

**STUDY FOR UPDATING SOME OF  
THE NORMS USED  
IN  
NATIONAL ACCOUNTS STATISTICS  
IN  
AGRICULTURE SECTOR**

*Sponsored by*  
**Central Statistical Organisation**  
Department of Statistics  
Ministry of Statistics and Programme Implementation

**SOCIO-ECONOMIC RESEARCH CENTRE**  
NEW DELHI

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# P R E F A C E

National Accounts Statistics (NAS) provide an idea of inter-relationship of various transactions which take place from the stage of production of goods and services to the stage of their final disposal in an economy. These are primarily compiled to meet the need of the Government, private analysts, policy makers and decision takers. The NAS are compiled by the Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation. The most important aggregate of National Accounts is Gross Domestic Product (GDP).

2. Three independent approaches namely, (i) income approach, (ii) expenditure approach and (iii) production approach can be followed to get at the estimates of GDP. In agriculture (including livestock) except for operation of government irrigation system production approach is followed to compile estimates of GDP. Under this approach, output of agriculture sub-sector and livestock are valued separately. The inputs, generally being common to both livestock and agriculture are estimated for the sector as a whole.

3. Current data for computing output and inputs in the agriculture are not adequate. In the absence of these data, certain rates and ratios – some of them based on the studies conducted in the distant past are being used and termed as indirect estimates.

4. The proportions of indirect estimates from agriculture both for output and input are quite high. For the base year 1993-94, these were 15.0 per cent for output and 59.3 per cent for input. This proportion at the GDP level was 22.7 per cent. In 1993-94 Rs.50,356 crores of total GDP of Rs. 2,21,834 crores was compiled as an indirect estimate. A revision in the rates and ratios used for the purpose will improve the quality of estimate of GDP in the agriculture sector. With this end in view, the CSO awarded a pilot study to the Socio-Economic Research Centre (SERC). The study was to be carried out in the States of Andhra Pradesh, Gujarat, Madhya Pradesh and Punjab to develop a methodology for the purpose.

5. We are grateful to the CSO for remitting the study to SERC. Our special thanks are due to Shri V. Saha, Additional Director General, CSO for his initiative and valuable support to the Project. We had also useful inter-action on more than one occasion with Shri Ramesh Kolli, Deputy Director General, Head National Accounts Division of CSO and other officers and staff members of the Division. We express our gratitude to all of them.

6. Prof. B.S. Minhas was very kind in functioning as Chairman of an Advisory Committee set by SERC to provide guidance in undertaking the study. We are grateful to Prof. Minhas and members of the Advisory Committee, Prof. B.B. Bhattacharya, Prof. S.M. Kansal and Dr. S.D. Sharma for their valuable advice.

7. Dr. S.D. Sharma, Director, Indian Agricultural Statistics Research Institute (IASRI) also contributed to the success of the study by helping in identifying the various research institutes under the Indian Council of Agricultural Research (ICAR) which were approached for getting some source material to update certain norms and ratios used under the study. The Indian Society of Agricultural Statistics (ISAS) was associated in the statistical analysis of the data collected for the study. Help and guidance provided by Dr.Sharma and his colleagues Dr. V.K. Gupta, Dr. V.K. Bhatia, Dr. R.K. Khatri and Dr.Rajinder Prasad, and ISAS is gratefully acknowledged.

8. Valuable inputs for the study were provided by the Directorate of Economics and Statistics of the respective State Governments and Departments of Animal Husbandry and Dairying of the Ministry of the Agriculture and Cooperation, Govt. of India and State Governments. We take this opportunity to thank the officers of these Departments for their contributions which facilitated in conducting this study.

9. Members of a professional team of SERC, comprising Sarvshri Ram Murti, R.P. Katyal and S.N. Narang were assigned various tasks for efficient execution of the work awarded to the Centre. Sarvshri G.D. Rao, V.K. Bhargava and Sham Lal Goyal and Dr. P.H. Thakar, assisted by a team of field staff undertook difficult task of collection of data in the States of Andhra Pradesh, Madhya Pradesh, Punjab and Gujarat respectively. Shri A.S. Chopra of the Headquarters assisted in the formative stage of the project to identify the constituents of the minor crops and providing useful suggestions during the execution of the project. The efforts put in by the professional team at the Headquarters and at the four Regional Offices covered under the study are commendable and are gratefully acknowledged.

August, 2004

**M.G. Sardana**  
Chairman  
Socio-Economics Research Centre

# STUDY TEAM

## Headquarters

M.G. Sardana	Advisor
R.P. Katyal	Advisor
Ram Murti	Project Director
S.N. Narang	Associate Director

## Regional Directors

G.D. Rao	Andhra Pradesh
Dr. P.H. Thakar	Gujarat
V.K. Bhargava	Madhya Pradesh
S.L. Goyal	Punjab

# ACRONYMS

1.	ICAR	Indian Council of Agricultural Research
2.	AIDIS	All India Debt and Investment Survey
3.	CCS	Cost of Cultivation Studies
4.	CSO	Central Statistical Organisation
5.	DAHD	Department of Animal Husbandry and Dairying
6.	DES	Directorate of Economics and Statistics
7.	DESMOA	Directorate of Economics & Statistics, Ministry of Agriculture
8.	DMI	Directorate of Marketing Inspection
9.	GDP	Gross Domestic Product
10.	GSDP	Gross State Domestic Product
11.	GVA	Gross Value Added
12.	ISS	Integrated Sample Survey
13.	KVIC	Khadi and Village Industries Commission
14.	NAD	National Accounts Division
15.	NAS	National Accounts Statistics
16.	NHB	National Horticulture Board
17.	NSSO	National Sample Survey Organisation
18.	SDP	State Domestic Product
19.	SDAHD	State Departments of Animal Husbandry and Dairying
20.	SERC	Socio-Economic Research Centre
21.	TCD	Technical Committee for Direction

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# EXECUTIVE SUMMARY

0.1 National Accounts are a set of coherent, consistent and integrated accounts which tell us about the working of an economy. National Accounts Statistics (NAS) help in decision making, formulation of plans, their implementation and evaluation. The most important macro-economic aggregate of National Accounts is Gross Domestic Product (GDP). (Para 1.1)

0.2 The NAS are compiled by the Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation. National Accounts aggregates can be computed by either (i) income approach, or (ii) expenditure approach or (iii) production approach. None of these three methods is exclusively adopted for compilation of these aggregates on account of limitation of availability of data. In fact, it is a combination of the three methods which is used for measuring these aggregates for various sectors of the economy. (Paras 1.2 and 1.3)

0.3 In agriculture sector, except for operation of government irrigation systems production approach is used for compiling GDP estimates. The estimate of domestic product from operation of government irrigation systems is produced adopting income approach based on the data obtained from Government records. Estimation of gross value added by production approach requires measurement of gross value of output and value of inputs. Gross value of output, is compiled separately for agriculture sub-sector and livestock. The inputs, generally being common to both the livestock and agriculture sub-sector are estimated for the sector as a whole. (Paras 1.5 to 1.8)

0.4 The current data for estimating output and inputs in the agriculture sector are not adequate. Certain rates and ratios, based on studies conducted in the distant past are being used. Such estimates are termed as indirect estimates. A revision in these rates and ratios to reflect the situation as it exists at present will enable the CSO to get at more realistic estimate of GDP from this sector. The CSO awarded a pilot study to Socio-Economic Research Centre (SERC) to be carried out in the four States of Andhra Pradesh, Gujarat, Madhya Pradesh, and Punjab to examine the methodology which could be adopted in improving GDP estimate from Agriculture. (Paras 1.9 and 1.10)



0.5 The proportions of indirect estimates from agriculture were 15.0 per cent for output and 59.3 per cent for inputs in the base year i.e. 1993-94 of the current series. At the GDP level it was 22.7 per cent. (Para 2.2)

0.6 The study was carried out following the guidelines provided by the Advisory Committee under the Chairmanship of Prof. B.S. Minhas, Ex-member Planning Commission and Ex-chairman Governing Council, National Sample Survey Organisation (Para 2.4).

