) was observed in the Centre/West whereas the highest cost (Rs 48,567) was noted in the East.

Cost C: The cost of production per hectare for pumpkin, on the basis of cost C, worked out to Rs 52,547 for the island. At zone level, the lowest cost (Rs 44,516) was observed in the Centre/West whereas the highest cost (Rs 57,224) was noted in the East.

**Table 70 – Cost of main components per hectare under pumpkin by zone
(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	3,100	2,537	2,197	1,121	2,235
Labour	7,738	7,935	7,088	4,420	7,046
Seeds/seedlings	1,966	2,536	1,802	2,370	2,279
Chemical fertilisers	3,929	4,853	5,422	4,048	4,758
Farm manure	214	4,436	1,073	4,037	3,190
Pesticides	6,202	9,233	7,379	8,796	8,444
Fuel and lubricant	3,280	2,960	3,477	2,898	3,100
Irrigation	829	169	929	122	399
Other	2,787	1,045	1,875	16	1,199
Cost A	30,045	35,704	31,242	27,828	32,650
Rent on land	7,212	8,431	9,911	6,175	8,253
Interest on working capital	487	582	514	457	534
Depreciation of Fixed Assets	2,426	3,850	4,016	1,746	3,368
Cost B	40,170	48,567	45,683	36,206	44,805
Family Labour	11,735	8,657	4,027	8,310	7,742
Cost C	51,905	57,224	49,710	44,516	52,547

Based on Cost C concept, the major cost components for pumpkin for the island were labour (paid + imputed) with 28%, followed by 16% for pesticides, 15% for manure and chemical fertilisers and 4% for seeds.

(d) Estimated cost of production – per kg of pumpkin (Table 71)

Cost A: The cost of production per kg of pumpkin, on the basis of cost A, worked out to Rs 1.79 for the island. At zone level, the lowest cost (Rs 1.18) was observed in the Centre/West whereas the highest cost (Rs 2.48) was noted in the South.

Cost B: The cost of production per kg of pumpkin, on the basis of cost B, worked out to Rs 2.43 for the island. The lowest cost (Rs 1.51) was registered in the Centre/West and the highest cost (Rs 3.47) was noted in the South.

Cost C: The cost of production per kg of pumpkin, on the basis of cost C, worked out to Rs 2.87 for the island. At zone level, the lowest cost (Rs 1.86) was observed in the Centre/West whereas the highest cost (Rs 3.84) was noted in the South.

Table 71 – Cost of main components per kg of pumpkin by zone
(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	0.15	0.08	0.18	0.05	0.10
Labour	0.55	0.36	0.56	0.17	0.35
Seeds/seedlings	0.13	0.14	0.14	0.10	0.13
Chemical fertilisers	0.25	0.33	0.43	0.17	0.29
Farm manure	-	0.26	0.09	0.16	0.17
Pesticides	0.34	0.51	0.53	0.40	0.46
Fuel and lubricant	0.23	0.15	0.31	0.13	0.18
Irrigation	0.05	0.02	0.09	-	0.03
Other	0.21	0.08	0.15	-	0.08
Cost A	1.91	1.93	2.48	1.18	1.79
Rent on land	0.46	0.49	0.60	0.28	0.44
Interest on working capital	0.03	0.03	0.04	0.02	0.03
Depreciation of fixed assets	0.14	0.20	0.35	0.03	0.17
Cost B	2.54	2.65	3.47	1.51	2.43
Family Labour	0.78	0.46	0.37	0.35	0.44
Cost C	3.32	3.11	3.84	1.86	2.87

(e) Estimated average price received by planters

The average price per kg of pumpkin received by planters during the survey reference period worked out to Rs 7.65 for the island. The prices for each zone were as follows: North (Rs 8.75), East (Rs 7.80), South (Rs 8.62) and Centre/West (Rs 5.24).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 72 – Cost of production and average price received per kg by planters for pumpkin by zone
(Rupees)

	North	East	South	Centre/West	Island of Mauritius
Cost of production per kg: Cost A	1.91	1.93	2.48	1.18	1.79
Cost of production per kg: Cost B	2.54	2.65	3.47	1.51	2.43
Cost of production per kg: Cost C	3.32	3.11	3.84	1.86	2.87
Average price received per kg	8.75	7.80	8.62	5.24	7.65

9.2.1.14 Estimates of yield, hours of work, cost of production and average price received by planters for tomato

(a) Estimated yield

The average yield of tomato for the island worked out to 18,296 kg per hectare. At zone level, the yield was highest in the Central or Western part of the island with a figure of 24,571 kg per hectare while the Eastern region registered the lowest yield of 15,959 kg per hectare (Table 73).

Table 73 – Yield of tomato by zone

Region	Yield (Kg/ha)
North	21,953
East	15,959
South	16,603
Centre/West	24,571
Island of Mauritius	18,296

(b) Hours of work for tomato – per hectare (Table 74)

The total hours of work per hectare for the complete cycle of tomato worked out to 1,431 for the island. Analysis by field operation shows that “harvesting” was the most (53%) labour intensive activity among all the field operations.

Analysis by type of labour shows that tomato planters used mostly (70%) hired labour. They contributed about 25% of the labour requirements and their family members who were not paid 5%.

Analysis by sex reveals that female labour, representing almost 61% of the total labour requirements, was predominant in most operations, except for “pesticides application” where only males were engaged.

Table 74 – Hours of work by field operation per hectare under tomato

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	17	...	17	39	16	55	3	1	4	59	17	76	5.3
Planting	11	...	11	7	83	90	3	2	5	21	85	106	7.4
Fertilisers application	28	...	28	18	38	56	2	4	6	48	42	90	6.3
Pesticides application	95	-	95	58	-	58	5	-	5	158	-	158	11.0
Irrigation	42	-	42	12	25	37	2	3	5	56	28	84	5.9
Harvesting	147	3	150	16	556	572	20	16	36	183	575	758	53.0
Other operations	19	...	19	11	120	131	5	4	9	35	124	159	11.1
ALL OPERATIONS	359	3	362	161	838	999	40	30	70	560	871	1,431	100.0
%	25.1	0.2	25.4	11.3	58.5	69.8	2.8	2.1	4.9	39.1	60.9	100.0	

(c) Estimated cost of production – per hectare (Table 75)

Cost A: The cost of production per hectare for tomato, on the basis of cost A, worked out to Rs 72,820 for the island. At zone level, the lowest cost (Rs 63,934) was observed in the East whereas the highest cost (Rs 90,587) was noted in the North.

Cost B: The cost of production per hectare for tomato, on the basis of cost B, worked out to Rs 85,171 for the island. At zone level, the lowest cost (Rs 74,451) was observed in the East whereas the highest cost (Rs 108,498) was noted in the North.

Cost C: The cost of production per hectare for tomato, on the basis of cost C, worked out to Rs 104,178 for the island. At zone level, the lowest cost (Rs 92,678) was observed in the South whereas the highest cost (Rs 138,444) was noted in the North.

Table 75 – Cost of main components per hectare under tomato by zone

(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	10,595	4,755	4,553	3,684	5,780
Labour	23,197	19,620	25,256	24,117	23,723
Seeds/seedlings	7,686	7,485	6,406	6,801	6,893
Chemical fertilisers	10,733	10,150	10,357	6,777	10,175
Farm manure	1,804	3,402	1,504	4,571	2,105
Pesticides	21,770	15,356	15,547	19,591	17,042
Fuel and lubricant	6,524	2,655	2,874	6,755	3,824
Irrigation	5,803	215	867	1,075	1,775
Other	2,475	296	1,667	590	1,503
Cost A	90,587	63,934	69,031	73,961	72,820
Rent on land	11,462	6,543	6,268	8,045	7,497
Interest on working capital	1,488	1,051	1,129	1,218	1,194
Depreciation of Fixed Assets	4,961	2,923	3,099	6,508	3,660
Cost B	108,498	74,451	79,527	89,732	85,171
Family Labour	29,946	22,130	13,171	25,027	19,007
Cost C	138,444	96,581	92,698	114,759	104,178

Based on Cost C concept, the major cost components for tomato for the island were labour (paid + imputed) with 41%, followed by 16% for pesticides, 12% for manure and chemical fertilisers and 7% for seeds.

(d) Estimated cost of production – per kg of tomato (Table 76)

Cost A: The cost of production per kg of tomato, on the basis of cost A, worked out to Rs 4.17 for the island. At zone level, the lowest cost (Rs 3.06) was observed in the Centre/West whereas the highest cost (Rs 4.34) was noted in the South.

Cost B: The cost of production per kg of tomato, on the basis of cost B, worked out to Rs 4.89 for the island. At zone level, the lowest cost (Rs 3.71) was observed in the Centre/West whereas the highest cost (Rs 5.04) was noted in the North.

Cost C: The cost of production per kg of tomato, on the basis of cost C, worked out to Rs 5.90 for the island. At zone level, the lowest cost (Rs 4.71) was observed in the Centre/West whereas the highest cost (Rs 6.55) was noted in the East.

Table 76 – Cost of main components per kg of tomato by zone

(Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/West	
Land preparation	0.49	0.34	0.28	0.14	0.33
Labour	1.09	1.27	1.65	1.01	1.39
Seeds/seedlings	0.35	0.43	0.41	0.28	0.39
Chemical fertilisers	0.50	0.68	0.66	0.28	0.58
Farm manure	0.08	0.23	0.09	0.19	0.11
Pesticides	0.99	1.09	0.95	0.81	0.97
Fuel and lubricant	0.31	0.16	0.17	0.28	0.22
Irrigation	0.26	0.02	0.04	0.04	0.10
Other	0.12	0.02	0.09	0.03	0.08
Cost A	4.19	4.24	4.34	3.06	4.17
Rent on land	0.54	0.49	0.39	0.33	0.44
Interest on working capital	0.07	0.07	0.07	0.05	0.07
Depreciation of fixed assets	0.24	0.18	0.18	0.27	0.21
Cost B	5.04	4.98	4.98	3.71	4.89
Family Labour	1.30	1.57	0.72	1.00	1.01
Cost C	6.34	6.55	5.70	4.71	5.90

(e) Estimated average price received by planters

The average price per kg of tomato received by planters during the survey reference period worked out to Rs 13.02 for the island. The prices for each zone were as follows: North (Rs 15.03), East (Rs 13.80), South (Rs 10.89) and Centre/West (Rs 11.43).

It is to be noted that the average price for the island was greater than the costs of production across zones, irrespective of the cost concepts used.

Table 77 – Cost of production and average price received per kg by planters for tomato by zone

(Rupees)

	North	East	South	Centre/West	Island of Mauritius
Cost of production per kg: Cost A	4.19	4.24	4.34	3.06	4.17
Cost of production per kg: Cost B	5.04	4.98	4.98	3.71	4.89
Cost of production per kg: Cost C	6.34	6.55	5.70	4.71	5.90
Average price received per kg	15.03	13.80	10.89	11.43	13.02

9.2.2 TOBACCO

9.2.2.1 Profile of holdings

(a) Ownership of land

The majority of the planters (71%) were growing tobacco on leased land and the remaining 29% on owned land (Table 78). The average rent paid for one hectare of leased land was Rs 9,420 for the island.

Table 78 – Percentage distribution of selected fields by ownership of land

Ownership of land	%
Leased	70.6
Owned	29.4
Free(parents)	-
Free(other)	-
Total	100.0

(b) Mechanisation of field operations

The majority of the tobacco growers (88%) opted for mechanised land preparation.

(c) Irrigation System

Out of 17 tobacco planters, 35% were using watering cans, nearly 24% were using drip irrigation and nearly 18% were using overhead irrigation. Nearly 24% of selected fields were not irrigated (Table 79).

Table 79 – Percentage distribution of selected fields by Irrigation System used

Irrigation System	%
Overhead	17.7
Surface	-
Drip	23.5
Watering can	35.3
None (rainfed)	23.5
Total	100.0

(d) Source of water supply

From Table 80, it is observed that some 54% of planters were using water from rivers and canals for irrigation and some 23% were using water from the Central Water Authority. Some 15% of the planters availed themselves of water from the Irrigation Authority, while 8% from wells.

Table 80 – Percentage distribution of irrigated fields by source of water supply

Source of water supply	%
CWA	23.1
Borehole	-
Well	7.7
River	46.2
Canal	7.7
Spring	-
Irrigation Authority	15.3
Total	100.0

9.2.2.2 Profile of planters***(a) Employment status***

The tobacco planters were all males and the majority (94%) of them were employers engaging paid employees to work on their plantations. The remaining 6% were own account workers cultivating their land either alone or with the assistance of members of their households.

9.2.2.3 Estimates of yield, hours of work, cost of production and average price received by planters for tobacco-Amarello

Tobacco leaves cured in the open air is known as tobacco-Amarello.

(a) Estimated yield

The average yield of tobacco-Amarello for the island worked out to 962 kg per hectare.

(b) Hours of work for tobacco-Amarello – per hectare (Table 81)

The total hours of work per hectare for the complete cycle of tobacco-Amarello worked out to 1,245 for the island.

Analysis by type of labour shows that tobacco-Amarello planters contributed mostly (35%) in terms of labour requirements. Their family members who were not paid contributed 33% while hired labour 32%.

Analysis by sex reveals that male labour, representing almost 54% of the total labour requirements, was predominant in most operations, except for “planting” and “harvesting” where female labour represented 57% and 72% respectively.

Table 81 – Hours of work by field operation per hectare under tobacco-Amarello

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	31	-	31	37	23	60	-	-	-	68	23	91	7.3
Planting	47	-	47	-	47	47	9	28	37	56	75	131	10.5
Fertilisers application	17	-	17	-	12	12	2	5	7	19	17	36	2.9
Pesticides application	59	-	59	6	-	6	9	-	9	74	-	74	6.0
Irrigation	38	-	38	-	12	12	28	38	66	66	50	116	9.3
Harvesting	53	-	53	-	116	116	21	74	95	74	190	264	21.2
Other operations	191	-	191	47	93	140	23	179	202	261	272	533	42.8
ALL OPERATIONS	436	-	436	90	303	393	92	324	416	618	627	1,245	100.0
<i>%</i>	<i>35.0</i>	<i>-</i>	<i>35.0</i>	<i>7.3</i>	<i>24.3</i>	<i>31.6</i>	<i>7.4</i>	<i>26.0</i>	<i>33.4</i>	<i>53.5</i>	<i>46.5</i>	<i>100.0</i>	

(c) Estimated cost of production – per hectare (Table 82)

The cost of production per hectare for tobacco-Amarello worked out to Rs 36,335 for the island on the basis of cost A, Rs 50,698 on the basis of cost B and Rs 76,438 on the basis of cost C.

