

# **MARKETABLE SURPLUS AND POST HARVEST LOSSES OF JOWAR IN INDIA 2002**



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## **PREFACE**

The Directorate of Marketing & Inspection (DMI), ever since its inception in the year 1935 has been engaged in conducting surveys on the marketing of agricultural commodities. The available data of marketable surplus based on the surveys conducted during earlier decades had **become obsolete. Therefore, a nation wide survey was initiated by the DMI for Estimation of Marketable Surplus & Post Harvest Losses of important cereals in the year 1972.** The survey included important cereals, namely, Paddy, Wheat, Jowar, Bajra and Maize. However, this data also became obsolete over a period of time and persistent demand from user organisations continued. Hence, a fresh nation wide survey was initiated for **Estimation of Marketable Surplus & Post Harvest Losses of selected foodgrains Paddy, Wheat, Jowar, Bajra, Maize, Ragi and Barley amongst cereals and Arhar, Green Gram, Black Gram, Gram and Lentil amongst pulses.** The survey was conducted over a period of three years, i.e; 1996-97, 1997-98 and 1998-99. The sampling frame included 25 States, 100 selected districts and 15,000-cultivator households, selected from these districts. The selection of States, districts and cultivator households was done in accordance with the **stratified multi stage random sampling design** recommended by the Technical Committee in consultation with the Indian Agriculture Statistical Research Institute (IASRI), New Delhi.

The data generated during the survey provided valuable information on various aspects of village profile and cultivator households, crops grown, retention for different purposes, marketed surplus and marketable surplus, post harvest losses at producer's level etc.

The data generated is voluminous. The facility of computer data entry helped in consolidating data from 7.23 lakhs schedules in a short span of time. This volume provides estimates based on the sample survey in respect of production of Jowar, retention by the farm family household for various purposes, post harvest losses at producer's level, marketed surplus and marketable surplus etc..

I place on record my sincere thanks to the members of the Technical Committee particularly Dr. A.K. Srivastava, Jt. Director and Dr. H.V.L. Bathla, Principal Scientist & Head, Division of Sample Survey, Indian Agricultural Statistics Research Institute and Dr. P. Kumar, Professor and Head, Division of Agriculture Economics, Indian Agricultural Research Institute, New Delhi, for rendering valuable guidance from time to time.

I thank the National Informatics Centre (NIC), Department of Information Technology, (Ministry of Communication & Information Technology), Government of India, and especially the office of NIC at Nagpur which provided valuable software support in data entry and analysis. I also thank the Regional Computer Centre, Calcutta for providing computer data entry service.

The field survey of such a voluminous nature required sincere and dedicated efforts by the officers and staff of the D.M.I. and officers and staff of the Designated State Agencies. I place on record my deep appreciation of their efforts in this survey.

I also place on record deep appreciation of sincere efforts of the Chief Project Co-ordinators and their team of officers in managing the task of such gigantic nature; particularly Dr. G.R.Bhatia, Additional Agricultural Marketing Adviser who has edited this report.

Last but not the least, I place on record my deep appreciation of the help and cooperation rendered by the selected cultivator households without whose enthusiasm, support and responses during the course of survey, the project would have not been possible.

The Government of India should not be regarded as assuming responsibility for any of the statements contained in this report.