0.7 The rates and ratios which require updation in the agriculture sub-sector were put under three categories. Small millets and other pulses were put in the first category. The second category covered (i) other oil seeds, (ii) other sugars, (iii) other fibres, (iv) other drugs and narcotics, (v) other condiments and spices, and (vi) other fruits and vegetables. Fodder, grass, gur and bagasse belonged to the third category. For the crops falling under the first two categories weighted average prices / value per hectare were determined in terms of specified major crops. For the third category, literature search was made for getting at the rates of value of output per hectare. Scope of minor crops, on the basis of consultation with State Departments of Agriculture and DES is given at Annex 2. (Paras 2.5 and 2.6)

0.8 For rates and ratios for crops falling under the first two categories, prices of constituents of minor crops as well as specified major crops were collected from four districts covering two centres in each district selected in each of the four States covered for the study. Prices were collected on a weekly basis during the peak marketing period. Peak marketing period varies from crop to crop. Price collection was done during October 2003 to February 2004. (Paras 2.10 and 2.11)

0.9 An attempt was made to identify studies undertaken covering rates and ratios, which could be used for estimating output of specified crops and livestock, as well as inputs of the sector in consultation with ICAR and specialized institutes under ICAR. (Para 2.13)

0.10 Three schedules were developed and used for determining peak marketing periods, collection of area and production as also prices. (Para 2.14)

0.11 Investigators appointed for collection of data were imparted training before the start of the field work. Review meetings were taken by the Regional Directors, appointed one for each State during the field work from time to time. (Para 2.15)

0.12 Indian Society of Agricultural Statistics (ISAS) was engaged for statistical analysis of data. (Para 2.16)

0.13 Relationship of weighted prices / average value per hectare of minor crops in terms of major crops has been built up in the form of ratios as also regression equations. (Para 2.18)

0.14 Prices, area and production figures form the inputs for studying the relationship between minor crops and major crops in terms of weighted average prices / value per hectare. Estimates of area and production of constituents of minor crop group may not always be available at the State and District level. It may either be not grown or estimates not prepared at District and or State level. These factors have restricted the coverage of analysis of the study (Para 3.4).

0.15 It is generally expected that the ratios of weighted average prices / value per hectare of minor crops to weighted average price / value per hectare of major crops is less than one. But it is not so in some cases. There are a number of conditioning factors in prices of crops taken in the numerator and denominator of the ratios. One may relate to the lean marketing period and the other to the peak marketing period. Prices also depend on marketable surplus, demand and supply as also on normal year or otherwise. Likewise ratios of average value per hectare of minor crop to major crop which too depend on prices and productivity are also affected. These aspects need to be kept in view while designing future studies. (Para 3.8)

0.16 Ratio estimates are presented in Tables 3.4 and 3.5 and results based on simple regression equations are given in Tables 3.6 and 3.7. (Paras 3.6, 3.7 and 3.14)

0.17 Results based on the study for estimating output of fodder are presented in Tables 3.8 and 3.9. For estimating output of gur and bagasse results are given in paras 3.27 and 3.28 (Paras 2.23, 3.24, 3.27 and 3.28).

0.18 In spite of best efforts it has not been possible to locate any study providing results giving (i) proportion of sugar cane used in gur production at the farms, (ii) state-wise yield rates of grass production, and (iii) rates of fallen animals by category. (Paras 3.25, 3.27 and 4.4)

0.19 Studies on yield rates of camel hair, meat by-products and products like heads, legs, fat, blood, horns, useless meat, tail stumps, oesophagus, hoofs, guts, bones, hides and skin and glands have been undertaken by National Research Centre on Camel, Bikaner and Indian Veterinary Research Institute, Izatnagar. Results based on these studies are presented in para 4.2 and Tables 4.1 to 4.4 (Paras 4.2 and 4.3).

0.20 No study covering seed rates of masoor, other pulses, other oil seeds and sweet potatoes in value terms appears to have been done. Seed rates in quantity term i.e. kg. per hectare are more appropriate as used for major crops. These rates in quantity term have been obtained on the basis of discussion with concerned Scientists in ICAR and are given in Table 4.5. (Para 4.6)

0.21 Rates currently used for estimating the inputs of concentrates fed to the livestock are based on NSS, 1975-76 report. Table 4.6 presents the results on this aspect on the basis of a study undertaken by a team of Statisticians from IASRI by pooling data for IASRI surveys carried out over 1963 to 1983. Data on feed consumption are collected as a part of Integrated Sample Survey (ISS) of the Department of Animal Husbandry, but these are not being statistically analysed. (Paras 4.7, 4.8 and 4.10)

0.22 The study has brought the need for more work to be undertaken to build up rates and ratios between value per hectare / prices for various minor crops in terms of major crops of the groups following the methodology suggested for the purpose. State Directorates of Economics and Statistics (DES) may be inspired to take up the work in this regard. (Para 5.9)

0.23 For crops under 'other fruits and vegetables', specially designed sample survey need be undertaken in limited areas to provide estimates of various parameters for building up the relationship between the minor crops and major crops of the group and to develop an appropriate methodology in this regard. (Para 5.10)

0.24 Data on feed consumption being collected as a part of ISS need to be analysed on a regular basis for use in the estimation of GDP from agriculture. (Para 5.11)

0.25 Some studies on pilot basis to be undertaken by DES have been suggested. The need for repeat survey of livestock products similar to one carried in 30th round of NSS in 1975-76 has also been suggested. (Paras 5.12 and 5.13)

# **ANNEX**

## ADVISORY COMMITTEE

- |    |   |                  |
|----|---|------------------|
| 1. | Prof. B.S. Minhas<br>Ex-Member, Planning Commission and<br>Ex-Chairman, Governing Council<br>National Sample Survey Organisation      | Chairman         |
| 2. | Prof. B.B. Bhattacharya<br>Director<br>Institute of Economic Growth   | Member           |
| 3. | Dr. S.D. Sharma<br>Director<br>Indian Agricultural Statistics Research Institute  | Member           |
| 4. | Prof. S.M. Kansal<br>Ex-Professor<br>Indian Statistical Institute   | Member           |
| 5. | Prof. M.G. Sardana<br>Ex-D irector General<br>Central Statistical Organisation and<br>Additional Secretary to the Government of India | Member           |
| 6. | Shri R.P. Katyal<br>Ex-Head National Accounts Division<br>Central Statistical Organisation  | Member           |
| 7. | Shri S.N. Narang<br>Ex-Joint Director<br>National Sample Survey Organisation<br>Department of Statistics                              | Member           |
| 8. | Shri R.R. Bagga<br>Ex-Joint Director<br>Central Bureau of Health Intelligence<br>Ministry of Health and Family Welfare                | Member           |
| 9. | Shri Ram Murti<br>Ex-D irector<br>Directorate General of Foreign Trade<br>Ministry of Commerce and Industry                           | Member Secretary |

## CONSTITUENTS OF MINOR CROPS

Item	Commodities	State			
		Andhra Pradesh	Gujarat	Madhya Pradesh	Punjab
1. Small millets	1.1 Barnyard millet (Kutki)	*		*	
	1.2 Common millet (Cheena)				
	1.3 Little millet (Swak)			*	
	1.4 Italian Fox tail millet (Kangeeni)		*		
	1.5 Kolo millet (Kadu)			*	
	1.6 Other small millet (Banti-Bavto)		*		
2. Other pulses	2.1 Field peas (matar)		*	*	
	2.2 Kidney beans (Moth)		*		*
	2.3 Cowpea (Lobia)	*	*		
	2.4 Cluster bean (Guwar)		*		
	2.5 Chickling vetch (Khesari)			*	
	2.6 Other Pulses (Val)		*		
3. Other oil seeds	4.1 Mahua seed				
	4.2 Neem seed				
	4.3 Cotton seed		*	*	*
	4.4 Kardi seed				
	4.5 Kali Sarson				
	4.6 Indian Mustard (Rai)	*	*	*	*
	4.7 Indian rape (Torina)	*	*		*
4. Other sugars	5.1 Sugar Beet				
	5.2 Palms	*			
	5.3 Sorghum				
5. Other fibres	6.1 Gogu	*			
	6.2 Sisal hemp (Seesal)				
6. Other drugs & narcotics	7.1 Betal leaf (Pan)	*			
	7.2 Indian hemp (Bhang)				
	7.3 Opium (Afeem)			*	
	7.4 Poppy (Post / Khaskhas)			*	
	7.5 Blonde Pysllimum (Mehndi)			*	

Contd.....