Table 82 – Cost of main components per hectare and per kg of tobacco-Amarello (Rupees)

Component	Cost per ha	Cost per kg
Land preparation	5,188	4.75
Labour	11,558	10.59
Seeds/seedlings	3,665	3.36
Chemical fertilizers	5,102	4.67
Farm Manure	1,810	1.66
Pesticides	4,121	3.78
Fuel & Lubricants	1,880	1.72
Irrigation	2,294	2.10
Other	717	0.65
Cost A	36,335	33.28
Rent on land	11,716	10.74
Interest on working capital	606	0.56
Depreciation on fixed assets	2,041	1.87
Cost B	50,698	46.45
Family Labour	25,740	23.60
Cost C	76,438	70.05

Based on Cost C concept, the major cost components for tobacco-Amarello for the island were labour (paid + imputed) with 49%, followed by 9% for manure and chemical fertilisers, 5% for seeds and 5% for pesticides.

(d) Estimated cost of production – per kg of tobacco-Amarello (Table 82)

The cost to produce of one kg of tobacco-Amarello was: Rs 33.28 (cost A), Rs 46.45 (cost B) and Rs 70.05 (cost C).

(e) Estimated average price received per kg by planters (Table 83)

The average price per kg of tobacco-Amarello received by planters during the survey reference period worked out to Rs 54.70 for the island.

This average price was higher than the cost based on cost A and cost B concepts but lower than the cost C of production.

Table 83 – Cost of production and average price received per kg by planters for tobacco-Amarello

	Cost (Rupees)
Cost of production per kg: Cost A	33.28
Cost of production per kg: Cost B	46.45
Cost of production per kg: Cost C	70.05
Average price received per kg	54.70

9.2.2.4 Estimates of yield, hours of work, cost of production and average price received by planters for tobacco-Virginia

Tobacco leaves cured in barns using diesel as fuel is known as Tobacco-Virginia. It is to be noted that this type of tobacco is of better quality compared to Amarello type.

(a) Estimated yield

The average yield of tobacco-Virginia for the island worked out to 1,389 kg per hectare.

(b) Hours of work for tobacco-Virginia – per hectare (Table 84)

The total hours of work per hectare for the complete cycle of tobacco-Virginia worked out to 1,434 for the island.

Analysis by type of labour shows that tobacco-Virginia planters used mostly (87%) hired labour. Their family members who were not paid contributed 7% while planters 6%.

Analysis by sex reveals that female labour, representing almost 66% of the total labour requirements, was predominant in most operations, except for “land preparation” and “pesticides application” where male labour represented 53% and 100% respectively.

Table 84 – Hours of work by field operation per hectare under tobacco-Virginia

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	11	-	11	56	62	118	4	2	6	71	64	135	9.4
Planting	9	-	9	20	153	173	2	2	4	31	155	186	13.0
Fertilisers application	4	-	4	4	48	52	1	2	3	9	50	59	4.1
Pesticides application	10	-	10	58	-	58	5	-	5	73	-	73	5.1
Irrigation	8	-	8	13	78	91	3	-	3	24	78	102	7.1
Harvesting	18	-	18	68	211	279	8	3	11	94	214	308	21.5
Other operations	29	-	29	136	333	469	24	49	73	189	382	571	39.8
ALL OPERATIONS	89	-	89	355	885	1,240	47	58	105	491	943	1,434	100.0
<i>%</i>	6.2	-	6.2	24.8	61.7	86.5	3.3	4.0	7.3	34.2	65.8	100.0	

(c) Estimated cost of production – per hectare (Table 85)

The cost of production per hectare for tobacco-Virginia worked out to Rs 113,948 for the island on the basis of cost A, Rs 128,233 on the basis of cost B and Rs 136,157 on the basis of cost C.

Table 85 – Cost of main components per hectare and per kg of tobacco-Virginia**(Rupees)**

Component	Cost per ha	Cost per kg
Land preparation	9,825	5.72
Labour	29,151	16.98
Seeds/Seedlings	7,944	4.63
Chemical fertilizers	10,350	6.03
Farm Manure	1,757	1.02
Pesticides	6,609	3.85
Fuel & Lubricants	41,401	24.11
Irrigation	1,534	0.89
Other	5,377	3.14
Cost A	113,948	66.37
Rent on land	9,270	5.40
Interest on working capital	1,947	1.13
Depreciation on fixed assets	3,068	1.79
Cost B	128,233	74.69
Family Labour	7,924	4.62
Cost C	136,157	79.31

Based on Cost C concept, the major cost components for tobacco-Virginia for the island were fuel and lubricants with 30%, followed by 27% labour (paid + imputed), 9% for manure and chemical fertilisers, 6% for seeds and 5% for pesticides.

(d) Estimated cost of production – per kg of tobacco-Virginia (Table 85)

The cost of production per kg of tobacco-Virginia, on the basis of cost A, worked out to Rs 66.37 for the island. The respective figures for cost B and cost C concepts were Rs 74.69 and Rs 79.31.

(e) Estimated average price received per kg by planters (Table 86)

The average price per kg of tobacco-Virginia received by planters during the survey reference period worked out to Rs 113.82.

It is to be noted that the average price was higher than the costs of production irrespective of the cost concepts used.

Table 86 – Cost of production and average price received per kg by planters for tobacco-Virginia

	Cost (Rupees)
Cost of production per kg: Cost A	66.37
Cost of production per kg: Cost B	74.69
Cost of production per kg: Cost C	79.31
Average price received per kg	113.82

9.2.3 SUGARCANE

9.2.3.1 Profile of holdings

(a) Ownership of land

The majority of the planters (65%) were growing sugarcane on owned land and 33% on leased land (Table 87). The average annual rent paid for one hectare of leased land was Rs 8,920 for the island.

Table 87 – Percentage distribution of selected fields by ownership of land

Ownership of land	%
Leased	32.5
Owned	65.0
Free(parents)	2.5
Free(other)	-
Total	100.0

(b) Mechanisation of field operations

Out of 40 sugarcane planters, nearly 13% used mechanised loading.

(c) Irrigation System

Out of 40 sugarcane planters, 10% were using overhead irrigation, nearly 8% were using surface irrigation and 5% were using drip irrigation. Nearly 78% of selected fields were not irrigated (Table 88).

Table 88 – Percentage distribution of selected fields by Irrigation System used

Irrigation System	%
Overhead	10.0
Surface	7.5
Drip	5.0
None (rainfed)	77.5
Total	100.0

(d) Source of water supply

From Table 89, it is observed that some 56% of planters were using water from the Irrigation Authority. Some 33% of the planters availed themselves of water from canals, while 11% from boreholes.

Table 89 – Percentage distribution of irrigated fields by source of water supply

Source of water supply	%
Borehole	11.1
Canal	33.3
Irrigation Authority	55.6
Total	100.0

9.2.3.2 Profile of planters

(a) *Employment status*

All the sugarcane planters interviewed had recourse to paid labour to work on their fields.

9.2.3.3 Estimates of yield, hours of work, cost of production and average price received by planters for sugarcane

A cane cycle normally last eight years. The first year is called a “virgin” crop and the subsequent years are known as “ratoon” crops.

A “virgin” plantation requires a thorough land preparation and the quantity of inputs used is more consequent than those required to maintain a “ratoon” plantation. The survey focused on “ratoon” plantations only.

The annual cycle for sugarcane generally extends from July to June of the following year. Since the survey has been conducted over the calendar year 2005, it was assumed that the inputs for the period January to June 2006 would be more or less similar to the corresponding period of the last crop cycle (i.e. 2004-2005).

(a) *Estimated yield*

The average yield of sugarcane for the island worked out to 63.8 tonnes per hectare (ha). At zone level, the yield was highest in the Centre/West (71.6 tonnes/ha) and a lowest yield of 58.4 tonnes/ha was estimated for North (Table 90).

Table 90 – Yield of sugarcane by zone

Region	Yield (tonnes/ha)
North	58.4
East	65.2
South	59.7
Centre/West	71.6
Island of Mauritius	63.8

(b) Hours of work for sugarcane – per hectare (Table 91)

The total hours of work per hectare under sugarcane worked out to 383 for the island. Analysis by field operation shows that “other operations” was the most (53%) labour intensive activity among all the field operations.

Analysis by type of labour shows that sugarcane planters used mostly (94%) hired labour. They themselves contributed about 4% of the labour requirements and their family members who were not paid only 2%.

Analysis by sex reveals that male labour, representing almost 54% of the total labour requirements, was predominant in most operations, except for “other operations” where female labour represented 76%.

Table 91 – Hours of work by field operation per hectare under sugarcane

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Fertilisers application	2	-	2	8	8	16	1	-	1	11	8	19	5.0
Pesticides application	2	-	2	20	1	21	...	...	...	22	1	23	6.0
Irrigation	...	-	...	3	-	3	-	-	-	3	-	3	0.8
Harvesting	1	-	1	120	14	134	-	-	-	121	14	135	35.2
Other operations *	11	...	11	36	149	185	1	6	7	48	155	203	53.0
ALL OPERATIONS	16	...	16	187	172	359	2	6	8	205	178	383	100.0
<i>%</i>	<i>4.2</i>	<i>...</i>	<i>4.2</i>	<i>48.8</i>	<i>44.9</i>	<i>93.7</i>	<i>0.5</i>	<i>1.6</i>	<i>2.1</i>	<i>53.5</i>	<i>46.5</i>	<i>100.0</i>	

* including weeding (manual), Earthing up

(c) Estimated cost of production – per hectare (Table 92)

Cost A: The cost of production per hectare for sugarcane, on the basis of cost A, worked out to Rs 28,975 for the island. At zone level, the lowest cost (Rs 24,508) was observed in the North whereas the highest cost (Rs 35,717) was noted in the East.

Cost B: The cost of production per hectare for sugarcane, on the basis of cost B, worked out to Rs 41,557 for the island. At zone level, the lowest cost (Rs 36,968) was observed in the South whereas the highest cost (Rs 50,888) was noted in the East.

Cost C: The cost of production per hectare for sugarcane, on the basis of cost C, worked out to Rs 42,913 for the island. At zone level, the lowest cost (Rs 37,975) was observed in the North whereas the highest cost (Rs 51,567) was noted in the East.

Table 92 – Cost of main components per hectare under sugarcane ^{1,2} by zone (Rupees)

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	-	-	-	-	-
Labour	14,434	21,093	18,509	18,856	18,107
Seeds/Seedlings	-	-	-	-	-
Chemical fertilizers	6,163	7,372	5,320	6,017	6,060
Farm Manure	-	208	-	-	37
Pesticides	3,514	5,776	2,118	1,781	3,005
Fuel & Lubricants	184	354	1,048	349	544
Irrigation	-	-	-	658	169
Other	213	914	694	3,086	1,053
Cost A	24,508	35,717	27,689	30,747	28,975
Rent on land	11,990	11,613	7,751	10,669	10,173
Interest on working capital	421	588	455	517	487
Depreciation on fixed assets	732	2,970	1,073	3,378	1,922
Cost B	37,651	50,888	36,968	45,311	41,557
Family Labour	324	679	2,339	1,484	1,356
Cost C	37,975	51,567	39,307	46,795	42,913

¹ "Ratoon" plantations only

² excludes Miller planters

Based on Cost C concept, the major cost components for sugarcane for the island were labour (paid + imputed) with 45%, followed by 14% for chemical fertilisers and manure and 7% for pesticides.

(d) Estimated cost of production – per tonne of sugarcane (Table 93)

Cost A: The cost of production per tonne of sugarcane, on the basis of cost A, worked out to Rs 457 for the island. At zone level, the lowest cost (Rs 420) was observed in the North whereas the highest cost (Rs 548) was noted in the East.

Cost B: The cost of production per tonne of sugarcane, on the basis of cost B, worked out to Rs 655 for the island. At zone level, the lowest cost (Rs 619) was observed in the South whereas the highest cost (Rs 781) was noted in the East.

Cost C: The cost of production per tonne sugarcane, on the basis of cost C, worked out to Rs 676 for the island. At zone level, the lowest cost (Rs 651) was observed in the North whereas the highest cost (Rs 791) was noted in the East.

Table 93 – Cost of main components per tonne of sugarcane ^{1,2} by zone**(Rupees)**

Component	Zone				Island of Mauritius
	North	East	South	Centre/ West	
Land preparation	-	-	-	-	-
Labour	247	324	310	263	285
Planting material	-	-	-	-	-
Chemical fertilizers	105	113	89	84	95
Farm Manure	-	3	-	-	1
Pesticides	60	89	35	25	47
Fuel & Lubricants	3	5	18	5	9
Irrigation	-	-	-	10	3
Other	5	14	11	43	17
Cost A	420	548	463	430	457
Rent on land	205	178	130	149	160
Interest on working capital	7	9	8	7	8
Depreciation on fixed assets	13	46	18	47	30
Cost B	645	781	619	633	655
Family Labour	6	10	39	21	21
Cost C	651	791	658	654	676

¹ “Ratoon” plantations only² excludes Miller planters***(e) Estimated average price received per tonne by planters***

The average price per tonne of sugarcane received by planters in a particular zone was estimated on the basis of the average extraction rate of sugar in that zone.

The average price per tonne received by planters during the survey reference period worked out to Rs 1,495 for the island. The prices for each zone were as follows: North (Rs 1,206), East (Rs 1,541), South (Rs 1,595) and Centre/West (Rs 1,573).

It is to be noted that the average price for the island was higher than the costs of production across zones, irrespective of the cost concepts used (Table 94).

Table 94 – Cost of production and average price received by planters for sugarcane ^{1,2}**(Rupees)**

	North	East	South	Centre/ West	Island of Mauritius
Cost of production per tonne: Cost A	420	548	463	430	457
Cost of production per tonne: Cost B	645	781	619	633	655
Cost of production per tonne: Cost C	650	791	658	654	676
Average price received per tonne	1,206	1,541	1,595	1,573	1,495

¹ “Ratoon” plantations only² excludes Miller planters

9.2.4 TEA

9.2.4.1 Profile of holdings

(a) *Ownership of land*

The majority of the planters (57%) were growing tea on leased land, 40% on owned land and some 3% on lands obtained free from their parents (Table 95). The average annual rent paid for one hectare of leased land was Rs 9,070 for the island.

Table 95 – Percentage distribution of selected fields by ownership of land

Ownership of land	%
Leased	56.7
Owned	40.0
Free(parents)	3.3
Total	100.0

9.2.4.2 Profile of planters

(a) *Employment status*

The majority (87%) of the planters interviewed were employers engaging paid employees to work on their plantations. The remaining 13% were own account workers cultivating their land either alone or with the assistance of members of their households.