Faridabad

s/d-

**Dated, the 16/9/03**

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## SUMMARY

1. In view of the persistent demand from the user organisations and after inter-departmental consultations 47 agricultural commodities were identified for undertaking the national surveys for estimation of marketable surplus & post harvest losses.
2. To start with 12 commodities namely Paddy, Jowar, Wheat, Bajra, Maize, Barley, Ragi, Red Gram, Green Gram, Black Gram, Gram and Lentil (Masoor) were covered
3. The study aims at providing reliable estimates of marketable surplus and post harvest losses at producer's level, both at National level and State level.
4. The survey covered 100 districts selected from 25 states in accordance with the methodology approved by the Technical Committee in consultation with the Indian Agriculture Statistical Research Institute (IASRI), New Delhi. From 100 selected districts, 1500 villages were selected. Out of 1500 villages selected, 460 villages were growing jowar. In other words, 30.67% of the villages selected were jowar-growing villages.
5. The total area under jowar was estimated at 10480.40 thousand hectares. Out of this an average of 1153.02 thousand hectares i.e., nearly 11% was grown as irrigated. The State-wise distribution of area under jowar shows that maximum area was in the State of Maharashtra (5308.04 thousand hectares), followed by Karnataka (1915.07 thousand hectares), Madhya Pradesh (872.13 thousand hectares), Andhra Pradesh (714.00 thousand hectares), Rajasthan (572.45 thousand hectares), Uttar Pradesh (381.96 thousand hectares), Tamil Nadu (380.13 thousand hectares), and Gujarat (279.00 thousand hectares). These States account for 99.45 per cent area under jowar. Maharashtra had the highest 12.32 percentage of area under irrigation. **In other states irrigation potential seemed to have not been fully exploited.**  
(Para-5)
6. The coverage of the High Yielding Varieties was of the order of 6636.33 thousand hectares i.e., 63.32 %. **This is a reflection of the successful efforts made by the Ministry of Agriculture for promotion of High Yielding Varieties.**  
(Para-5.2)
7. The production of jowar was estimated at 10652.19 thousand tonnes, out of which the contribution of irrigated jowar was 1383.80 thousand tonnes i.e., 12.99%. The contribution of High Yielding Varieties in production was estimated at 7924.37 thousand Tonnes or 74.39%. This further signifies the need for promotion of HYV to meet the competitive marketing environment.  
(Para-5.3, 5)
8. The total requirement of jowar for farm family consumption i.e., retention for consumption at farmer level and purchases, was estimated at 5111.07 thousand tonnes, which was 47.98% of the estimated production.  
(Para-6.6.1)
9. The estimates of retention for various purposes and purchases of jowar to meet the total requirement of farm family were as under :
  - i) For farm family consumption - 34.20 % (Para-6.2.1)
  - ii) For consumption by permanent labour and temporary labour. - 3.26 % (Para-6.3.1)
  - iii) Estimated purchases for Consumption. - 10.84 % (Para-6.5.1)
  - iv) For seed purpose - 1.04 % (Para-6.7.1)
  - v) For animal feed - 2.29 % (Para-6.8.1)
  - vi) For payment in cash and kind - 1.61 % (Para-6.10.1)

- 10 The total post harvest losses of jowar at producers' level (in transport from field to threshing floor, threshing and winnowing, transportation and farm storage) were estimated at 2.20 percent of the total production. The 1974-75 survey had reported these to be 5.02 percent of the total production of Jowar. This confirms considerable improvement owing to technological developments.  
(Para-7.1.2)
- 11 The total marketed surplus was estimated to be 39.72 percent. The share of direct sales by the producers to consumers was 12.21 percent, to co-operatives, it was 1.80 percent, and to FCI it was 1.29 percent. It is a matter of introspection for the co-operative sector and FCI to evaluate their role in marketing of jowar for the benefit of the farming community. It is also imperative to open up avenues through marketing reforms for promoting direct sales by the producer to the target group and have improved share in consumers rupee.  
(Para-8.3)
- 12 Out of the total sales, 50.52 percent sales were within villages. This clearly established the need for development of infrastructure and facilities at the village level to serve the interests of the farm households. It is also necessary to shift the focus of development from the urban market centres (largely developed) to the rural market centres.  
(Para-8.5)
- 13 The earlier survey of marketable surplus & post harvest losses of jowar conducted during the year 1974-75 showed that estimated farm family requirement was 4609.63 Thousand tonnes i.e., 66.16 % of estimated production of that year.  
(Para-9.6)
- 14 The 1974-75 survey showed that the marketable surplus was 2357.80 thousand tonnes i.e., 33.14 % of the production. The present survey revealed that the marketable surplus now stood at 3463.39 thousand tonnes i.e., 32.51 percent and the total farm family requirement including the losses at farm level was 7188.80 thousand tonnes i.e., 67.49 percent of the total production.  
(Para-9.7)
- 15 The marketed surplus was estimated at 4231.56 thousand tonnes or 39.72 percent. The 1974-75 survey reported marketed surplus to be 2432.77 thousand tonnes or 34.92 percent of total production of Jowar in the country.  
(Para-9.5)
- 16 The present survey showed that the farm family requirement was 7188.80 thousand tonnes. During 1974-75 survey, it was observed to be 4609.63 thousand tonnes. Thus farm family requirement seemed to have increased by 56 percent.  
(Para-9.7)
- 17 The earlier surveys showed that the average number of family members per household was 6.26, whereas the present survey showed that the average number of family members per household was 6.45. Thus there was an increase of 3.04 percent.  
(Ref. part I)  
(Para6.12)