Item	Commodities	State			
		Andhra Pradesh	Gujarat	Madhya Pradesh	Punjab
7. Other condiments and spices	8.1. Anise (Jira)		*		
	8.2. Aromatic cardamom (Elachi-small)				
	8.3. Bishops weed (Ajwan)				
	8.4. Cumin (Jeera)		*		
	8.5. Dill seed (Soya)		*		
	8.6. Fennel (Sonf)		*		
	8.7. Fenugreek (Methi)		*		
	8.8. Mint (Podina)		*		
	8.9. Nutmeg (Jaiphal)				
	8.10. White mustard (Banarase Rae)				



## PEAK MARKETING PERIODS OF CROPS BY STATES UNDER STUDY

Crop Name			Peak Marketing Period			
			Andhra Pradesh	Gujarat	Madhya Pradesh	Punjab
1. Cereals	1.1	Jowar	9-6	10-12, 2-3	10-6	9-12
	1.2	Bajra	9-3	9-11	*	9-12
	1.3	Barley	4-5	2-4	*	4-5
	1.4	Maize	10-12	10-12	10-2	9-12
	1.5	Ragi	10-5	10-12		
2. Small millets	2.1	Barnyard Millet (Kutki)	12-4		9-12	
	2.2	Little Millet (Swak)	12-4		10-1	
	2.3	Italian Fox Tail Millet (Kangeeni)	4	*		
	2.4	Kolo Millet (Kadu)			10-12	
	2.5	Other small millets (Banti-Bavto)		10-12, 2-3		
3. Pulses	3.1.	Arhar	12-4	1-4	11-3	9-1
	3.2.	Urad	11-4	9-11	11-3	9-12
	3.3.	Moong	11-4	9-11	11-3	10-12, 5-6
	3.4.	Masoor			11-3	10-12
	3.5.	Horsegram	11-4	2-3	2-4	4-5
4. Other Pulses	4.1	Field Peas (Matar)	12-2	3-4	*	
	4.2	Kidney beans (Moth)		10-1		12
	4.3	Cowpea (Lobia)	12-2	9-11		
	4.4	Cluster bean (Guwar)		11-1		
	4.5	Chicking Vetech (Khesari)	12		11-3	
	4.6	Other pulses (Val)		*		
5. Oil Seeds	5.1	Linseed			10-2	*
	5.2	Castor	12-4	11-4	*	*
	5.3	Sesamum	11-5	9-11		*
	5.4	Niger	12-3		12-3	
	5.5	Safflower	*	3-4		*
6. Other oil seeds	6.1	Mahua seed			3-1	
	6.2	Neem seed		6-7		
	6.3	Cotton seed		10-2	10-2	10-12
	6.4	Kali Sarson			11-2	4-5
	6.5	Indian Mustard (Rai)	*	2-3	*	
	6.6	India rape (Torja)	*	2-3	*	9-2

Crop Name			Peak Marketing Period			
			Andhra Pradesh	Gujarat	Madhya Pradesh	Punjab
7. Drugs & Narcotics	7.1	Tobacco	*	12-3		
8. Other Drugs & Narcotics	9.1	Betal Leaf (Pan)	*	1-12		
	9.2	Blonde Pysllimum(Mehndi)		1-12		
9. Condiments & Spices	10.1	Cardamom	*		11-1	
	10.2	Dry Chilies	1-2	2-4	11-2	11-1
	10.3	Dry Ginger			10-2	
	10.4	Black Pepper				
10. Other condiments and Spices	11.1	Anise (Jeera)		3-4		
	11.2	Aromatic Cardamom (Elachi Small)				
	11.3	Bishops Weed (Ajwan)		2-3		
	11.4	Cumin (Jeera)		3-4		
	11.5	Dill Seed (Soya)		10-12		
	11.6	Fennel (Sonf)		2-4		
	11.7	Fenugreek (Methi)		3-4		

\* Peak marketing period are not available.

**SOCIO-ECONOMIC RESEARCH CENTRE**  
NEW DELHI

**Study to update some of the norms used for estimating National Accounts  
Statistics in Agricultural Sector**

**Schedule for Collection of Prices of Selected Commodities**

State : \_\_\_\_\_

District : \_\_\_\_\_

Centre : \_\_\_\_\_

Date : \_\_\_\_\_

S.No.	Crop	Commodity	Variety	Price	
				Unit (Quintal)	Rs.
(1)	(2)	(3)	(4)	(5)	(6)
1.	Foodgrains	1.1 Jowar 1.2 Bajra 1.3 Barley 1.4 Maize 1.5 Ragi			
2.	Small Millets	2.1. Barnyard Millet (Kutki) 2.2. Common Millet (Cheena) 2.3. Little Millet (Swak) 2.4. Italian Fox Tail Millet (Kangeeni) 2.5. Kolo Millet (Kadu) 2.6.			
3.	Pulses	3.1 Arhar 3.2 Urad 3.3 Moong 3.4 Masoor 3.5 Horsegram			
4.	Other Pulses	4.1. Field Peas (Matar) 4.2. Kidney Beans (Moth) 4.3. Cowpea (Lobia) 4.4. Cluster Bean (Guwar) 4.5. Chicking Vetech (Khesari) 4.6.			

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

S.No.	Crop	Commodity	Variety	Price	
				Unit (Quintal)	Rs.
(1)	(2)	(3)	(4)	(5)	(6)
5.	Oil Seeds	5.1 Linseed			
		5.2 Castor			
		5.3 Sesamum			
		5.4 Niger			
		5.5 Safflower			
6.	Other Oil Seeds	6.1 Mahua Seed			
		6.2 Neem Seed			
		6.3 Cotton Seed			
		6.4 Kardi Seed			
		6.5 Kali Sarson			
		6.6 Indian Mustard (Rai)			
		6.7 Indian Rape (Torja)			
		6.8			
7.	Other Sugars	7.1 Khansari			
		7.2 Gur			
		7.3 Shakar			
8.	Fibres	8.1 Sanhemp			
		8.2 Mesta			
9.	Other Fibres	9.1 Brown hemp (Patsan)			
		9.2 Sisal hemp (seesal)			
		9.3			
10.	Drugs & Narcotics	10.1 Opium			
		10.2 Tobacco			
11.	Other drugs & Narcotics	11.1 Betal leaf (Pan)			
		11.2 Indian hemp (Bhang)			
		11.3 Poppy (Post / Khaskhas)			
		11.4 Blonde Pysllimum (Mehndi)			
		11.5			

S.No.	Crop	Commodity	Variety	Price	
				Unit (Quintal)	Rs.
(1)	(2)	(3)	(4)	(5)	(6)
12.	Condiments & Spices	12.1 Cardamom 12.2 Dry chilies 12.3 Dry ginger 12.4 Black Pepper			
13.	Other Condiments and Spices	13.1 Anise (Jira) 13.2 Aromatic Cardamom (Elachi-Small) 13.3 Bishops Weed (Ajwan) 13.4 Cumin (Jeera) 13.5 Dill Seed (Soya) 13.6 Fennel (Sonf) 13.7 Fenugreek (Methi) 13.8 Mint (Podina) 13.9 Nutmeg (Jaiphal) 13.10 White Mustard (Banarse Rai) 13.11			
14.	Other Fruits & Vegetables	14.1 Apricot (Khoobani) 14.2 Fig (Anjeer) 14.3 Jack Fruit (Katahal) 14.4 Litchi 14.5 Papaya 14.6 Pear (Nashpati) 14.7 Pomegranate (Annar) 14.8 Sapota (Chikoo) 14.9 Date Palm 14.10 Phalsa 14.11 Custard Apple 14.12 Strawberry 14.13 Plum 14.14 Cherry 14.15			