Table 96 – Percentage distribution of planters by employment status and sex

Employment Status	Male (%)	Female (%)	Both sexes (%)
Own account worker	23.5	-	13.3
Employer	76.5	100.0	86.7
Total	100.0	100.0	100.0

9.2.4.3 Estimates of yield, hours of work and average price received by planters for tea

As the crop cycle of tea exceeds 50 years, it would be impossible to work out its cost of production. However, during this survey data on material and labour inputs and other costs were collected from the selected tea planters for the calendar year 2005.

(a) Estimated yield

The average yield of tea for the island worked out to 13,070 kg per hectare. The yields by type of planter were as follows: 10,430 kg/ha for “Free” planters, 12,063 kg/ha for “Metayer” and 16,831 kg/ha for “Cooperatives” planters (Table 97).

Table 97 – Yield of tea by type of planter

Type of planter	Yield (Kg/ha)
Free	10,430
Metayer	12,063
Cooperatives	16,831
Island of Mauritius	13,070

(b) Hours of work for tea – per hectare (Table 98)

The total hours of work per hectare under tea worked out to 2,088 for the island. Analysis by field operation shows that “harvesting” was the most (93%) labour intensive activity among all the field operations.

Analysis by type of labour shows that tea planters used mostly (65%) hired labour. They contributed about 29% of the labour requirements and their family members who were not paid 6%.

Analysis by sex reveals that female labour, representing 69% of the total labour requirements, was predominant in most operations, except for “fertilisers application” and “pesticides application” where male labour represented 70% and 100% respectively.

Table 98 – Hours of work by field operation per hectare under tea

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Fertilisers application	6	2	8	15	7	22	2	1	3	23	10	33	1.6
Pesticides application	4	...	4	7	-	7	-	-	-	11	...	11	0.5
Irrigation	-	-	-	-	-	-	-	-	-	-	-	-	-
Harvesting	344	241	585	183	1,050	1,233	44	76	120	571	1,367	1,938	92.8
Other operations	10	7	17	33	55	88	...	1	1	43	63	106	5.1
ALL OPERATIONS	364	250	614	238	1,112	1,350	46	78	124	648	1,440	2,088	100.0
<i>%</i>	<i>17.4</i>	<i>12.0</i>	<i>29.4</i>	<i>11.4</i>	<i>53.3</i>	<i>64.7</i>	<i>2.2</i>	<i>3.7</i>	<i>5.9</i>	<i>31.0</i>	<i>69.0</i>	<i>100.0</i>	

(c) Estimated average price received per kg by planters

The average price per tonne of tea leaves received by planters during the survey reference period worked out to Rs 8.25 for the island. The prices for each type of planter were as follows: Rs 9.59 for “Free” planters, Rs 6.18 for “Metayer” and Rs 9.75 for “Cooperatives” planters (Table 99).

Table 99 – Average price received per kg of tea leaves by type of planter

Type of planter	Average price received (Rs/kg)
Free	9.59
Metayer	6.18
Cooperatives	9.75
Island of Mauritius	8.25

9.2.5 FLOWERS

9.2.5.1 Profile of holdings

(a) Ownership of land

The majority of the planters (82%) were growing flowers on owned lands and the remaining 18% on leased land (Table 100). The average annual rent paid for one hectare of leased land was Rs 24,700 for the island.

Table 100 – Percentage distribution of selected fields by ownership of land

Ownership of land	%
Leased	18.2
Owned	81.8
Total	100.0

(b) Irrigation System

Out of 22 growers, 59% were using drip irrigation, nearly 32% were using overhead irrigation and 5%, surface irrigation. Only 4% of selected fields were not irrigated (Table 101).

Table 101 – Percentage distribution of fields by Irrigation System used

Irrigation System	%
Overhead	31.8
Surface	4.6
Drip	59.1
None (rainfed)	4.5
Total	100.0

(c) Source of water supply

From Table 102, it is observed that 71% of planters were using water from the Central Water Authority and 19% from wells. Nearly 10% of the planters availed themselves of water from rivers or canals for irrigation.

Table 102 – Percentage distribution of irrigated fields by source of water supply

Source of water supply	%
CWA	71.4
Well	19.0
River	4.8
Canal	4.8
Total	100.0

9.2.5.2 Profile of planters**(a) Employment status**

All the flower growers interviewed were employers engaging paid employees to work on their plantations.

9.2.5.3 Estimates of yield, hours of work and average price received by planters for anthurium**(a) Estimated yield**

The average yield of anthurium for the island worked out to 149,510 units per hectare.

(b) Hours of work for anthurium – per hectare (Table 103)

The total hours of work per hectare under anthurium worked out to 6,314 for the island. Analysis by field operation shows that “other operations” was the most (57%) labour intensive activity among all the field operations.

Analysis by type of labour shows that anthurium growers used mostly (99%) hired labour. They contributed only 1% of labour requirements.

Analysis by sex reveals that female labour, representing 53% of the total labour requirements, was predominant in major operations, except for “fertilisers application”, “pesticides application” and “other operations” where male labour represented 75%, 53% and 58% respectively.

Table 103 – Hours of work by field operation per hectare under anthurium

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Fertilisers application	-	-	-	209	68	277	-	-	-	209	68	277	4.4
Pesticides application	-	-	-	239	212	451	-	-	-	239	212	451	7.1
Irrigation	6	-	6	14	-	14	-	-	-	20	-	20	0.3
Harvesting	-	-	-	402	1,541	1,943	-	-	-	402	1,541	1,943	3.8
Other operations	79	-	79	2,017	1,527	3,544	-	-	-	2,096	1,527	3,623	57.4
ALL OPERATIONS	85	-	85	2,881	3,348	6,229	-	-	-	2,966	3,348	6,314	100.0
<i>%</i>	<i>1.4</i>	<i>-</i>	<i>1.4</i>	<i>45.6</i>	<i>53.0</i>	<i>98.6</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>47.0</i>	<i>53.0</i>	<i>100.0</i>	

(c) Estimated average price received by planters

The average price per unit of anthurium received by growers during the survey reference period was Rs 6.55 for the island.

9.2.5.4 Estimates of yield, hours of work and average price received by planters for gerbera**(a) Estimated yield**

The average yield of gerbera for the island worked out to 223,524 units per hectare.

(b) Hours of work for gerbera – per hectare (Table 104)

The total hours of work per hectare under gerbera worked out to 18,922 for the island. Analysis by field operation shows that “harvesting” was the most (57%) labour intensive activity among all the field operations.

Analysis by type of labour shows that gerbera growers used mostly (90%) hired labour. They contributed about 10% of the labour requirements.

Analysis by sex reveals that male labour, representing 64% of the total labour requirements, was predominant in all operations.

Table 104 – Hours of work by field operation per hectare under gerbera

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Fertilisers application	-	-	-	587	381	968	-	-	-	587	381	968	5.1
Pesticides application	-	-	-	902	-	902	-	-	-	902	-	902	4.8
Irrigation	1,653	-	1,653	38	-	38	-	-	-	1,691	-	1,691	8.9
Harvesting	-	289	289	6,500	4,035	10,535	-	-	-	6,500	4,324	10,824	57.2
Other operations	-	-	-	2,497	2,040	4,537	-	-	-	2,497	2,040	4,537	24.0
ALL OPERATIONS	1,653	289	1,942	10,524	6,456	16,980	-	-	-	12,177	6,745	18,922	100.0
<i>%</i>	<i>8.8</i>	<i>1.5</i>	<i>10.3</i>	<i>55.6</i>	<i>34.1</i>	<i>89.7</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>64.4</i>	<i>35.6</i>	<i>100.0</i>	

(c) Estimated average price received by planters

The average price per unit of gerbera received by growers during the survey reference period worked out to Rs 8.24 for the island.

9.2.5.5 Estimates of yield, hours of work and average price received by planters for rose*(a) Estimated yield*

The average yield of rose for the island worked out to 409,591 units per hectare.

(b) Hours of work for rose – per hectare (Table 105)

The total hours of work per hectare under rose worked out to 12,991 for the island. Analysis by field operation shows that “harvesting” was the most (53%) labour intensive activity among all the field operations.

Analysis by type of labour shows that rose growers used mostly (85%) hired labour. They contributed about 13% of the labour requirements and their family members who were not paid only 2%.

Analysis by sex reveals that male labour, representing 84% of the total labour requirements, was predominant in all operations.

Table 105 – Hours of work by field operation per hectare under rose

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Fertilisers application	-	-	-	538	64	602	-	-	-	538	64	602	4.6
Pesticides application	-	-	-	704	114	818	-	-	-	704	114	818	6.3
Irrigation	965	-	965	-	-	-	-	-	-	965	-	965	7.4
Harvesting	506	-	506	4,827	1,370	6,197	-	245	245	5,333	1,615	6,948	53.5
Other operations	168	-	168	3,205	285	3,490	-	-	-	3,373	285	3,658	28.2
ALL OPERATIONS	1,639	-	1,639	9,274	1,833	11,107	-	245	245	10,913	2,078	12,991	100.0
%	12.6	-	12.6	71.4	14.1	85.5	-	1.9	1.9	84.0	16.0	100.0	

(c) Estimated average price received by planters

The average price per unit of rose received by growers during the survey reference period worked out to Rs 5.75 for the island.

9.3 RESULTS OF THE SURVEY – ISLAND OF RODRIGUES

9.3.1 FOODCROPS

9.3.1.1 Profile of holdings

(a) Surveyed crops

Table 106 shows the distribution of surveyed foodcrops plantations. It is to be noted that the number of maize plantations surveyed initially was 30 but following the passage of cyclone “Juliet”, 15 plantations were severely damaged and were discarded from the sample.

Table 106 – Number and percentage of fields surveyed by crop

Crop	No	%
Beans-dried	30	40.0
Maize	15	20.0
Onion	30	40.0
Total	75	100.0

(b) Ownership of land

The majority of the planters (85%) were growing foodcrops on land obtained free, 12% on leased land and only 3% on owned land (Table 107). The average annual rent paid for one hectare of leased land was Rs 132 for the island and the low rent is mainly due to planter leasing state lands.

Table 107 – Percentage distribution of selected fields by ownership of land

Ownership of land	%
Leased	12.0
Owned	2.7
Free (parents)	2.7
Free (other)	82.6
Total	100.0

(c) Mechanisation of field operations

Out of the 75 planters in the island of Rodrigues, mechanisation for land preparation was reported by nearly 27% for maize, 23% for beans-dried and 23% for onion.

Table 108 – Percentage of fields by crop with mechanised operation for land preparation

Crop	% of fields
Beans (dried)	23.3
Maize	26.7
Onion	23.3

(d) Length of crop cycle

Table 109 summarises the crop cycle of each selected crop with the minimum and maximum values, mean and standard deviation. On the average onion has the longest cycle with 121 days while maize has the shortest cycle with 98.

Table 109 – Length of crop cycle

Crop	n	Minimum	Maximum	Mean	Std. Deviation
		(Days)			
Beans (dried)	30	78	148	102.0	17.8
Maize	15	79	114	98.3	8.4
Onion	30	80	150	121.4	17.9

n=sample size**(e) Points of purchase of inputs**

Table 110 gives a broad picture of the different points of purchase of selected inputs.

Organic fertilisers used by planters were either produced by themselves or obtained free from relatives or friends.

Chemical fertilisers and pesticides were purchased from cooperatives societies.

Seeds were mostly (87%) produced by planters or obtained free from relatives or friends.

Table 110 – Percentage distribution of planters by point of purchase of selected inputs

Point of purchase	Organic Fertiliser (%)	Chemical Fertiliser (%)	Pesticides (%)	Seeds (%)
Cooperative Society	-	100.0	100.0	13.3
Home produced or obtained free	100.0	-	-	86.7
Total	100.0	100.0	100.0	100.0

(f) Irrigation System

Out of 75 planters, 32% were using watering cans and only 2% were using overhead or surface irrigation. Some 65% of selected fields were not irrigated (Table 111).

Table 111 – Percentage distribution of selected fields by Irrigation System used

Irrigation System	%
Overhead	1.3
Surface	1.3
Drip	-
Watering can	32.0
None (rainfed)	65.4
Total	100.0

(g) Source of water supply

From Table 112, it is observed that the main source of water supply was the Rodrigues Water Resources. Some 35% of the planters availed themselves of water from wells, while 23% from rivers and 4% from boreholes.

Table 112 – Percentage distribution of irrigated fields by source of water supply

Source of water supply	%
Rodrigues Water Resources	38.5
Borehole	3.8
Well	34.6
River	23.1
Total	100.0

9.3.1.2 Profile of planters

(a) Age and sex

The sampled planters consisted mainly of males (73%). Nearly 49% were aged 60 years and over, while 44% were aged between 40 to 59 years. Only 2% (all of them males) were below 30 years of age and the mean age works out to 53.1 years.

Analysis by sex shows that female planters were on the average younger than their male counterparts. In fact 65% of females were below 50 years compared to nearly 24% of males. The mean age was 47.7 years for females and 55.1 years for males.

Table 113 – Percentage distribution of planters by age and sex

Age group (years)	Male (%)	Female (%)	Both sexes (%)
15-29	1.8	-	1.4
30-39	5.4	15.0	8.0
40-49	16.4	50.0	25.3
50-59	27.3	20.0	25.3
60 and over	49.1	15.0	40.0
Total	100.0	100.0	100.0

(b) Marital status

Male planters were predominantly married (91%). However, among females, 71% were married while the remaining 29% were either widowed, divorced or separated.

Table 114 – Percentage distribution of planters by marital status and sex

Marital status	Male (%)	Female (%)	Both sexes (%)
Married	90.9	70.7	89.3
Widowed, divorced or separated	7.3	29.3	8.0
Single	1.8	-	2.7
Total	100.0	100.0	100.0

(c) Educational attainment

From Table 115, it is observed that 11% of the planters had either never been to school or studied only at pre-primary level. Another 76% have studied up to primary level, with 29% having passed the Certificate of Primary Education. Some 13% had followed secondary education, with none having obtained the School Certificate.

Analysis by sex shows that male and female planters were almost similar up to primary education. However, female planters had a higher education background than the males with 20% who have followed secondary education compared to 11% for males.

Table 115 – Percentage distribution of planters by educational attainment and sex

Educational attainment	Male (%)	Female (%)	Both sexes (%)
Nil and Pre-primary	10.9	10.0	10.7
Primary			
Below CPE	47.3	45.0	46.7
Passed CPE	30.9	25.0	29.3
Secondary			
Below SC	10.9	20.0	13.3
Total	100.0	100.0	100.0

(d) Employment status

The majority (75%) of the planters interviewed were employers engaging paid employees to work on their plantations. The remaining 25% were own account workers cultivating their land either alone or with the assistance of members of their households.