## CHAPTER –I

### INTRODUCTION

- 1.1 The Directorate of Marketing & Inspection (DMI) has been conducting surveys on the marketing of agricultural commodities since its inception in the year 1935. The methodology adopted for these surveys was based on personnel inquiries from the most knowledgeable functionaries engaged in different aspects of marketing in different markets. It was also supplemented with questionnaires where it was feasible to obtain statistical information. During that period of time much of statistical expertise had not been developed in the country nor detailed factual information was available on the procedures adopted in different parts of the country for marketing of different agricultural commodities.
- 1.2 These surveys provided the basic information on marketing systems and practices for different agricultural commodities. However, it was felt necessary **to have precise estimates of marketable surplus & post harvest losses of foodgrains in the context of planning for agricultural development, distribution programmes and pricing policies.** Since the available data based on surveys conducted by the DMI had become obsolete, a series of national surveys on “**Marketable Surplus & Post Harvest Losses**” of selected agricultural commodities were taken up. The survey started with one commodity (Paddy) in the year 1972-73, followed by the surveys on Wheat, Jowar, Bajra and Maize during subsequent years. These surveys adopted the improved modern statistical techniques then available. With time, these data also became obsolete. In view of the persistent demand from the user organisations, and after inter-departmental consultations, 47 agriculture commodities were selected for undertaking surveys for marketable surplus & post harvest losses. To start with the following, 12 foodgrains were selected for these surveys.

#### CEREALS

Paddy  
Jowar  
Wheat  
Bajra  
Maize  
Barley  
Ragi

#### PULSES

Red Gram  
Green Gram  
Black Gram  
Bengal Gram  
Lentil (Masoor)

### 1.3 **OBJECTIVES OF THE STUDY**

The main objectives of the studies are:

- ➔ To revise and up-date the estimates of marketable surplus of foodgrains;
- ➔ To compile the latest data on farm retention for consumption, seed, feed, wages and other payments in kind, etc., and
- ➔ To estimate the post harvest losses at the producer's level.

The study aims at providing reliable estimates of marketable surplus, farm retention and post harvest losses at producers' level, statewise as well as for the country as a whole.

## **CHAPTER – II**

### **REVIEW OF LITERATURE**

- 2.1 The DMI has been engaged in conducting agricultural marketing surveys since its inception in the year 1935. The commodity survey reports brought forth background of commodity marketing, the problems and remedial measures required to overcome the same. These reports provided information on marketable surplus ratios, which were utilised by the Department of Statistics, Ministry of Planning, in framing estimates of 'Net National Product' and by Department of Industrial Policy & Promotion for assigning weights to different agricultural commodities in compilation of "All India index numbers of wholesale prices". The marketable surplus ratios in respect of foodgrains and sources are indicated below:

**TABLE NO. 1**

#### **MARKETABLE SURPLUS RATIOS OF FOODGRAIN CROPS**

S.No.	Commodity	Marketable surplus ratio (Percentage)	Year of which data relates
1.	Rice	32.2	Market Report 1951
2.	Wheat	37.8	Marketing Report 1957-58 & 1958-59
3.	Jowar	29.6	N.A.
4.	Bajra	27.2	N.A.
5.	Barley	28.0	N.A.
6.	Maize	38.5	N.A.
7.	Ragi	18.2	N.A.
8.	Gram	45.2	N.A.
9.	Arhar	62.4	Marketing Report 1956-57
10.	Urad	63.5	-
11.	Masoor	28.8	-
12.	Moong	60.7	-