**SOCIO-ECONOMIC RESEARCH CENTRE**  
NEW DELHI

**Study to update some of the norms used for estimating National Accounts  
Statistics in Agricultural Sector**

**S.1 : Peak Marketing Periods by States & Crops**

**State : Andhra Pradesh**

S.No. (1)	Crop (2)	Item (3)	Peak Marketing Period (4)
1.	Foodgrains	1.1 Jowar	September to June
		1.2 Bajra	September to March
		1.3 Barley	---
		1.4 Maize	October to December
		1.5 Ragi	October to May
2.	Small Millets	2.1. Barnyard Millet (Kutki)	December to March
		2.2. Common Millet (Cheena)	---
		2.3. Little Millet (Swak)	December to March
		2.4. Italian Fox Tail Millet (Kangeeni)	March
		2.5. Kolo Millet (Kadu)	---
3.	Pulses	3.1 Arhar	December to March
		3.2 Urad	November to March
		3.3 Moong	November to March
		3.4 Masoor	---
		3.5 Horsegram	November to March
4.	Other Pulses	4.1. Field Peas (Matar)	December to February
		4.2. Kidney Beans (Moth)	---
		4.3. Cowpea (Lobia)	December to February
		4.4. Cluster Bean (Guwar)	---
		4.5. Chicking Vetech (Khesari)	December
5.	Other cereals	5.1 Oats	---

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

<b>S.No.</b>	<b>Crop</b>	<b>Item</b>	<b>Peak Marketing Period</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
6.	Oil Seeds	6.1 Linseed 6.2 Castor 6.3 Sesamum 6.4 Niger 6.5 Safflower	--- December to April November to May December to March ---
7.	Other Oil Seeds	7.1 Mahua Seed 7.2 Neem Seed 7.3 Cotton Seed 7.4 Kardi Seed 7.5 Kali Sarson 7.6 Indian Mustard (Rai) 7.7 Indian Rape (Torja)	
8.	Other Sugars	8.1 Sugar beat 8.2 Palm 8.3 Sorghum	
9.	Fibres	9.1 Sanhemp 9.2 Mesta	
10.	Other Fibres	10.1 Brown hemp (Patsan) 10.2 Sisal hemp (seesal)	
11.	Drugs & Narcotics	11.1 Opium 11.2 Tobacco	
12.	Other drugs & Narcotics	12.1 Betal leaf (Pan) 12.2 Indian hemp (Bhang) 12.3 Opium (Afeem) 12.4 Poppy (Post / Khaskhas) 12.5 Blonde Pysllimum (Mehndi)	

<b>S.No.</b>	<b>Crop</b>	<b>Item</b>	<b>Peak Marketing Period</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
13.	Condiments & Spices	13.1 Cardamom 13.2 Dry chilies 13.3 Dry ginger 13.4 Black Pepper	January to February
14.	Other Condiments and Spices	14.1 Anise (Jira) 14.2 Aromatic Cardamom (Elachi-Small) 14.3 Bishops Weed (Ajwan) 14.4 Cumin (Jeera) 14.5 Dill Seed (Soya) 14.6 Fennel (Sonf) 14.7 Fenugreek (Methi) 14.8 Mint (Podina) 14.9 Nutmeg (Jaiphal) 14.10 White Mustard (Banarse Rai)	
15.	Other Fruits & Vegetables	15.1 Apple 15.2 Apricot (Khoobani) 15.3 Fig (Anjeer) 15.4 Guava (Amrood) 15.5 Jack Fruit (Katahal) 15.6 Litchi 15.7 Papaya 15.8 Pear (Nashpati) 15.9 Pineapple (Ananas) 15.10 Pomegranate (Annar) 15.11 Sapota (Chikoo) 15.12 Date Palm 15.13 Phalsa 15.14 Custard Apple 15.15 Strawberry 15.16 Plum 15.17 Cherry	--- --- --- October to February --- --- December to March --- --- --- May to October --- --- August to November --- --- December to March



**SOCIO-ECONOMIC RESEARCH CENTRE**  
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**Study to update some of the norms used for estimating National Accounts  
Statistics in Agricultural Sector**

**S. 2 : Area under Selected Crops and Production of these Crops, 2001-02**

State : Andhra Pradesh

District : \_\_\_\_\_

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Foodgrains	1.1 Jowar	639329	634051	992	7260.19
		1.2 Bajra	91535	71031	776	5951.60
		1.3 Barley	---	---	---	---
		1.4 Maize	428285	1456755	3401	4972.33
		1.5 Ragi	81727	102804	1259	5751.85
2.	Small Millets	2.1 Barnyard Millet (Kutki)	26148	18359	701	6587.34
		2.2 Common Millet (Cheena)	807	671	832	7000.00
		2.3 Little Millet (Swak)				
		2.4 Italian Fox Tail Millet (Kangeeni) Samai	27859	13618	489	6587.34
		2.5 Kolo Millet (Kadu)				
3.	Pulses	3.1 Arhar Price	419840	188326	449	15051.64
		3.2 Urad (R)18085.73	626892	383069	611(K)	18926.30
		3.3 Moong (R)17233.93	476035	155343	326(K)	17010.95
		3.4 Masoor	---	---	---	---
		3.5 Horsegram (R) 8502.13	80339	39263	489(K)	9026.18
4.	Other Pulses	4.1 Field Peas (Matar)				
		4.2 Kidney Beans (Moth)				
		4.3 Cowpea (Lobia) Cow grass	20746	7040	339	
		4.4 Cluster Bean (Guwar)				
		4.5 Chicking Vetech (Khesari)				
5.	Other cereals	5.2 Oats				

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

\* Rs./Tonne during peak marketing period

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
6.	Oil Seeds	6.1 Linseed	5876	1419	242	17127
		6.2 Castor	283585	82983	293	
		6.3 Sesamum	132336	26700	201	
		6.4 Niger	19090	8017	420	
		6.5 Safflower	19730	5920	306	
7.	Other Oil Seeds	7.1 Mahua Seed	2453	790	322	
		7.2 Neem Seed				
		7.3 Cotton Seed				
		7.4 Kardi Seed				
		7.5 Kali Sarson				
		7.6 Indian Mustard (Rai) }				
		7.7 Indian Rape (Torla) }				
8.	Other Fruits & Vegetables	8.1 Apple	9881	177001	135601	
		8.2 Apricot (Khoobani)				
		8.3 Fig (Anjeer)				
		8.4 Guava (Amrood)				
		8.5 Jack Fruit (Katahal)				
		8.6 Litchi	4781	556913	14720	
		8.7 Papaya				
		8.8 Pear (Nashpati)	5918	30964	5232	
		8.9 Pineapple (Ananas)				
		8.10 Pomegranate (Annar)				
		8.11 Sapota (Chikoo)				
		8.12 Date Palm				
		8.13 Phalsa				
		8.14 Custard Apple				
		8.15 Strawberry				
		8.16 Plum				
		8.17 Cherry				

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
9.	Fibres	9.1 Sanhemp	1812	---		
		9.2 Mesta (Bales of 180 kg.)	78942	671542	1531	
10.	Other Fibres	10.1 Brown hemp (Patsan)				
		10.2 Sisal hemp (seesal)				
11.	Drugs & Narcotics	11.1 Opium	---	---	---	---
		11.2 Tobacco	127256	168570	1304	32515
12.	Condiments & Spices	12.1 Cardamom				
		12.2 Dry chilies				
		12.3 Dry ginger	2547	6263	2467	
		12.4 Black Pepper				
13.	Other drugs & Narcotics	13.1 Betal leaf (Pan)	2614	77030	29469	
		13.2 Indian hemp (Bhang)	124			
		13.3 Opium (Afeem)				
		13.4 Poppy (Post / Khaskhas)				
		13.5 Blonde Pysllimum (Mehndi)				
14.	Other Condiments and Spices	14.1 Anise (Jira)				
		14.2 Aromatic Cardamom (Elachi-Small)				
		14.3 Bishops Weed (Ajwan)				
		14.4 Cumin (Jeera)				
		14.5 Dill Seed (Soya)				
		14.6 Fennel (Sonf)				
		14.7 Fenugreek (Methi)				
		14.8 Mint (Podina)				
		14.9 Nutmeg (Jaiphal)				
		14.10 White Mustard (Banarse Rai)				