Table 116 – Percentage distribution of planters by employment status and sex

Employment Status	Male (%)	Female (%)	Both sexes (%)
Own account worker	25.5	20.0	24.0
Employer	74.5	80.0	76.0
Total	100.0	100.0	100.0

9.3.1.3 Profile of family labour (excluding planter)

A total of 219 family members (excluding the planters) were working on the 75 foodcrops plantations selected for the study, giving a mean of 2.9 members per plantation. These family members included 49% males and 51% females and nearly all of them (99%) were working without pay on this family enterprise.

(a) Age and sex

From Table 117, it is observed that about 41% of the family members working on the plantations were aged between 15 and 29 years and the mean age works out to 34.6 years.

Analysis by sex shows that male family workers were on the average younger than the female counterparts. In fact nearly 77% males were below 40 years compared to 62% females. The mean age was 31.9 years for males and 37.2 years for females.

Table 117 – Percentage distribution of family labour (excluding planter) by age and sex

Age group (years)	Male (%)	Female (%)	Both sexes (%)
15-29	48.6	33.9	41.1
30-39	28.0	27.7	27.8
40-49	13.1	17.0	15.1
50-59	9.4	9.8	9.6
60 and over	0.9	11.6	6.4
Total	100.0	100.0	100.0

(b) Marital status

Among the family members assisting on the plantations, 59% were married, 36% single and the remaining 5% were either widowed, or divorced or separated. It is to be noted that male contributing family workers included a significant proportion of single persons (50%) compared to 23% among the females.

Table 118 – Percentage distribution of family labour (excluding planter) by marital status and sex

Marital status	Male (%)	Female (%)	Both sexes (%)
Married	47.7	69.7	58.9
Widowed, divorced or separated	2.8	7.1	5.0
Single	49.5	23.2	36.1
Total	100.0	100.0	100.0

(c) Educational attainment

From Table 119, it is observed that nearly 35% of the family labour had followed post primary education. The male workers have achieved higher educational background than the females with 36% of them having followed secondary education compared to 31% females. Among the males, 11% have passed the School Certificate and nearly 4% the Higher School Certificate. Corresponding figures for females were 11% and nil.

Table 119 – Percentage distribution of family labour (excluding planter) by educational attainment and sex

Educational attainment	Male (%)	Female (%)	Both sexes (%)
Nil and Pre-primary	-	4.5	2.3
Primary			
Below CPE	19.6	30.4	25.1
Passed CPE	42.1	33.9	37.9
Secondary			
Below SC	21.5	20.5	21.0
Passed SC	11.2	10.7	11.0
Passed HSC	3.7	-	1.8
Tertiary			
Diploma/Degree	1.9	-	0.9
Total	100.0	100.0	100.0

9.3.1.4 Estimates of yield, hours of work, cost of production and average price received by planters for beans (dried)

Beans in the island of Rodrigues are marketed in the dried form. Its cost of production includes the manual shelling of the dried beans from their pods.

(a) Estimated yield

The average yield of beans-dried worked out to 920 kg per hectare.

(b) Hours of work for beans-dried – per hectare (Table 120)

The total hours of work per hectare for the complete cycle of beans (dried) worked out to 1,116 for the island. Analysis by field operation shows that “other operations” was the most (47%) labour intensive activity among all the field operations. This is mainly due to the manual shelling of the dried beans from their pods.

Analysis by type of labour shows that beans (dried) planters used mostly (39%) hired labour. The family members who were not paid contributed 31% while planters 30%.

Analysis by sex reveals that male labour, representing 64% of the total labour requirements, was predominant in all operations.

Table 120 – Hours of work by field operation per hectare under beans-dried

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	59	-	59	97	11	108	2	11	13	158	22	180	16.1
Planting	43	-	43	43	33	76	30	59	89	116	92	208	18.6
Fertilisers application	12	-	12	7	3	10	1	1	2	20	4	24	2.2
Pesticides application	30	-	30	6	2	8	9	4	13	45	6	51	4.6
Irrigation	-	-	-	-	-	-	-	-	-	-	-	-	-
Harvesting	25	-	25	32	25	57	24	25	49	81	50	131	11.7
Other operations	161	-	161	95	81	176	43	142	185	299	223	522	46.8
ALL OPERATIONS	330	-	330	280	155	435	109	242	351	719	397	1,116	100.0
%	29.5	-	29.5	25.1	13.9	39.0	9.8	21.7	31.5	64.4	35.6	100.0	

(c) Estimated cost of production – per hectare (Table 121)

The cost of production per hectare for beans-dried worked out to Rs 19,353 for the island on the basis of cost A, Rs 20,431 on the basis of cost B and Rs Rs 35,899 on the basis of cost C.

Table 121 – Cost of main components per hectare and per kg of beans-dried (Rupees)

Component	Cost per ha	Cost per kg
Land preparation	3,152	2.58
Labour	5,278	4.46
Seeds/seedlings	4,307	2.93
Fertilisers	567	0.23
Manure	1,117	0.81
Pesticides	4,932	3.21
Irrigation	-	-
Other	-	-
Cost A	19,353	14.22
Rent on land	197	0.06
Interest on working capital	361	0.29
Depreciation of fixed assets	520	0.41
Cost B	20,431	14.98
Family labour	15,468	10.91
Cost C	35,899	25.89

Based on Cost C concept, the major cost components for beans-dried for the island were labour (paid + imputed) with 58%, followed by 14% for pesticides, 12% for seeds and 5% for manure and chemical fertilisers.

(d) Estimated cost of production – per kg of beans-dried (Table 121)

The cost of production per kg of beans-dried, on the basis of cost A, worked out to Rs 14.22 for the island. The respective figures for cost B and cost C concepts were Rs 14.98 and Rs 25.89.

(e) Estimated average price received per kg by planters (Table 122)

The average price per kg of beans-dried received by planters during the survey reference period worked out to Rs 63.06 for the island.

It is to be noted that the average price for the island was greater than the costs of production irrespective of the cost concepts used.

Table 122 – Cost of production and average price received per kg by planters for beans-dried

	Amount (Rupees)
Cost of production per kg: Cost A	14.22
Cost of production per kg: Cost B	14.98
Cost of production per kg: Cost C	25.89
Average price received per kg	63.06

9.3.1.5 Estimates of yield, hours of work, cost of production and average price received by planters for maize

Maize in the island of Rodrigues is sold as grains and not with cobs. Therefore its cost of production includes labour for the manual removal of the grains from the cobs. Planters usually keep most of the production for own consumption and also feed their livestock and poultry, and some are sold.

(a) Estimated yield

The average yield of maize for the island worked out to 1,659 kg per hectare.

(b) Hours of work for maize – per hectare (Table 123)

The total hours of work per hectare for the complete cycle of maize worked out to 663 for the island. Analysis by field operation shows that “other operations” was the most (45%) labour intensive activity among all the field operations. This is mainly due to the manual removal of the grains from the cobs.

Analysis by type of labour shows that family members, who were not paid, contributed 44% of total labour requirements, followed by planters 33% and hired labour 23%.

Analysis by sex reveals that male labour, representing 73% of the total labour requirements, was predominant in all operations.

Table 123 – Hours of work by field operation per hectare under maize

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	69	-	69	58	-	58	21	17	38	148	17	165	24.9
Planting	20	2	22	5	5	10	16	27	43	41	34	75	11.3
Fertilisers application	9	-	9	2	2	4	12	6	18	23	8	31	4.7
Pesticides application	1	-	1	-	-	-	-	-	-	1	-	1	0.2
Irrigation	-	-	-	-	-	-	-	-	-	-	-	-	-
Harvesting	14	2	16	25	-	25	22	28	50	61	30	91	13.7
Other operations	98	6	104	51	-	51	61	84	145	210	90	300	45.2
ALL OPERATIONS	211	10	221	141	7	148	132	162	294	484	179	663	100.0
%	31.8	1.5	33.3	21.3	1.1	22.4	19.9	24.4	44.3	73.0	27.0	100.0	

(c) Estimated cost of production – per hectare (Table 124)

The cost of production per hectare for maize worked out to Rs 4,082 for the island on the basis of cost A, Rs 4,559 on the basis of cost B and Rs 17,991 on the basis of cost C.

Table 124 – Cost of main components per hectare and per kilo of maize (Rupees)

Component	Cost per ha	Cost per kg
Land preparation	786	0.40
Labour	2,091	1.09
Seeds/seedlings	106	0.05
Fertilisers	-	-
Manure	951	0.46
Pesticides	142	0.06
Fuel and lubricants	6	-
Irrigation	-	-
Other	-	-
Cost A	4,082	2.06
Rent on land	101	0.02
Interest on working capital	146	0.05
Depreciation of fixed assets	230	0.15
Cost B	4,559	2.18
Family labour	13,432	5.30
Cost C	17,991	7.48

Based on Cost C concept, the major cost components for maize for the island were labour (paid + imputed) with 71%, followed by 11% for fuel and lubricants, 10% for land preparation, 4% for manure and chemical fertilisers and 1% for pesticides.

(d) Estimated cost of production – per kg of maize (Table 124)

The cost of production per kg of maize, on the basis of cost A, worked out to Rs 2.06 for the island. The respective figures for cost B and cost C concepts were Rs 2.18 and Rs 7.48.

(e) Estimated average price received per kg by planters (Table 125)

The average price per kg of maize received by planters during the survey reference period worked out to Rs 9.69 for the island.

It is to be noted that the average price for the island was greater than the costs of production across zones irrespective of the cost concepts used.

Table 125 – Cost of production and average price received per kg by planters for maize

	Amount (Rupees)
Cost of production per kg: Cost A	2.06
Cost of production per kg: Cost B	2.18
Cost of production per kg: Cost C	7.48
Average price received per kg	9.69

9.3.1.6 Estimates of yield, hours of work, cost of production and average price received by planters for onion

(a) Estimated yield

The average yield of onion for the island worked out to 14,120 kg per hectare.

(b) Hours of work for onion – per hectare (Table 126)

The total hours of work per hectare for the complete cycle of onion worked out to 3,044 for the island. Analysis by field operation shows that “other operations” was the most (31%) labour intensive activity among all the field operations. This is mainly due to the manual trimming of the onion bulbs.

Analysis by type of labour shows that family members, who were not paid, contributed 51% followed by planters 27% and hired labour 22%.

Analysis by sex reveals that female labour, representing almost 54% of the total labour requirements, was predominant in major operations, except for “land preparation” and “irrigation” where male labour represented 86% and 71% respectively.

Table 126 – Hours of work by field operation per hectare under onion

Field operation	Planter			Hired labour			Unpaid family labour			ALL TYPES OF LABOUR			
	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	Male	Female	Both sex	%
Land preparation	108	4	112	106	3	109	47	34	81	261	41	302	9.9
Planting	79	30	109	45	210	255	133	184	317	257	424	681	22.4
Fertilisers application	23	6	29	-	-	-	31	53	84	54	59	113	3.7
Pesticides application	28	-	28	7	-	7	21	-	21	56	-	56	1.8
Irrigation	148	45	193	-	-	-	149	77	226	297	122	419	13.8
Harvesting	65	45	110	38	69	107	121	186	307	224	300	524	17.2
Other operations	143	78	221	-	201	201	111	416	527	254	695	949	31.2
ALL OPERATIONS	594	208	802	196	483	679	613	950	1,563	1,403	1,641	3,044	100.0
%	19.5	6.9	26.4	6.4	15.9	22.3	20.1	31.2	51.3	46.1	53.9	100.0	

(c) Estimated cost of production – per hectare (Table 127)

The cost of production per hectare for onion worked out to Rs 39,491 for the island on the basis of cost A, Rs 41,878 on the basis of cost B and Rs 85,696 on the basis of cost C.

Table 127 – Cost of main components per hectare and per kilo of onion (Rupees)

Component	Cost per ha	Cost per kg
Land preparation	986	0.07
Labour	8,305	0.59
Seeds/seedlings	12,029	0.85
Chemical Fertilisers	1,762	0.12
Farm Manure	3,716	0.26
Pesticides	9,801	0.69
Fuel and lubricants	-	-
Irrigation	469	0.03
Other	2,423	0.17
Cost A	39,491	2.78
Rent on land	73	-
Interest on working capital	795	0.06
Depreciation on fixed assets	1,519	0.11
Cost B	41,878	2.95
Family labour	43,818	3.10
Cost C	85,696	6.05

Based on Cost C concept, the major cost components for onion for the island were labour (paid + imputed) with 61%, followed by 14% for seeds, 11% for pesticides and 6% for manure and chemical fertilisers.

(d) Estimated cost of production – per kg of onion (Table 127)

The cost of production per kg of onion, on the basis of cost A, worked out to Rs 2.78 for the island. The respective figures for cost B and cost C concepts were Rs 2.95 and Rs 6.05.

(e) Estimated average price received per kg by planters (Table 128)

The average price per kg of onion received by planters during the survey reference period worked out to Rs 9.41 for the island.

It is to be noted that the average price for the island was greater than the costs of production irrespective of the cost concepts used.

Table 128 – Cost of production and average price received by planters for onion

	Amount (Rupees)
Cost of production per kg: Cost A	2.78
Cost of production per kg: Cost B	2.95
Cost of production per kg: Cost C	6.05
Average price received per kg	9.41

CHAPTER 10 – ANALYSIS OF RESULTS (Production structure)

10.1 ANALYTICAL APPROACH

This chapter provides an analysis of the production structure of each of the 14 foodcrops (11 for Mauritius and 3 for Rodrigues), tobacco, sugarcane, tea and flowers.

Production structure – operation ratio: The operation ratio (IC/GO) for a given crop is obtained by dividing the sum of its inputs (intermediate consumption-IC) by its gross output (GO). IC and GO have been worked out according to the 1993 System of National Accounts and their definitions are found in Chapter 3.