**Source:** Directorate of Economics & Statistics U.O. No. 8-8/76-AWPT-ES dated 22.11.1976.

- 2.2 In view of the persistent demand from user organisations, another National survey was undertaken by the DMI during 1972-73 in respect of Paddy, Wheat, Jowar, Bajra and Maize. The marketable surplus ratios obtained therein are furnished below:

**TABLE NO. 2**

**MARKETABLE SURPLUS RATIOS OF SELECTED CEREALS**

S · N o ·	Commodity	Marketable surplus ratio (Percentage)	Year of reference	Year of publication of report
1 ·	Paddy <sup>1</sup>	8.87	1972-73	1979
2 ·	Wheat <sup>2</sup>	65.10	1973-74	1986
3 ·	Jowar <sup>3</sup>	33.14	1974-75	1984
4 ·	Bajra <sup>4</sup>	36.31	1974-75	1985
5 ·	Maize <sup>5</sup>	30.86	1974-75	1987

2.3 This apart, micro studies are being undertaken in the Agricultural Universities and Research Institutes. Some of these findings with regard to marketable surplus & post harvest losses are furnished below :

- The World Bank Operations Evaluation Study of (1974-85) <sup>7</sup> reported the storage losses of Sorghum and Millet as 4% in Nigeria and 1.7% in Malawi.
- Khadse, et al.<sup>8</sup> studied the marketable surplus of kharif jowar in Vidarbha Region of Maharashtra and reported the marketable surplus of 7.22% in small category, 22.79% in medium category, 42.66% in large category and 29.77% as overall average. The study further concluded that the production of jowar, marketable surplus and marketed surplus were having positive relationship with the size of holdings. Whereas the retentions for kind payment and home consumption were having negative relationship with the size of holding. In small and medium size holdings, the distress sale was found. They further concluded, “the major factor governing marketable surplus was being production and that home consumption and kind payment were responsible to reduce the marketable surplus of jowar in the area studied”. It may be mentioned here that jowar is a major staple food in the area of study conducted by the researchers.
- Pawar P.P. et al. (1990)<sup>9</sup> reported that the marketable surplus of jowar was positively related to size of holdings in Marathwada region of Maharashtra. The study concludes that the distress sale of both rabi and kharif crop was found in case of small cultivators due to their urgent needs of cash requirements. This is in conformity with the conclusions of the Khadse et.al. as indicated above.

- Pawar N.D., et al. (1998)<sup>10</sup> in their study of marketable surplus of jowar in Marathwada region of Maharashtra reported marketable surplus of 13.86% in small category, 39.75% in medium category. 48.08% in large category and **41.00% as overall average for all categories in Marathwada region of Maharashtra State.**
- Dr. Darogasingh and Dr. R.K. Khosla (1978)<sup>11</sup> reported post harvest losses of jowar to the extent of 10%. Out of this, the losses at threshing yard are 2.0%, in transport as 0.5% and in storage 7.5%.



## CHAPTER – III

### SAMPLING DESIGN AND COVERAGE

#### 3.1 SAMPLING DESIGN :

The Technical Committee recommended stratified multi stage random sampling design for this survey. The selection of districts was done on **aggregate method of production for all crops of foodgrains**. Accordingly selection of districts was done @ 20% of total number of districts of each state, instead of taking 20% at the National level and allocating them among the states on the basis of their size and production as followed earlier by the DMI, for ensuring reliable estimates of marketable surplus, both at the State and National level. The sampling design consisted of:

- i) In each state 20% of the total number of districts were selected for the survey.
- ii) In each selected district, 15 (Fifteen) villages were selected after grouping into three stratum, based on total area cultivated under foodgrains.
- iii) In each selected village, 10 (Ten) cultivator households were selected after classifying them into three categories viz., **Small, Medium and Large**.

Accordingly, the total number of districts selected on all India basis worked out to 100 (One hundred), the total number of villages to be surveyed worked out to 1500 (100 districts X 15 villages) and 15000 cultivator households (1500 villages X 10 cultivator households), from whom the data were collected in prescribed schedules on quarterly basis over a period of three years of survey.