**SOCIO-ECONOMIC RESEARCH CENTRE**  
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**Study to update some of the norms used for estimating National Accounts  
Statistics in Agricultural Sector**

**S. 2 : Area under Selected Crops and Production of these Crops, 2001-02**

**State : Andhra Pradesh**  
**District : Mahaboobnagar**

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Foodgrains	1.1 Jowar	173065	118673	686	
		1.2 Bajra	17981	8631	480	
		1.3 Barley	---	---	---	
		1.4 Maize	40788	79503	1949	
		1.5 Ragi	7076	8074	1141	
2.	Small Millets	2.1 Korra	1617	374	231	
		2.2 Varagu	---	---	---	
		2.3 Samai	564	149	264	
		2.4 Other minor millets	---	---	---	
		2.5 Kolo Millet (Kadu)				
3.	Pulses	3.1 Arhar Redgram	57593	16299	283	
		3.2 Urad Blackgram	3728	1613	433	
		3.3 Moong Greengram	57898	755	13	
		3.4 Masoor	---	---	---	
		3.5 Horsegram (Ulavalu)	8307	3175	382	
4.	Other Pulses	4.1 Field Peas (Matar)	---	---	---	
		4.2 Kidney Beans (Moth) Beans	220	559	2543	
		4.3 Cowgram	586	124	213	
		4.4 Cluster Bean (Guwar)				
		4.5 Chicking Vetech (Khesari)				
		4.6 Other pulses				
5.	Other cereals	5.2 Oats				

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

\* Rs./Tonne during peak marketing period

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
6.	Oil Seeds	6.1 Linseed	---	---	---	
		6.2 Castor	165340	48775	295	
		6.3 Sesamum	1022	199	195	
		6.4 Niger	---	---	---	
		6.5 Safflower	813	274	337	
7.	Other Oil Seeds	7.1 Mahua Seed				
		7.2 Neem Seed				
		7.3 Cotton Seed				
		7.4 Kardi Seed				
		7.5 Kali Sarson				
		7.6 Indian Mustard (Rai)	1	0.322	322	
		7.7 Indian Rape (Torai)				
		7.8 Other oil seeds				
8.	Other Fruits & Vegetables	8.1 Apple				
		8.2 Apricot (Khoobani)				
		8.3 Fig (Anjeer)				
		8.4 Guava (Amrood)	800	9162	11452	
		8.5 Jack Fruit (Katahal)				
		8.6 Litchi				
		8.7 Papaya	127	17221	135601	
		8.8 Pear (Nashpati)				
		8.9 Pineapple (Ananas)				
		8.10 Pomegranate (Annar)				
		8.11 Sapota (Chikoo)	101	531	52583	
		8.12 Date Palm				
		8.13 Phalsa				
		8.14 Custard Apple				
		8.15 Strawberry				
		8.16 Plum				
		8.17 Cherry	69	1305	18907	
		8.18 Orange & Mosambi	1620	16281	10927	

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
9.	Fibres	9.1 Sanhemp	4			
		9.2 Mesta (Bales of 180 kg.)	75	638	1531	
10.	Other Fibres	10.1 Brown hemp (Patsan)				
		10.2 Sisal hemp (seesal)				
11.	Drugs & Narcotics	11.1 Opium	---	---	---	
		11.2 Tobacco	3431	2494	727	
12.	Condiments & Spices	12.1 Coriander	606	298	492	
		12.2 Dry chilies	10923	12996	1190	
		12.3 Dry ginger				
		12.4 Black Pepper				
13.	Other drugs & Narcotics	13.1 Betal leaf (Pan)				
		13.2 Indian hemp (Bhang)				
		13.3 Opium (Afeem)				
		13.4 Poppy (Post / Khaskhas)				
		13.5 Blonde Pysllimum (Mehndi)				
14.	Other Condiments and Spices	14.1 Anise (Jira)				
		14.2 Aromatic Cardamom (Elachi-Small)				
		14.3 Bishops Weed (Ajwan)				
		14.4 Cumin (Jeera)				
		14.5 Dill Seed (Soya)				
		14.6 Fennel (Sonf)				
		14.7 Fenugreek (Methi)				
		14.8 Mint (Podina)				
		14.9 Nutmeg (Jaiphal)				
		14.10 White Mustard (Banarse Rai)				

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**Study to update some of the norms used for estimating National Accounts**  
**Statistics in Agricultural Sector**

**S. 2 : Area under Selected Crops and Production of these Crops, 2001-02**

**State : Andhra Pradesh**  
**District : Mahaboobnagar**

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Foodgrains	1.1 Jowar	5060	3474	886	
		1.2 Bajra	8686	10666	1228	
		1.3 Barley	---	---	---	
		1.4 Maize	9129	46248	5066	
		1.5 Ragi	9272	8137	1905	
2.	Small Millets	2.1 Korra	1292	971	751	
		2.2 Varagu	792	659	832	
		2.3 Samai	---	---	---	
		2.4 Other minor millets	314	230	730	
		2.5 Kolo Millet (Kadu)	---	---	---	
3.	Pulses	3.1 Arhar Redgram	61248	29460	481	
		3.2 Urad Blackgram	37886	21052	556	
		3.3 Moong Greengram	11704	5491	469	
		3.4 Masoor	---	---	---	
		3.5 Horsegram (Ulavalu)	1149	622	541	
4.	Other Pulses	4.1 Field Peas (Matar)	---	---	---	
		4.2 Kidney Beans (Moth) Beans	186	160	907	
		4.3 Cowgram	15	9	632	
		4.4 Cluster Bean (Guwar)				
		4.5 Chicking Vetech (Khesari)				
		4.6 Other pulses				
5.	Other cereals	5.2 Oats				

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

\* Rs./Tonne during peak marketing period

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
6.	Oil Seeds	6.1 Linseed	---	---	---		
		6.2 Castor	16484	4088	248		
		6.3 Sesamum	1469	164	111		
		6.4 Niger	---	---	---		
		6.5 Safflower	---	---	---		
7.	Other Oil Seeds	7.1 Mahua Seed					
		7.2 Neem Seed					
		7.3 Cotton Seed					
		7.4 Kardi Seed					
		7.5 Kali Sarson					
		7.6 Indian Mustard (Rai)	}	11	3	261	
		7.7 Indian Rape (Torla)					
		7.8 Other oil seeds		156	175		
8.	Other Fruits & Vegetables	8.1 Apple					
		8.2 Apricot (Khoobani)					
		8.3 Fig (Anjeer)					
		8.4 Guava (Amrood)	562	6874	13999		
		8.5 Jack Fruit (Katahal)					
		8.6 Litchi					
		8.7 Papaya	589	79598	135601		
		8.8 Pear (Nashpati)					
		8.9 Pineapple (Ananas)					
		8.10 Pomegranate (Annar)					
		8.11 Sapota (Chikoo)	2312	11123	4811		
		8.12 Date Palm					
		8.13 Phalsa					
		8.14 Custard Apple					
		8.15 Strawberry					
		8.16 Plum					
		8.17 Cherry					
		8.18 Orange & Mosambi	8319	163592	21853		