Intermediate consumption: It is worth to note the following:

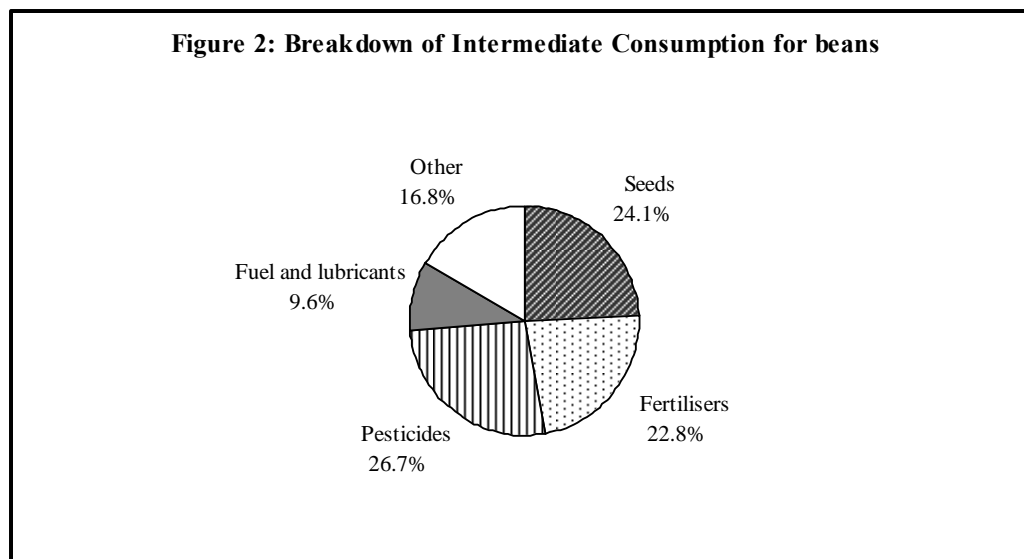
- (i) value of home produced seeds is not considered as a component of intermediate consumption
- (ii) rental value of leased land is not included in intermediate consumption

However, items (i) and (ii) are considered in the cost of production concepts as described in Chapters 3, 7 and 9.

10.2 RESULTS OF SURVEY - ISLAND OF MAURITIUS

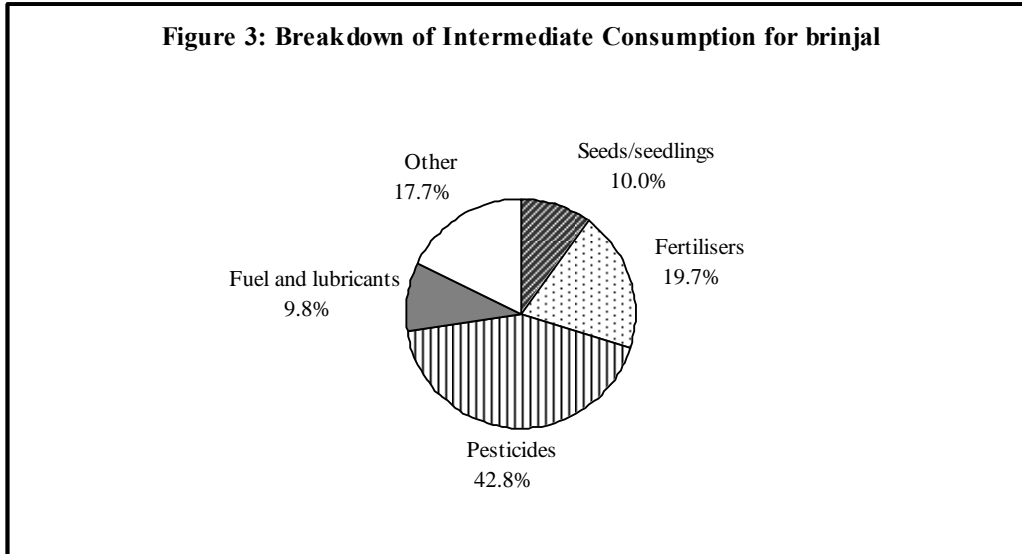
10.2.1 Operation ratio (*Intermediate Consumption/Gross Output – IC/GO*) of beans

The operation ratio (IC/GO) worked out to 30.1% for beans. Figure 2 shows that the major components of the intermediate consumption were *pesticides* (27%), *seeds* (24%) and *fertilisers* (23%).



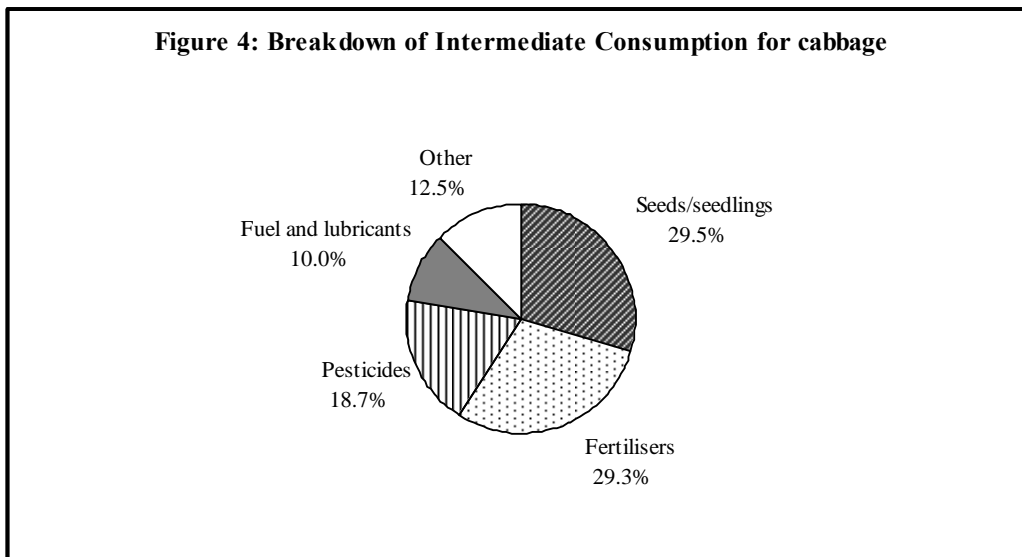
10.2.2 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of brinjal

The operation ratio (IC/GO) worked out to 31.1% for brinjal. Figure 3 shows that the major components of the intermediate consumption were *pesticides* (43%), *fertilisers* (20%) and *seeds/seedlings* (10%).



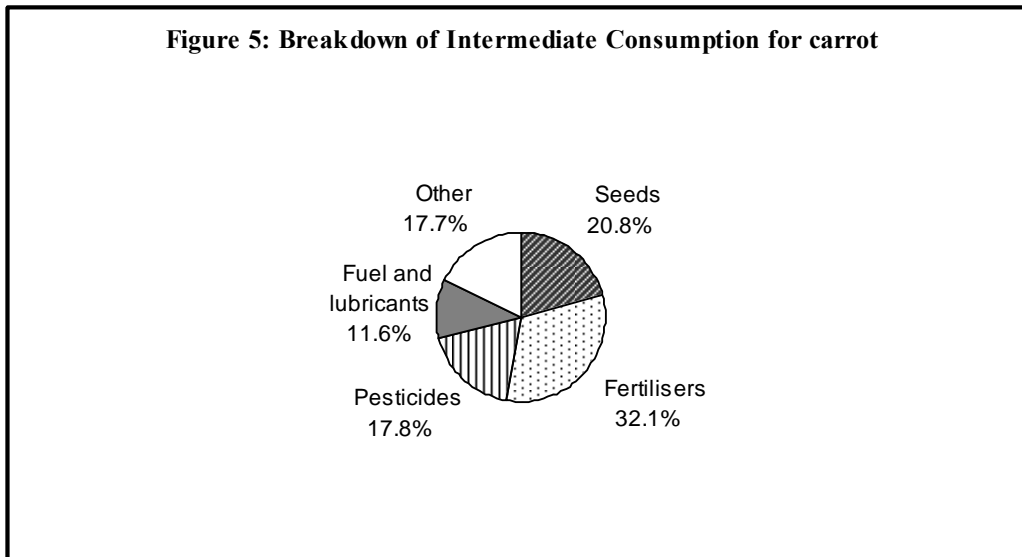
10.2.3 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of cabbage

The operation ratio (IC/GO) worked out to 27.1% for cabbage. Figure 4 shows that the major components of the intermediate consumption were *seeds/seedlings* (30%), *fertilisers* (29%) and *pesticides* (19%).



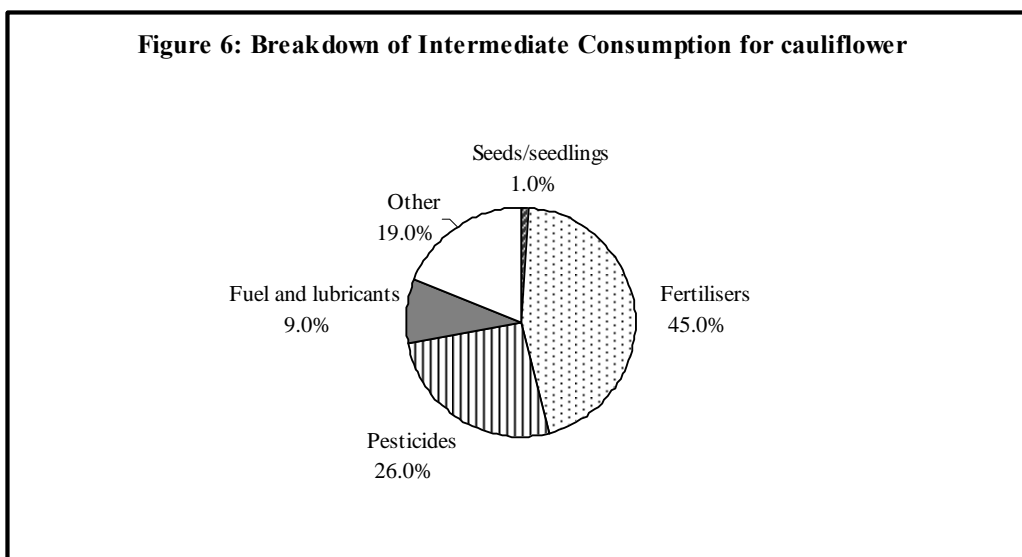
10.2.4 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of carrot

The operation ratio (IC/GO) worked out to 26.5% for carrot. Figure 5 shows that the major components of the intermediate consumption were *fertilisers* (32%), *seeds* (21%), and *pesticides* (18%).



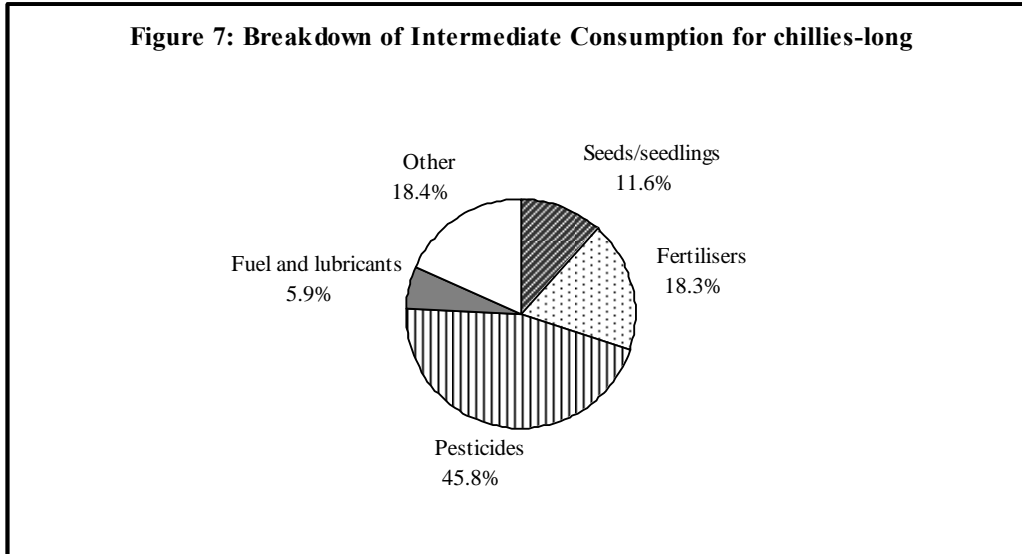
10.2.5 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of cauliflower

The operation ratio (IC/GO) worked out to 15.7% for cauliflower. Figure 6 shows that the major components of the intermediate consumption were *fertilisers* (45%) and *pesticides* (26%).



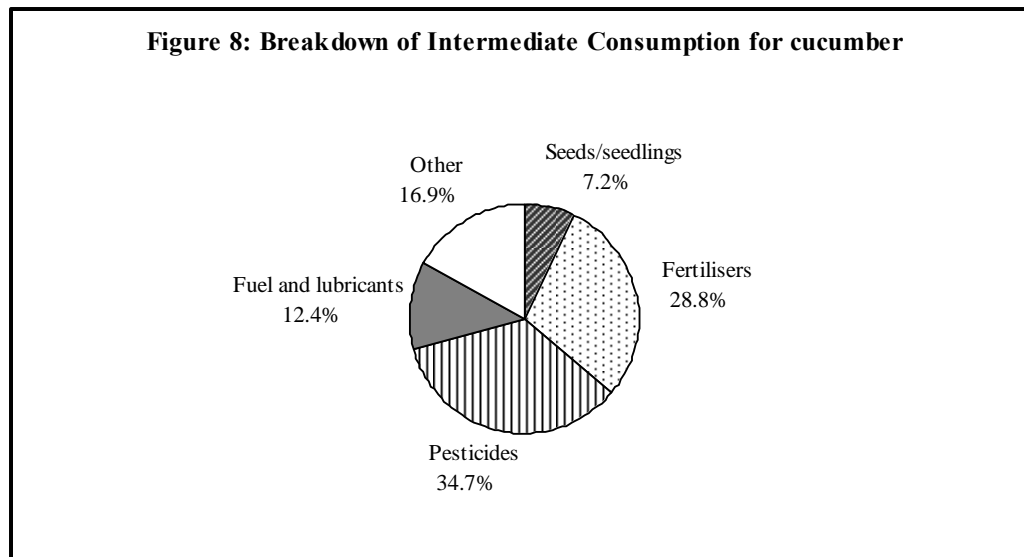
10.2.6 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of chillies-long

The operation ratio (IC/GO) worked out to 24.8% for chillies-long. Figure 7 shows that the major components of the intermediate consumption were *pesticides* (46%), *fertilisers* (18%) and *seeds/seedlings* (12%).



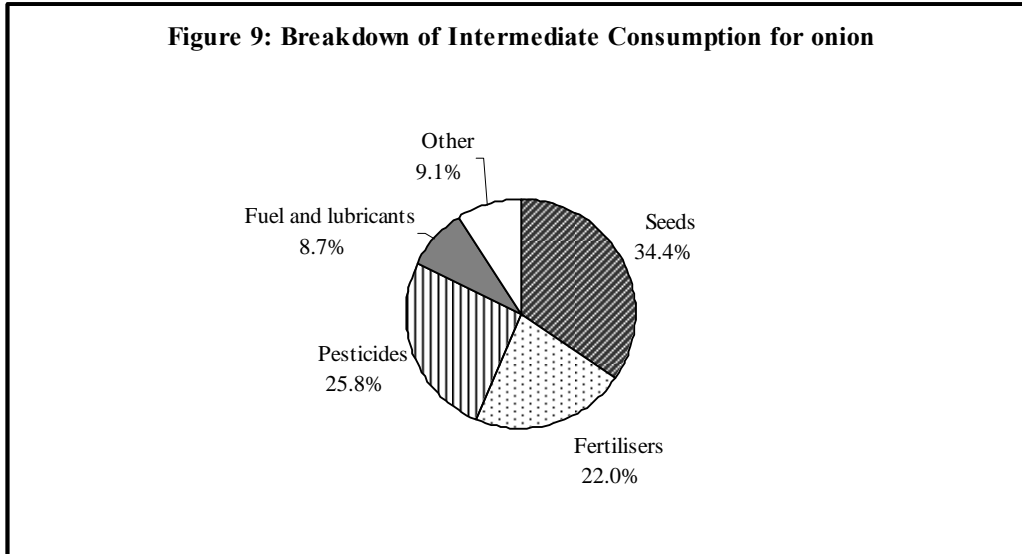
10.2.7 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of cucumber

The operation ratio (IC/GO) worked out to 18.6% for cucumber. Figure 8 shows that the major components of the intermediate consumption were *pesticides* (35%), *fertilisers* (29%) and *seeds/seedlings* (7%).



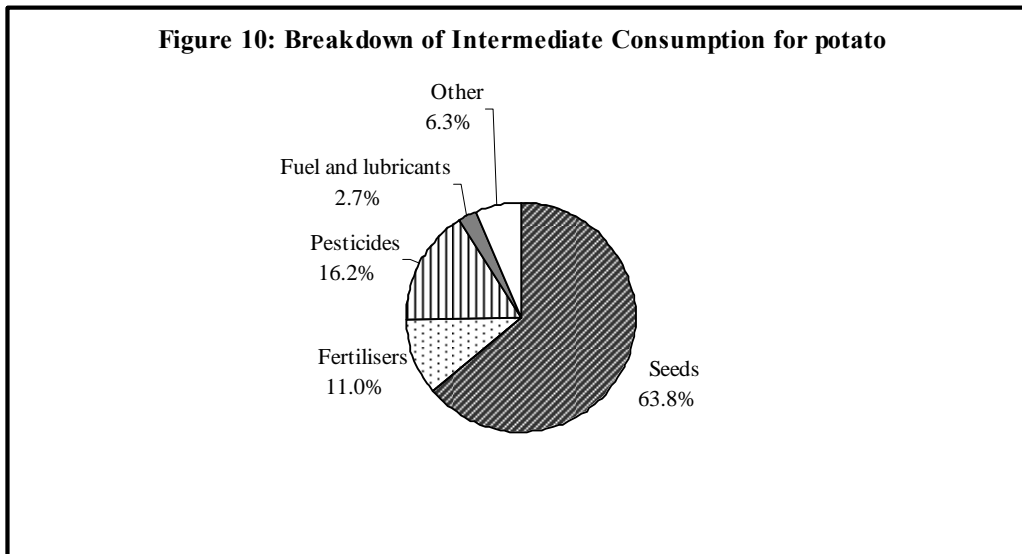
10.2.8 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of onion

The operation ratio (IC/GO) worked out to 32.6% for onion. Figure 9 shows that the major components of the intermediate consumption were *seeds* (34%), *pesticides* (26%) and *fertilisers* (22%).



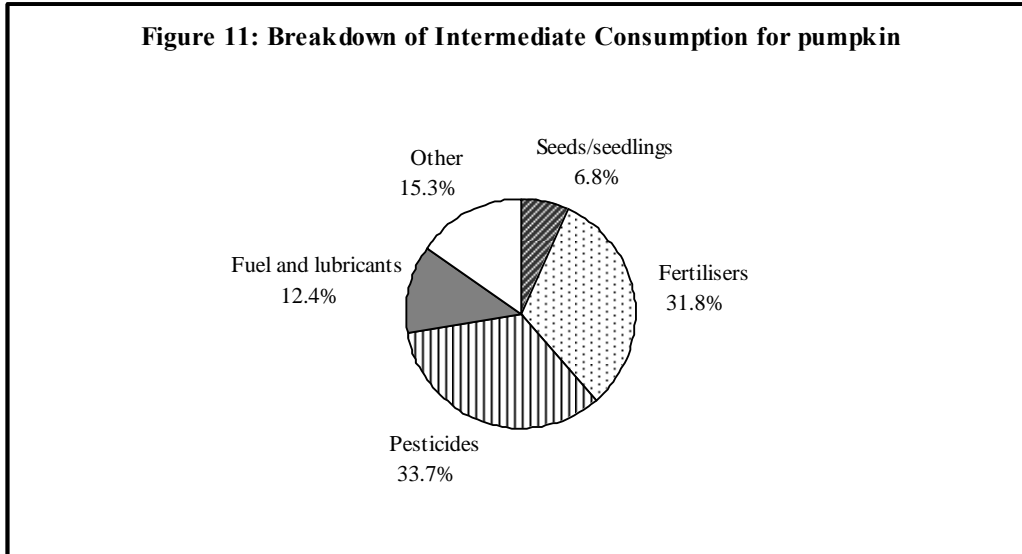
10.2.9 Operation ratio (*Intermediate Consumption/Gross Output– IC/GO*) of potato

The operation ratio (IC/GO) worked out to 47.8% for potato. Figure 10 shows that the major components of the intermediate consumption were *seeds* (64%), *pesticides* (16%) and *fertilisers* (11%).



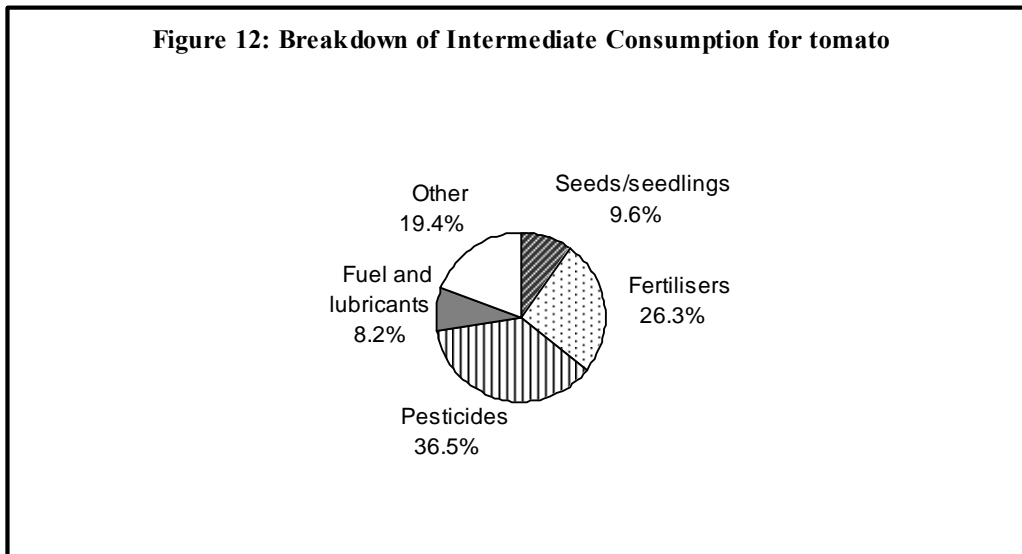
10.2.10 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of pumpkin

The operation ratio (IC/GO) worked out to 18.5% for pumpkin. Figure 11 shows that the major components of the intermediate consumption were *pesticides* (34%), *fertilisers* (32%) and *seeds* (7%).



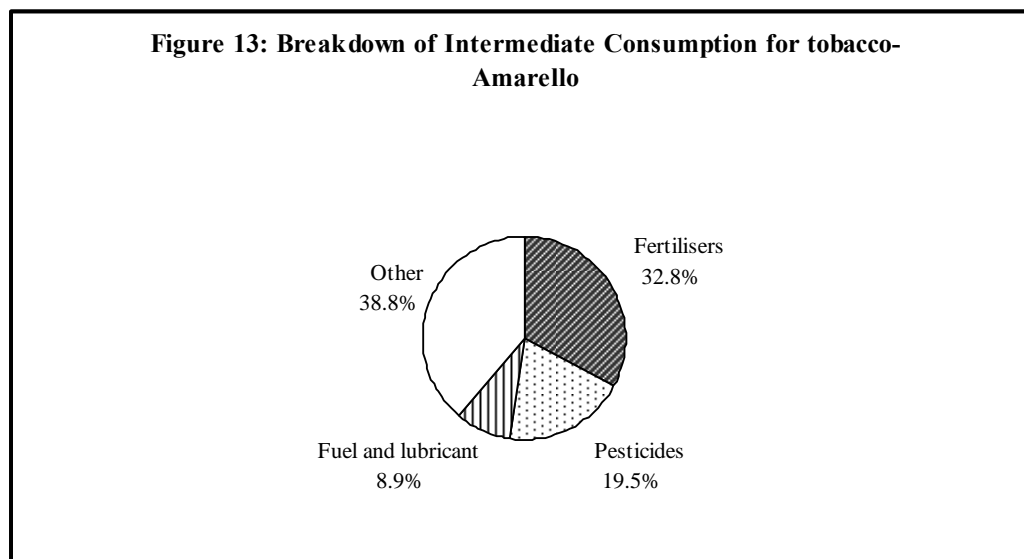
10.2.11 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of tomato

The operation ratio (IC/GO) worked out to 19.6% for tomato. Figure 12 shows that the major components of the intermediate consumption were *pesticides* (37%), *fertilisers* (26%) and *seeds/seedlings* (10%).



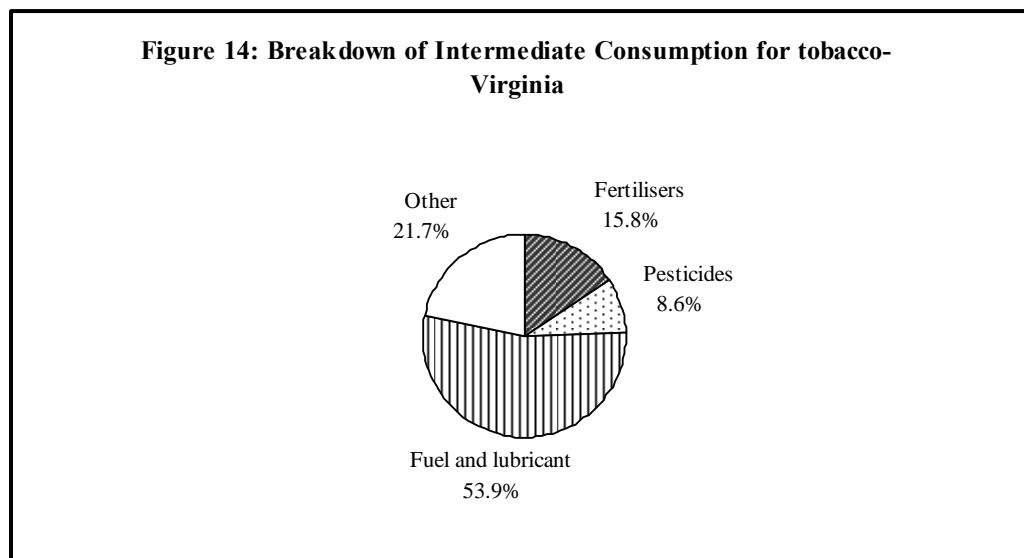
10.2.12 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of tobacco-Amarello

The operation ratio (IC/GO) worked out to 40.1% for tobacco-Amarello. Figure 13 shows that the major components of the intermediate consumption were *fertilisers* (33%), *rental of machine* (25%) *pesticides* (20%) and *fuel and lubricants* (9%).



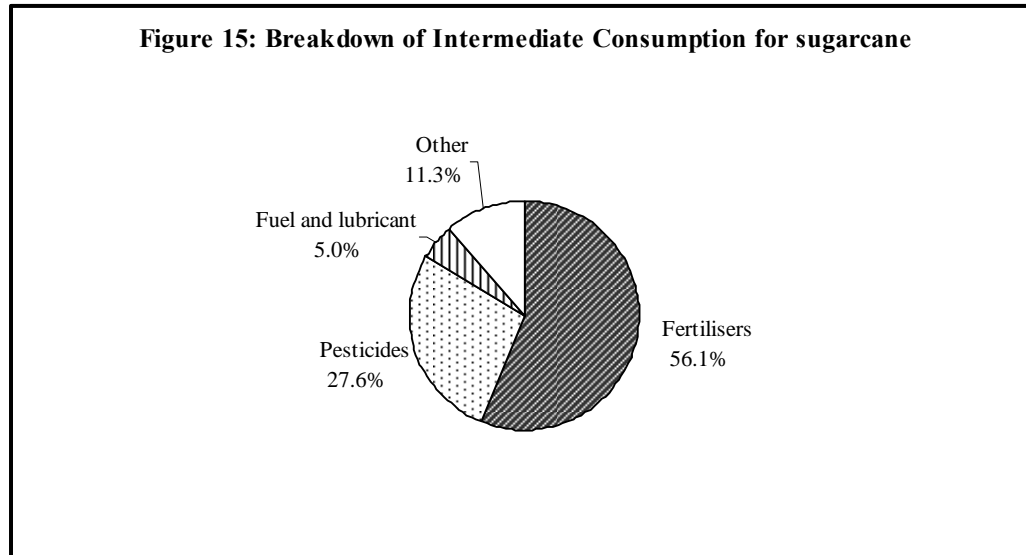
10.2.13 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of tobacco-Virginia

The operation ratio (IC/GO) worked out to 45.6% for tobacco-Virginia. Figure 14 shows that the major components of the intermediate consumption were *fuel and lubricants* (54%), *fertilisers* (16%), *rental of machine* (13%) and *pesticides* (9%). It is to be noted that “fuel and lubricants” is quite significant since diesel oil is used to cure the tobacco leaves in the barns.