S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
9.	Fibres	9.1 Sanhemp				
		9.2 Mesta (Bales of 180 kg.)				
10.	Other Fibres	10.1 Brown hemp (Patsan)				
		10.2 Sisal hemp (seesal)				
11.	Drugs & Narcotics	11.1 Opium	---	---	---	
		11.2 Tobacco	51549	57805	1121	
12.	Condiments & Spices	12.1 Coriander	2993	2317	774	
		12.2 Dry chilies	18267	43176	2364	
		12.3 Dry ginger				
		12.4 Black Pepper				
13.	Other drugs & Narcotics	13.1 Betal leaf (Pan)	76	2239	29469	
		13.2 Indian hemp (Bhang)				
		13.3 Opium (Afeem)				
		13.4 Poppy (Post / Khaskhas)				
		13.5 Blonde Pysllimum (Mehndi)				
14.	Other Condiments and Spices	14.1 Anise (Jira)				
		14.2 Aromatic Cardamom (Elachi-Small)				
		14.3 Bishops Weed (Ajwan)				
		14.4 Cumin (Jeera)				
		14.5 Dill Seed (Soya)				
		14.6 Fennel (Sonf)				
		14.7 Fenugreek (Methi)				
		14.8 Mint (Podina)				
		14.9 Nutmeg (Jaiphal)				
		14.10 White Mustard (Banarse Rai)				

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**Study to update some of the norms used for estimating National Accounts  
Statistics in Agricultural Sector**

**S. 2 : Area under Selected Crops and Production of these Crops, 2001-02**

**State : Andhra Pradesh**  
**District : Visakhapatnam**

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Foodgrains	1.1 Jowar	1536	894	582	
		1.2 Bajra	15686	13019	830	
		1.3 Barley	---	---	---	
		1.4 Maize	7977	14674	1840	
		1.5 Ragi	33925	40338	1189	
2.	Small Millets	2.1 Korra	22248	11769	531	
		2.2 Varagu	---	---	---	
		2.3 Samai	---	---	---	
		2.4 Other minor millets	220	165	751	
		2.5 Kolo Millet (Kadu)				
3.	Pulses	3.1 Arhar Redgram	4894	1522	311	
		3.2 Urad Blackgram	5661	2942	520	
		3.3 Moong Greengram	4878	1909	391	
		3.4 Masoor	---	---	---	
		3.5 Horsegram (Ulavalu)	6560	4947	754	
4.	Other Pulses	4.1 Field Peas (Matar)	---	---	---	
		4.2 Kidney Beans (Moth) Beans	4723	3500	907	
		4.3 Cowgram	2543	1422	559	
		4.4 Cluster Bean (Guwar)				
		4.5 Chicking Vetch (Khesari)				
		4.6 Other pulses				
5.	Other cereals	5.2 Oats				

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

\* Rs./Tonne during peak marketing period

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
6.	Oil Seeds	6.1 Linseed	---	---	---	
		6.2 Castor	6	2	282	
		6.3 Sesamum	14653	2583	176	
		6.4 Niger	17313	7341	424	
		6.5 Safflower	---	---	---	
7.	Other Oil Seeds	7.1 Mahua Seed				
		7.2 Neem Seed				
		7.3 Cotton Seed				
		7.4 Kardi Seed				
		7.5 Kali Sarson				
		7.6 Indian Mustard (Rai)				
		7.7 Indian Rape (Torja)				
		7.8 Other oil seeds				
8.	Other Fruits & Vegetables	8.1 Apple				
		8.2 Apricot (Khoobani)				
		8.3 Fig (Anjeer)				
		8.4 Guava (Amrood)	198	2478	13999	
		8.5 Jack Fruit (Katahal)				
		8.6 Litchi				
		8.7 Papaya				
		8.8 Pear (Nashpati)				
		8.9 Pineapple (Ananas)				
		8.10 Pomegranate (Annar)				
		8.11 Sapota (Chikoo)	33	173	5253	
		8.12 Date Palm				
		8.13 Phalsa				
		8.14 Custard Apple				
		8.15 Strawberry				
		8.16 Plum				
		8.17 Cherry				
		8.18 Orange & Mosambi				

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
9.	Fibres	9.1 Sanhemp	17	N.A.	N.A.	
		9.2 Mesta (Bales of 180 kg.)	307	2611	1531	
10.	Other Fibres	10.1 Brown hemp (Patsan)				
		10.2 Sisal hemp (seesal)				
11.	Drugs & Narcotics	11.1 Opium	---	---	---	
		11.2 Tobacco	1702	2598	1526	
12.	Condiments & Spices	12.1 Coriander				
		12.2 Dry chilies	4672	8471	1813	
		12.3 Dry ginger	1158	3047	2631	
		12.4 Black Pepper				
13.	Other drugs & Narcotics	13.1 Betal leaf (Pan)	250	7367	29469	
		13.2 Indian hemp (Bhang)				
		13.3 Opium (Afeem)				
		13.4 Poppy (Post / Khaskhas)				
		13.5 Blonde Pysllimum (Mehndi)				
14.	Other Condiments and Spices	14.1 Anise (Jira)				
		14.2 Aromatic Cardamom (Elachi-Small)				
		14.3 Bishops Weed (Ajwan)				
		14.4 Cumin (Jeera)				
		14.5 Dill Seed (Soya)				
		14.6 Fennel (Sonf)				
		14.7 Fenugreek (Methi)				
		14.8 Mint (Podina)				
		14.9 Nutmeg (Jaiphal)				
		14.10 White Mustard (Banarse Rai)				

**SOCIO-ECONOMIC RESEARCH CENTRE**  
NEW DELHI

**Study to update some of the norms used for estimating National Accounts  
Statistics in Agricultural Sector**

**S. 2 : Area under Selected Crops and Production of these Crops, 2001-02**

**State : Andhra Pradesh**

**District : Vizianagram**

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Foodgrains	1.1 Jowar	432	256	594	
		1.2 Bajra	2724	2956	1085	
		1.3 Barley	---	---	---	
		1.4 Maize	4613	24878	5393	
		1.5 Ragi	9086	10370	1141	
2.	Small Millets	2.1 Korra	1441	634	440	
		2.2 Varagu	---	---	---	
		2.3 Samai	---	---	---	
		2.4 Other minor millets	701	526	751	
		2.5 Kolo Millet (Kadu)				
3.	Pulses	3.1 Arhar Redgram	1313	765	583	
		3.2 Urad Blackgram	12348	4795	388	
		3.3 Moong Greengram	20111	7167	356	
		3.4 Masoor	---	---	---	
		3.5 Horsegram (Ulavalu)	26871	12925	481	
4.	Other Pulses	4.1 Field Peas (Matar)	---	---	---	
		4.2 Kidney Beans (Moth) Beans	245	224	907	
		4.3 Cowgram				
		4.4 Cluster Bean (Guwar)				
		4.5 Chicking Vetech (Khesari)				
		4.6 Other pulses				
5.	Other cereals	5.2 Oats				

Study sponsored by Central Statistical Organisation, Department of Statistics, New Delhi.

\* Rs./Tonne during peak marketing period

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
6.	Oil Seeds	6.1 Linseed	---	---	---	
		6.2 Castor	---	---	---	
		6.3 Sesamum	29627	5670	191	
		6.4 Niger	408	161	395	
		6.5 Safflower	---	---	---	
7.	Other Oil Seeds	7.1 Mahua Seed				
		7.2 Neem Seed				
		7.3 Cotton Seed				
		7.4 Kardi Seed				
		7.5 Kali Sarson				
		7.6 Indian Mustard (Rai)				
		7.7 Indian Rape (Torja)				
		7.8 Other oil seeds				
8.	Other Fruits & Vegetables	8.1 Apple				
		8.2 Apricot (Khoobani)				
		8.3 Fig (Anjeer)				
		8.4 Guava (Amrood)	361	3766	13999	
		8.5 Jack Fruit (Katahal)				
		8.6 Litchi				
		8.7 Papaya	2	271	135601	
		8.8 Pear (Nashpati)				
		8.9 Pineapple (Ananas)				
		8.10 Pomegranate (Annar)				
		8.11 Sapota (Chikoo)	102	536	5253	
		8.12 Date Palm				
		8.13 Phalsa				
		8.14 Custard Apple				
		8.15 Strawberry				
		8.16 Plum				
		8.17 Cherry				
		8.18 Orange & Mosambi				

S. No.	Crop	Commodity	Area (Hectare)	Production (Tonne)	Yield in kgs perhectare	Wholesale Prices* Rs/Ton
(1)	(2)	(3)	(4)	(5)	(6)	(7)
9.	Fibres	9.1 Sanhemp	---	---	---	
		9.2 Mesta (Bales of 180 kg.)	59501	541459	1638	
10.	Other Fibres	10.1 Brown hemp (Patsan)				
		10.2 Sisal hemp (seesal)				
11.	Drugs & Narcotics	11.1 Opium	---	---	---	
		11.2 Tobacco	1658	2694	1625	
12.	Condiments & Spices	12.1 Coriander	---	---	---	
		12.2 Dry chilies	2569	4548	1770	
		12.3 Dry ginger				
		12.4 Black Pepper				
13.	Other drugs & Narcotics	13.1 Betal leaf (Pan)	26	766	29469	
		13.2 Indian hemp (Bhang)				
		13.3 Opium (Afeem)				
		13.4 Poppy (Post / Khaskhas)				
		13.5 Blonde Pysllimum (Mehndi)				
14.	Other Condiments and Spices	14.1 Anise (Jira)				
		14.2 Aromatic Cardamom (Elachi-Small)				
		14.3 Bishops Weed (Ajwan)				
		14.4 Cumin (Jeera)				
		14.5 Dill Seed (Soya)				
		14.6 Fennel (Sonf)				
		14.7 Fenugreek (Methi)				
		14.8 Mint (Podina)				
		14.9 Nutmeg (Jaiphal)				
		14.10 White Mustard (Banarse Rai)				





**RESULTS BASED ON SHAPIRO-WILK'S TEST****TEST OF NORMALITY OF DATA (ANDHRA PRADESH)**

<b>Crop</b>	<b>Kolmogorov-Smirnov</b>
<b>Individual Crop</b>	
Jowar	0.200
Maize	0.000
Bajra	0.000
Ragi	0.000
Kangeeni	0.000
Barnyard	0.000
Cheena	0.000
Arhar	0.000
Urad	0.000
Moong	0.000
Horsegram	0.000
Cowpea	0.000
Kidney bean	0.200
Sesamum	0.005
Safflower	0.200
Niger	0.000
Castor	0.200
Toria	0.071
Rai	0.000
Tobacco	0.000
Pan	0.000
Cardamum	0.000
Chilly	0.000
Ginger	0.128
<b>Grouped Crop</b>	
Pulses	0.000
Other Pulses	0.000
Oil Seeds	0.000
Other Oil Seeds	0.000
Drugs & Narcotics	0.000
Other Drugs & Narcotics	0.000
Spices	0.000
Cereals	0.000
Small millets	0.000

Value less than 0.05 indicates that data follow normal distribution.

## TEST OF NORMALITY OF DATA (MADHYA PRADESH)

Crop	Kolmogorov-Smirnov
Individual Crop	
Jowar	0.000
Maize	0.000
Bajra	0.000
Barley	0.000
Kutki	0.000
Arhar	0.000
Urad	0.001
Moong	0.000
Masoor	0.000
Horsegram	0.000
Matar	0.000
Khesari	0.000
Linseed	0.000
Niger	0.000
Mahua	0.000
Cottonseed	0.000
Sarson	0.000
Rai	0.000
Chilly	0.000
Ginger	0.000
Dilseed	0.200
Grouped Crop	
Pulses	0.000
Other Pulses	0.000
Oil Seeds	0.000
Other Oil Seeds	0.000
Spices	0.000
Other Spices	0.200
Cereals	0.000
Small millets	0.000

Value less than 0.05 indicates that data follow normal distribution.

## TEST OF NORMALITY OF DATA (GUJARAT)

Crop	Kolmogorov-Smirnov
Individual Crop	
Arhar	0.000
Urad	0.000
Moong	0.000
Horsegram	0.000
Cluster bean	0.003
Val	0.001
Cowpea	0.000
Kidney bean	0.000
Sesamum	0.000
Safflower	0.200
Castor	0.000
Cottonseed	0.000
Mustard	0.000
Dry Chilly	0.000
Cumin	0.000
Dilseed	0.032
Fennel	0.002
Fenugreek	0.000
Anise	0.077
Jowar	0.000
Bajra	0.000
Maize	0.001
Barley	0.000
Foxtail	0.200
Bunti-bavto	0.000
Grouped Crop	
Pulses	0.000
Other Pulses	0.000
Oil Seeds	0.000
Other Oil Seeds	0.000
Spices	0.000
Other Spices	0.000
Cereals	0.000
Small millets	0.000

Value less than 0.05 indicates that data follow normal distribution.

## TEST OF NORMALITY OF DATA (PUNJAB)

Crop	Kolmogorov-Smirnov
Individual Crop	
Arhar	0.003
Urad	0.190
Moong	0.008
Masoor	0.079
Sesamum	0.000
Toria	0.000
Mustard	0.000
Grouped Crop	
Pulses	0.004
Oil Seeds	0.000
Other Oil Seeds	0.000

Value less than 0.05 indicates that data follow normal distribution.

**Basis of Fuzz Regression Methodology**

A fuzzy regression model corresponding to linear regression equation can be written as

$$Y = F_0 + F_1X_1 + \dots + F_nX_n \tag{1}$$

where  $X_i$ 's are, as before, explanatory variables. Y is the response, which lies in an interval and so are the parameters  $F_i$ 's. Here, Y is expressed as triangular fuzzy number as

$$Y_j = [y_{jl}, y_{ju}] \tag{2}$$

where  $y_{jl}$  represents the lower unit of  $j^{th}$  response and  $y_{ju}$  represents upper limit. In model it is expressed as

$$y_j = (y_{jo} \ y_{jw}) \tag{3}$$

As  $X_i$ 's are precise and Y is vague, the parameters  $F_i$ 's must also be triangular fuzzy numbers. So,  $F_i$  can be written as  $F_i = (F_{io} \ F_{iw})$

$$\tag{4}$$

By using interval arithmetic, eq (1) becomes

$$\langle y_{jc}, \ y_{jw} \rangle = \langle F_{0c}, \ F_{0w} \rangle + \langle F_{1c}, \ F_{1w} \rangle X_{1j} + \dots + \langle F_{nc}, \ F_{nw} \rangle X_{nj} \tag{5}$$

or

$$\langle y_{jc}, \ y_{jw} \rangle = \langle F_{0c} + F_{1c}X_{1j} + \dots + F_{nc}X_{nj}, \ F_{0w} + F_{1c}|X_{1j}| + \dots + F_{nw}|X_{nj}| \rangle$$

(6)

or

$$\begin{aligned} y_{jc} &= F_{0c} + F_{1c}X_{1j} + \dots + F_{nc}X_{nj} \\ y_{jw} &= F_{0w} + F_{1c}|X_{1j}| + \dots + F_{nw}|X_{nj}| \end{aligned} \tag{7}$$

The parameters  $F_i$ 's are estimated by minimizing the total vagueness, given by the quantity

$\sum_{j=1}^m y_{jw}$  subject to the constraint that each data point must fall within the estimated value

of response variable. This can be written as a linear programming problem (LPP) as

$$\text{Minimize } \sum_{j=1}^m (a_{0w} + a_{1c}|X_{1j}| + \dots + a_{nw}|X_{nj}|) \tag{8}$$

subject to

$$\sum_j \left[ \left\{ a_{0c} + \sum_{i=1}^n a_{ic} X_{ij} \right\} - \left\{ a_{0w} + \sum_{i=1}^n a_{ic} X_{ij} \right\} \right] \leq y_{jl}$$

$$\sum_j \left[ \left\{ a_{0c} + \sum_{i=1}^n a_{ic} X_{ij} \right\} + \left\{ a_{0w} + \sum_{i=1}^n a_{ic} X_{ij} \right\} \right] \geq y_{jR}$$

$$\text{and } a_{iw} \geq 0 \quad \forall i = 1, 2, \dots, n$$

Many commercial software packages are available to solve LPP using simplex algorithm. Some of them are SAS, LINDO, LPSS and TORA. Any standard spread sheet package like MS-Excel can be used for solving LPP manually.