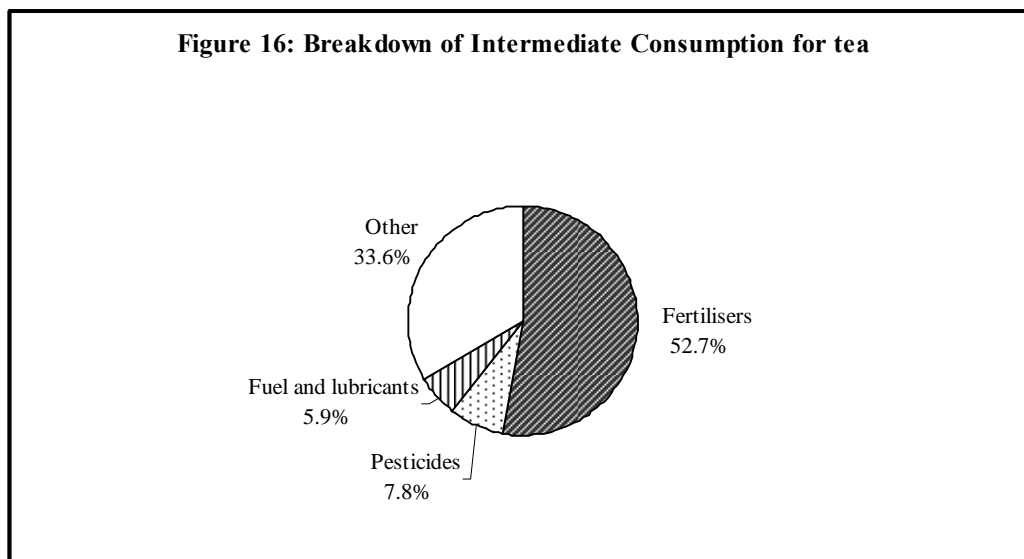
10.2.14 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of sugarcane

The operation ratio (IC/GO) worked out to 11.4% for sugarcane. Figure 15 shows that the major components of the intermediate consumption were *fertilisers* (56%) and *pesticides* (28%).



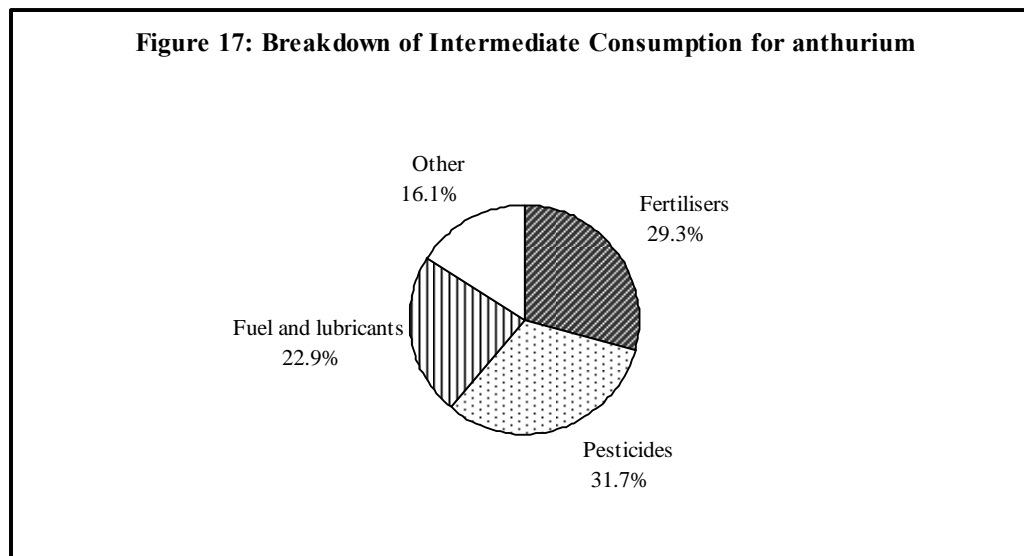
10.2.15 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of tea

The operation ratio (IC/GO) worked out to 12.0% for tea. Figure 16 shows that the major components of the intermediate consumption were *fertilisers* (53%), *other inputs* (18%) and *rental of machine* (16%).



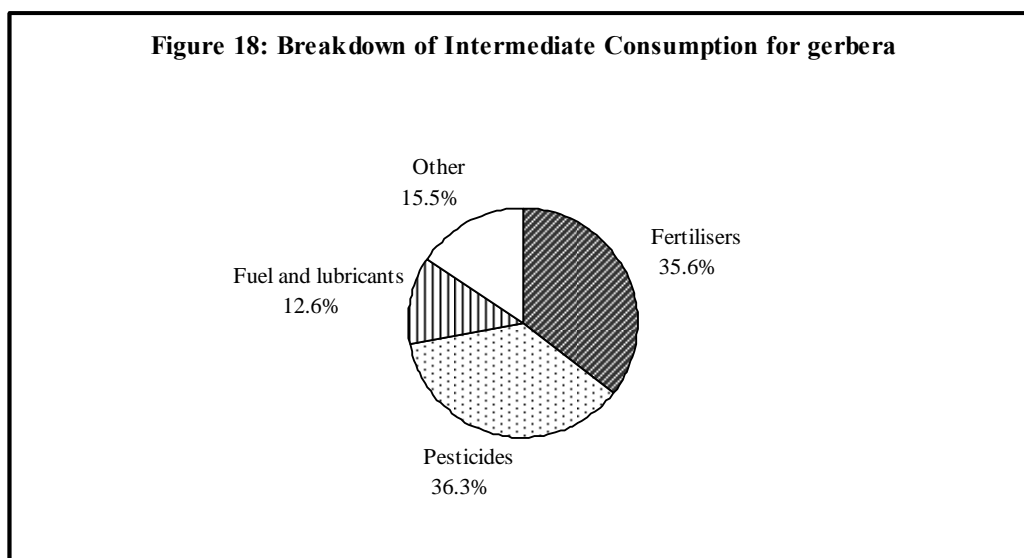
10.2.16 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of anthurium

The operation ratio (IC/GO) worked out to 11.5% for anthurium. Figure 17 shows that the major components of the intermediate consumption were *pesticides* (32%), *fertilisers* (29%) and *fuel and lubricants* (23%).



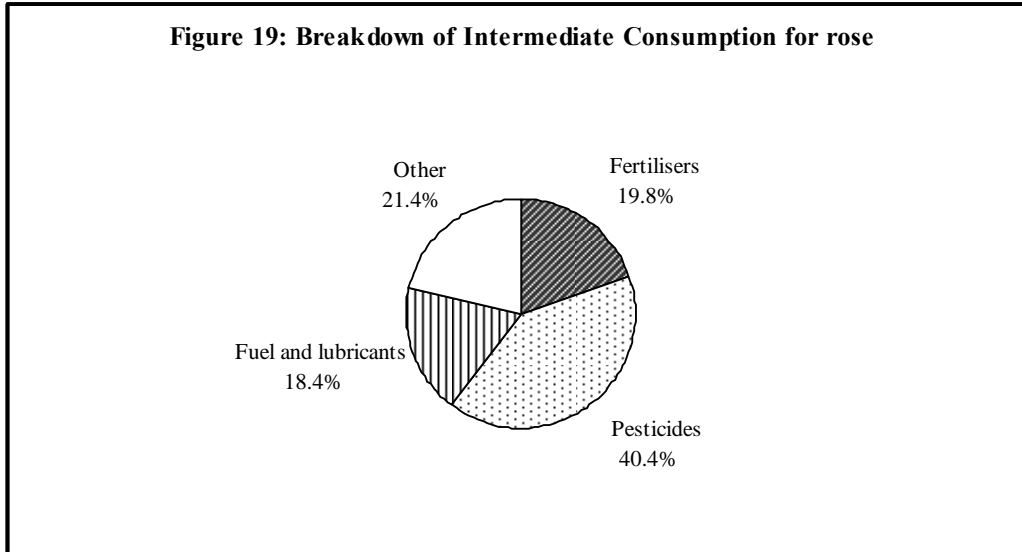
10.2.17 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of gerbera

The operation ratio (IC/GO) worked out to 26.1% for gerbera. Figure 18 shows that the major components of the intermediate consumption were *pesticides* (36%), *fertilisers* (36%) and *fuel and lubricants* (13%).



10.2.18 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of rose

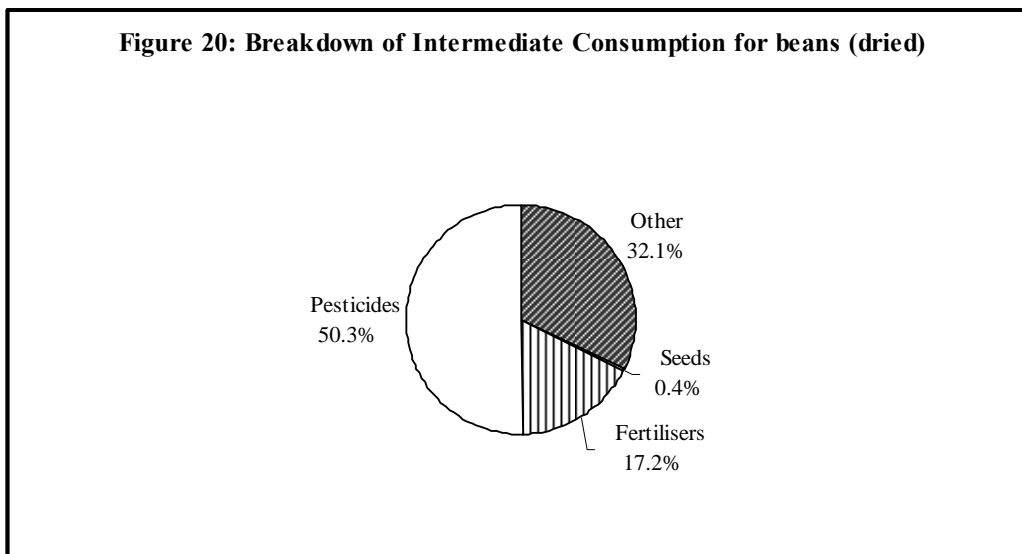
The operation ratio (IC/GO) worked out to 23.9% for rose. Figure 19 shows that the major components of the intermediate consumption were *pesticides* (40%), *fertilisers* (20%) and *fuel and lubricants* (18%).



10.3 RESULTS OF SURVEY - ISLAND OF RODRIGUES

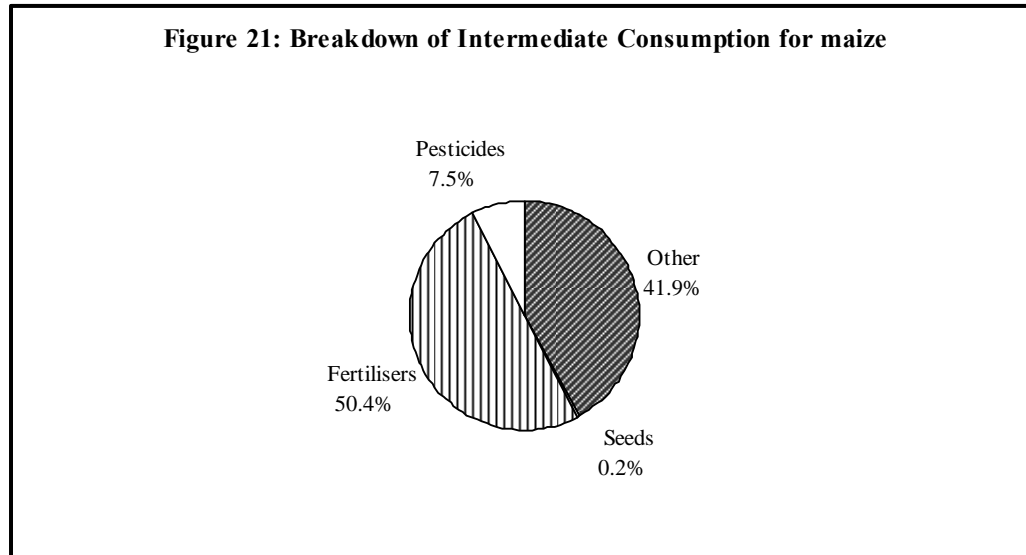
10.3.1 Operation ratio (Intermediate Consumption/Gross Output) of beans-dried

The operation ratio (IC/GO) worked out to 16.9% for beans-dried. Figure 20 shows that the major components of the intermediate consumption were *pesticides* (50%) and *fertilisers* (17%).



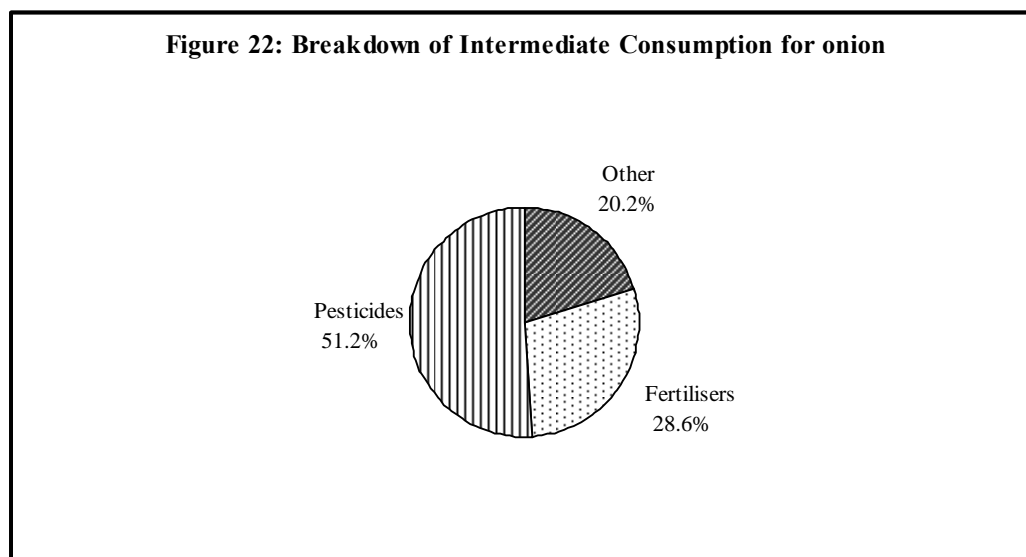
10.3.2 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of maize

The operation ratio (IC/GO) worked out to 11.7% for maize. Figure 21 shows that the major components of the intermediate consumption were *fertilisers* (50%) and *pesticides* (8%).



10.3.3 Operation ratio (Intermediate Consumption/Gross Output– IC/GO) of onion

The operation ratio (IC/GO) worked out to 14.4% for onion. Figure 22 shows that the major components of the intermediate consumption were *pesticides* (51%) and *fertilisers* (29%).



CHAPTER 11: SUGGESTIONS AND RECOMMENDATIONS

11.1 Introduction

As in most surveys, the Agricultural Cost of Production Survey met with some difficulties due to unforeseen circumstances and this chapter provides an illustration of these problems and suggestions which may prove useful for planning and organisation of such a survey in the future.