**SOCIO-ECONOMIC RESEARCH CENTRE**  
NEW DELHI

**STUDY FOR UPDATING SOME OF THE NORMS USED IN  
NATIONAL ACCOUNTS STATISTICS IN AGRICULTURE SECTOR**

**SCHEDULES SELECTED FOR POST ENUMERATION CHECK BY  
STATE, DISTRICT AND CENTRE**

State	District	Centre	No. of Schedule			Date of Survey
			S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	
Andhra Pradesh	Mahboob Nagar	(i) Gadwal	1	1	2	16.10.03 & 25.12.03
		(ii) Balanagar		1		
	Prakasam	(i) Uppugundur	1	2	2	27.11.03 & 29.01.04
		(ii) Markapur			2	05.12.03 & 06.02.04
		Visakhapatnam			1	2
	(ii) Narsipatnam	2	05.12.03 & 13.02.04			
	Vizianagram	(i) Gajapattinagram	1	1	1	12.12.04
(ii) Parvattipuram		2			10.10.03 & 18.12.03	
			<b>1</b>	<b>5</b>	<b>15</b>	
Gujarat	Banaskantha	(i) APMC Planpur	1	1	2	31.10.03 & 05.12.03
		(ii) APMC Deesatharad		1		
	Mahesana	(i) Mahesana	1	2	2	09.10.03 & 19.12.03
		(ii) Vishnagar			2	02.01.04 & 23.01.04
	Sabarkantha	(i) Himatnagar	1	3	3	10.10.03, 14.11.03 & 26.12.03
(ii) Himatnagar & Other market		1			30.01.04	
Vadodra	(i) APMC Vadodra	1	2	2	31.10.03 & 05.12.03	
	(ii) APMC Padra			1	03.01.04	

			<b>1</b>	<b>5</b>	<b>14</b>	
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State	District	Centre	No. of Schedule			Date of Survey	
			S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>		
<b>Madhya Pradesh</b>	Betul	(i) Chicholi	1	1	2	25.11.03 & 10.02.04	
		(ii) Betul		1			2
	Chhindwara	(i) Chhindwara		1	2	2	25.10.03 & 03.01.04
		(ii) Amarwara			2		18.10.03 & 27.12.03
	Seoni	(i) Barghat		1	2	2	08.11.03 & 17.01.04
		(ii) Seoni (Mandi)			2		28.11.03 & 30.01.04
	Sidhi	(i) Sidhi		1	2	1	17.10.03 & 26.12.03
		(ii) Deosar			1		18.12.03
				<b>1</b>	<b>5</b>	<b>15</b>	
	<b>Punjab</b>	Amritsar	(i) Amritsar Danamandi	1	1	2	05.12.03 & 13.02.04
(ii) Tarantaran Mandi			3		28.11.03, 05.12.03 & 13.02.04		
Ludhiana		(i) Ludhiana Mandi		1	2	2	21.11.03 & 30.01.04
		(ii) Khanna Mandi			2		28.11.03 & 06.02.04
Patiala		(i) Patiala Mandi		1	3	2	28.11.03, 05.12.03 & 13.02.04
		(ii) Rajpur Mandi			2		05.12.03 & 13.02.04
Roper		(i) Kharar Mandi		1	2	2	05.12.03 & 13.02.04
		(ii) Kurali Mandi			2		05.12.03 & 13.02.04

			<b>1</b>	<b>5</b>	<b>18</b>	
<b>Total</b>			<b>4</b>	<b>20</b>	<b>62</b>	



No. SERC/F-105/DTS/04

DATED : 10 SEPTEMBER 2004

**Shri D.D. Mathur**  
Dy. Director (MR)  
Government of India  
Department of Tourism  
(MR Division)  
C-1 Hutments, Dalhousie Road  
New Delhi – 110 001.

Sir,

I am sending herewith the enclosed information as  
desired.

Yours faithfully,

Encls.: As stated.

**( S.N. NARANG )**  
MEMBER SECRETARY

# **SOCIO-ECONOMIC RESEARCH CENTRE**

## **1. Type of Organisation**

Socio-Economic Research Centre (SERC) is an independent non-profit institution of national standing. It is registered under the Societies Act of 1860.

## **2. Location**

SERC has its head office in New Delhi. Currently Centre has regional offices in Ahmedabad, Bhopal (M.P.), Chandigarh, Hyderabad and Raipur (Chhattisgarh). It has close working relationship with technical organizations in Kolkata, Mumbai, Jammu & Kashmir, Orissa etc. It can, therefore, set up the regional offices in any part of India at a short notice. It has done so in the past.

## **3. Infrastructure**

It has in-house capability and expertise on data processing of data collected under large scale sample surveys. It is well equipped with computer hardware / software facilities for the day to day text processing and large scale data processing. The relevant software for text processing, data entry, statistical analysis and large scale data processing are available. The computer hardware facilities available with SERC include :-

- Five Intel Pentium Computer System each having sufficient Giga Bytes Storage HDD capacity connected on Local Area Network (LAN) in Windows environment.
- One system works as Server and the remaining four as work stations on LAN.
- 15" SVGA, Non-interlaced 1024 x 768 pixels resolutions Color Monitor with each system.
- 52 x CD ROM Drive.
- 1.44 MB 3.5" Floppy Disc Drive, Key Board and Mouse with Mouse Pad.
- HP Laser Printer with network support on the LAN provide sharing t,o all the computer systems.

Contd...2...

# SERC

-: 2 :-

## 4. Staff

It has core staff of about 40 persons, besides panel of consultants of renowned economists and statisticians. It is in a position to put in place a field staff of about 200 persons at a short notice. It is demonstrated by large-scale sample surveys conducted by it during the last 12 years.

## 4. Research Team

Team Leader. The research team in SERC is led by Prof. M.G. Sardana, a renowned sample survey statistician and formerly Director General Central Statistical Organisation and Addl. Secretary to the Government of India.

He holds an M.A. degree in Mathematics with Statistics from Punjab University and has two years post graduate Diploma in Agriculture Statistics from Indian Agricultural Statistics Research Institute.

As Consultant to leading International organizations as Asian Development Bank (ADB), United Nations Development Programme (UNDP), Food and Agriculture Organisation, Economics and Social Commission for Asia and Pacific etc., he has had international assignments in many countries around the globe.

Other professionals include :

### i) **S.N. Narang**

M.Sc. degree in Mathematics with Statistics followed by Advance Course in Statistics from Indian Statistics Institute.

He has over 40 years of experience in development of statistical system in India and Sample Survey practices.

He has been Consultant to ESCAP, UNESCO, UNICEF and ADB in different countries in various parts of the world.

Contd...3...

**ii) Ram Murti**

He holds an M.A. degree in Mathematics with Statistics from Punjab University and has done Advance Course in Statistics from Indian Statistical Institute, Kolkata.

He received training in Electronics data processing, Operation Research and financial management and financial accounts etc.

Held senior positions in Government of India and was Advisor on statistics to the Government of Afghanistan for three years.

He has rich experience in undertaking sample survey and estimation of national accounts aggregates.

**iii) R.R. Bagga**

He is M.A. in Mathematics and holds Diploma in Statistics from Indian Statistical Institute.

Has held high positions in Government of India and was Advisor in Health Data Collection and Analysis to the Government of Afghanistan for five years.

Has been associated in the development of health statistics as also in undertaking sample surveys in various aspects of socio-economic development.

**5. International Affiliation**

The Centre has undertaken research studies for international organizations like International Labour Organization, Geneva, United Nations Development Programme India and studies and surveys financed by World Bank.