11.2 Sampling frames

As the list of planters registered with SPWF is not exhaustive, agricultural data from the Census of Population could be used to improve the frame construction. This would necessitate more details of coding for specialised crops not covered in the current National Standard Industrial Classification (NSIC) of the Republic of Mauritius.

11.3 Workloads

The workloads of enumerators ended up to be unequal ranging from 40 to 80 plantations. It is suggested that the workload of an interviewer should be limited to around 40-50 for a calendar year, depending on both the concentration and the length of crop cycles of the selected crops in the allocated agro-climatic zone.

11.4 Replacement of severely damaged crops

It has not been possible to replace the severely damaged crops in this survey due to lack of funds. Allowance should be made in the future planning of such surveys to replace severely damaged crops.

**APPENDICES –
SURVEY DOCUMENTS**

AGRICULTURAL COST OF PRODUCTION SURVEY - 2005

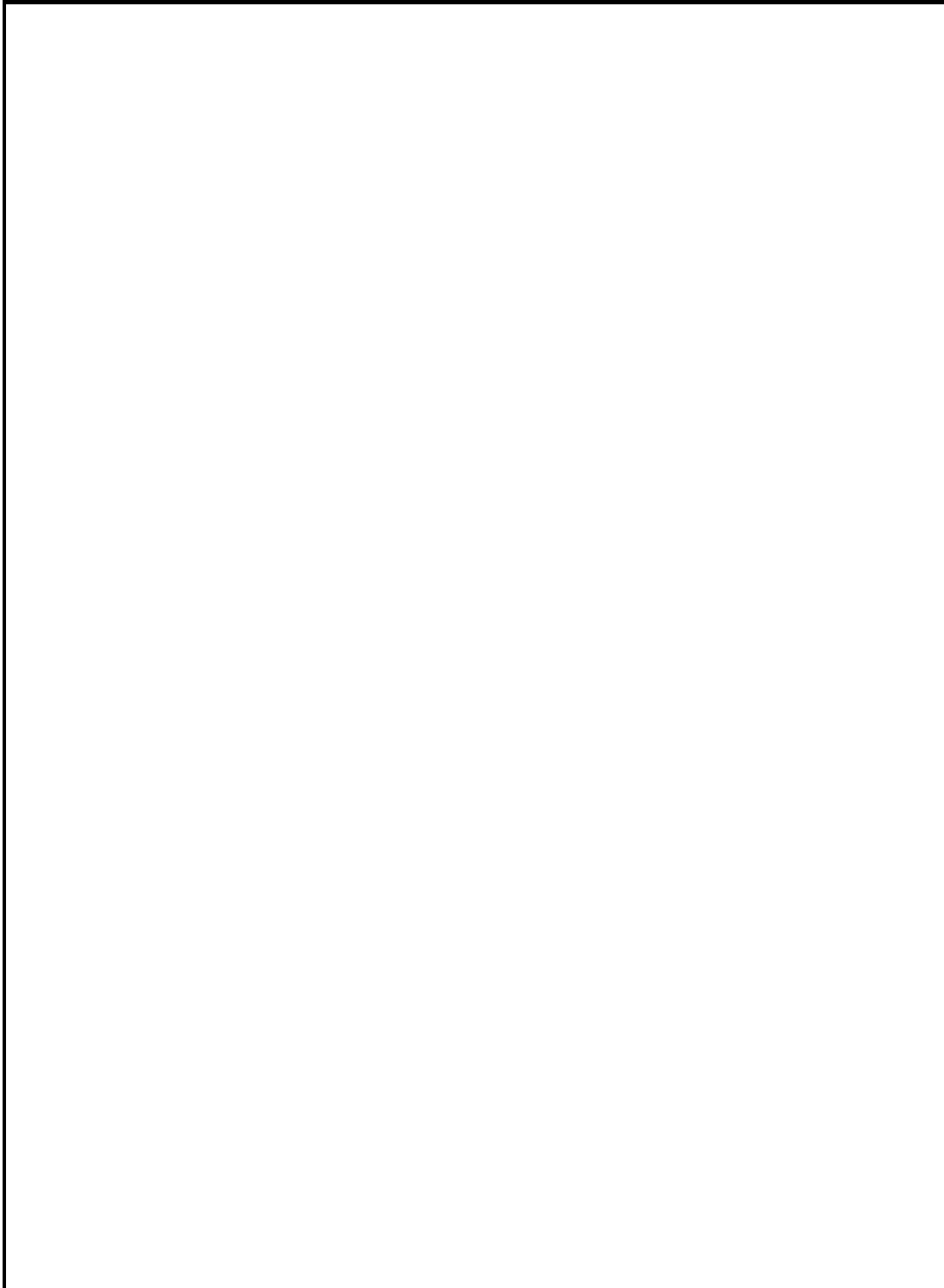
Sketch of location

Crop:.....

S.N.

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Name of planter:.....



D 1

CONFIDENTIAL

S.N



Republic of Mauritius

CENTRAL STATISTICS OFFICE

Ministry of Finance and Economic Development

AGRICULTURAL COST OF PRODUCTION SURVEY
(January-December 2005)

DAILY RECORD OF INPUT AND OUTPUT

Zone:.....

Period covered: from.....to.....

Name of planter:.....

Address of planter:.....

Type of planter:.....

Address of field: Street:.....

Locality:.....

Crop:.....

Variety.....

Name of Interviewer:.....	Date submitted: / /
Name of Supervisor:.....	Date submitted: / /

2. Record of other operations (cont'd)

2.1	2.2	2.3	2.4	2.5		2.6	2.7	2.8	2.9	2.10										2.21	2.22				
S.N	Date	Type of operation	Area covered (perches)	Material used	Whether purchased or home produced or both	Value (Rs)	Qty	Unit	Planter	Labour										Unpaid family worker					
										Inputs : materials					Paid employee					Other					Male	Female
										2.11	2.12	2.13	2.14	2.15	2.16	2.17	2.18	2.19	2.20	2.21	2.22				
									Hours of work	No.	Hours of work	No.	Hours of work	No.	Hours of work	No.	Hours of work	No.	Hours of work	No.	Hours of work	No.	Hours of work		
106	/																								
107	/																								
108	/																								
109	/																								
110	/																								
111	/																								
112	/																								
113	/																								
114	/																								
115	/																								
116	/																								
117	/																								
118	/																								
119	/																								
120	/																								

Harvest (cont'd):

CONFIDENTIAL

ACOPS 1

S.N



Republic of Mauritius

CENTRAL STATISTICS OFFICE

Ministry of Finance and Economic Development

AGRICULTURAL COST OF PRODUCTION SURVEY

(January-December 2005)

QUESTIONNAIRE

A.1 Zone:.....

A.2 Period covered: from.....to.....

A.3 Type of planter:.....

A.4 Address of field: Street:.....

Locality:.....

A.5 Crop:.....

A.6 Variety:.....

Name of Interviewer:.....	Date submitted: / /
Name of Supervisor:.....	Date submitted: / /

FOR OFFICE USE

Edited and coded by :..... Input by :.....

Checked by :..... Verified by :.....

1. Profile of holding

1.1 Area under cultivation:..... perches

1.2 Area harvested:..... perches

1.3 Ownership of land:

1-Leased	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Skip to Q1.5
2-Owned		
3-Free (parents)		
4-Free (other)		
5-Other (specify).....		

1.4 (a) Rent paid: Rs..... (b) Total area:.....perches (c) Period covered:.....mths
 (d) Rent (Rs)

1.5 Electricity consumed: Rs.....

1.6 Are you a member of any **agricultural** association?

1-None	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2-Cooperative society	
3-Young Farmers Club/AYC	
4-Other (specify).....	

1.7 Have you followed any formal training in **agricultural** farming?

1-Yes	<input type="checkbox"/> <input type="checkbox"/>	Skip to 1.9
2-No		

1.8 If "Yes" to Q1.7, specify training and duration (**3 most important**)

(a) Training	(b) Duration (mths)	(c) Payment (if any)
(i) <input type="text"/> <input type="text"/>	(i) <input type="text"/> <input type="text"/>	(i) Rs..... <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
(ii) <input type="text"/> <input type="text"/>	(ii) <input type="text"/> <input type="text"/>	(ii) Rs..... <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
(iii) <input type="text"/> <input type="text"/>	(iii) <input type="text"/> <input type="text"/>	(iii) Rs..... <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

1. Profile of holding (cont'd)

1.9 What is your **main** point of purchase for each of the following input?

Input	Point of purchase					Code
	1-Wholesaler	2-Retailer	3-Cooperative	4-AMB	5-Other	
(a) Manure						
(b) Fertiliser						
(c) Pesticides						
(d) Seeds						
(e) Seedlings/other						

1.10 Do you benefit from any irrigation facilities provided by Irrigation Authority?

1-Yes
 2-No **Skip to Q1.12**

1.11 (a) Irrigation dues: Rs..... (b) Total area:.....perches (c) Period covered:.....mths

(d) Irrigation dues (Rs)

1.12 Which of the following irrigation system do you usually use?

1-None **Skip to Section 2**
 2-Overhead
 3-Surface
 4-Drip
 5-Other (specify).....

1.13 If answer to Q1.12="2,3,4 or 5", specify source of water

1-CWA
 2-Borehole
 3-Well
 4-River
 5-Canal
 6-Spring
 7-Recycled water
 8-Irrigation Authority **Skip to Section 2**

1.14 Water dues: Rs.....

2. Family Labour

2.1 S/	2.2 Name of family member	2.3 Relationship to planter	2.4 Age (in completed years)		2.5 Sex		2.6 Marital status			2.7 School attendance			2.8 Educ. attainment (Current if in school; highest otherwise e.g. Std I, F II)	2.9 Status in agricultural holding			2.10 Is this your main occupation?		2.11 Description of main occupation	
			Male	Female	Married	Widowed, divorced or separated	Single	Past	Never	Now	Own account	Employer		Employee	Contracting	Family worker	Yes	No		
01	Planter		1		1	2	1	2	3	1	2	3		1	2	3	4	1	2	
02					1	2	1	2	3	1	2	3		1	2	3	4	1	2	
03					1	2	1	2	3	1	2	3		1	2	3	4	1	2	
04					1	2	1	2	3	1	2	3		1	2	3	4	1	2	
05					1	2	1	2	3	1	2	3		1	2	3	4	1	2	

3. Paid employees (family+other)

3.1 S/	3.2 Name of employee	3.3 Occupation	3.4 Sex		3.5 Mode of payment (daily, weekly, fortnightly or monthly)	3.6 No. of normal working days per week (excl. overtime)	3.7 No. of normal working hours per week (excl. overtime)	3.8 Wages and salary (incl. overtime) (Rs)	3.9 Refund of travelling (Rs)	3.10 Employer's contribution (NPF, etc) (Rs)	3.11 Payment in kind (Rs)	3.12 Monthly TOTAL (3.8+3.9+3.10+3.11) (Rs)
			Male	Female								
01			1	2								
02			1	2								
03			1	2								
04			1	2								
05			1	2								
06			1	2								
07			1	2								
3.13 Total												

4. Farm structures and fixed stock articles

(a) Farm machinery, transport equipment and other assets

4.1 Item	4.2 Year of purchase	4.3 Price paid (Rs)	4.4 Current value (Rs)	4.5 Expected life time (yrs)	4.6 Expenditure on maintenance during last 12 months (Rs)	4.7 Remarks
Farm machinery (specify):						
(01)						
(02)						
(03)						
Transport equipment (specify):						
(04)						
(05)						
(06)						
(07) Irrigation infrastructure						
Sprayers (specify):						
(08)						
(09)						
Other (specify):						
(10)						
(11)						

4. Farm structures and fixed stock articles (cont'd)

(b) Farm structures

4.8	4.9	4.10	4.11	4.12	4.13	4.14
Type of structure	Brief description	Year of acquisition / construction	Amount spent (Rs)	Expected life time (yrs)	Expenditure on maintenance during last 12 months (Rs)	Usage
(01) Storage sheds/godown						
(02) Fencing of plantation Other (specify):						
(03)						
(04)						

(c) Implement/tools

4.15	4.16	4.17	4.18	4.19	4.20	4.21
Item	Year of purchase	Price paid (Rs)	Current value (Rs)	Expected life time (yrs)	Expenditure on maintenance during last 12 months (Rs)	Remarks
(01) Sprinklers						
(02) Hoes/forks Other (specify):						
(03)						
(04)						

5. Acquisition of machinery and other fixed assets during past 12 months

5.1	5.2	5.3	5.4	5.5
S.N	Date of purchase	Description	Purchase value (Rs)	Remarks
(a) Machinery:				
01				
02				
03				
04				
05				
(b) Other fixed assets:				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
5.6 Total				

8. Summary of production and disposal

(a) Harvest

8.1 Number of harvest:

(b) Record of production

8.2 Unit:

8.3 Quantity produced:

8.4 Quantity unmarketable:

8.5 Quantity home consumed/donated:

8.6 Quantity available for sale (8.3-8.4-8.5):

(c) Disposal of produce

	Quantity	Value (Rs)
On farm.....	8.7 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	8.8 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	.....	Rs.....

Self.....	8.9 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	8.10 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	.....	Rs.....

Auction.....	8.11 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	8.12 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	.....	Rs.....

Other.....	8.13 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	8.14 <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	.....	Rs.....

8.15 Total amount received (8.8+8.10+8.12+8.14) Rs.....

8.16 Packing charges Rs.....

8.17 Transport charges Rs.....

8.18 Auction fees Rs.....

8.19 Other charges Rs.....

8.20 Total charges (8.16+8.17+8.18+8.19) Rs.....

FOR OFFICE USE

9. SUMMARY DATA

Rupees

9.1 Gross output

--	--	--	--	--	--

Receipts from sale of produce (8.15 - 8.20)

.....

9.2 Intermediate consumption

--	--	--	--	--	--

Rental of machinery and equipment

.....

Seeds/seedlings/other

.....

Fertilisers

.....

Pesticides

.....

Water/electricity

.....

Fuel and lubricants

.....

Repair expenses (minor)

.....

Other

.....

9.3 Value added

--	--	--	--	--	--

Value added (9.1 - 9.2)

.....

9.4 Compensation of employees

--	--	--	--	--	--

Compensation of employees (3.13)

.....

9.5 Other taxes on production

--	--	--	--	--	--

Other taxes on production

.....

9.6 Gross operating surplus

--	--	--	--	--	--

Gross operating surplus (9.3-9.4-9.5)

.....

9.7 Total value of additions

--	--	--	--	--	--

Fixed assets (5.6)

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