##### 3.1.1 METHOD OF SAMPLING

##### SELECTION OF SAMPLE DISTRICTS:

As stated earlier, in accordance with the procedure of sampling approved by the Technical Committee, in consultation with the Director, IASRI, New Delhi, Selection of districts was done on the basis of **aggregate method of production for all crops of foodgrains**. The selection of districts was done @ 20% of the total number of districts of each state, **instead of** taking 20% at the National level and allocating them among the States on the basis of their size of production, as was followed by the D.M.I. earlier. This was done to ensure reliable estimates of marketable surplus etc., both at the State and National level. All the districts in each state were classified into three categories, namely '**High**', '**Medium**' and '**Low**' production, based on annual production of foodgrain crops for three years (1991-92, 1992-93 & 1993-94). The data on annual production of foodgrains was obtained from the State Departments. About 20% of the total districts in each state were selected, after clubbing some States and Union Territories, so as to ensure selection of two districts from each category and atleast six districts from each state. Since the number of districts in individual States ranged between 2 in Goa and 63 in U.P., it posed a problem in respect of states having less than 30 districts.

i) States having 30 or more districts:

Bihar (42), Uttar Pradesh (63), Maharashtra (31) and Madhya Pradesh (45).

ii) States having more than 6 but less than 30 districts:

Andhra Pradesh (23), Arunachal Pradesh (11), Assam (23), Gujarat (14), Haryana (16), Himachal Pradesh (12), J & K (14), Karnataka (20), Kerala (14), Manipur (8), Nagaland (7), Orissa (13), Punjab (12), Rajasthan (27), Tamil Nadu (22), and West Bengal (17).

iii) States/Union Territories (U.Ts.) having less than 6 districts :

Goa (2), Meghalaya (5), Mizoram (3), Sikkim (4), Tripura (3), Andaman & Nicobar (2), Pondicherry (4), Daman & Diu (2), Delhi (1), Chandigarh (1), Lakshdweep (1), and Dadra Nagar Haveli (1).

Therefore, clubbing of some states and Union Territories was done to ensure selection of atleast two districts from each category. Accordingly, 100 districts were selected for the survey on All India basis.

It may further be added here that while selecting the districts, it was ensured that these selected districts contributed to nearly 20% of aggregate production of foodgrains.

### 3.1.2 SELECTION OF SAMPLE VILLAGES:

The Technical Committee in the 1<sup>st</sup> meeting had also suggested that while selecting the districts, different regions/agro-climatic zones in the states be taken into consideration to the extent possible. Incidentally, the list of 100 selected districts covered most of the agro-climatic zones except 'Western Dry Zone' and 'Island zone'.

In each selected district 15 (Fifteen) villages were selected after classifying villages into three strata, viz., '**High**', '**Medium**', and '**Low**', production. Keeping in view the practical difficulties in obtaining foodgrain production data from individual villages, the Technical Committee recommended that "Total area cultivated under foodgrains" may be taken as basis for classifying the villages. Accordingly, all the villages in the selected district were arranged in descending order of total gross or net area under foodgrains and then divided into three segments, each accounting for one third of the total cultivated area under foodgrains in the district. The villages in top segment of the list were placed in 'High' production stratum, those in the middle segment in 'Medium' production stratum, and the remaining in 'Low' production stratum. Five villages from each stratum were selected for survey by simple random sampling.

### 3.1.3 SELECTION OF CULTIVATOR HOUSEHOLDS :

In each selected village **ten** cultivator households were selected. All the cultivator households in the village were listed from the revenue records of the village. The cultivator households were arranged in **descending order of area cultivated under foodgrains** and the list was **divided into three segments**, each accounting for **one third of the total area cultivated under foodgrains** in the village. The cultivator households in the top segment of the list were placed in '**Large**' category, those in the middle segment '**Medium**' category, and the remaining in '**Small**' category. Four cultivator households from small category and three cultivator households each from medium and large category were selected for survey by simple random sampling.

## 3.2 COVERAGE :

- 3.2.1 The survey covered 100 districts selected from 25 states in accordance with the methodology approved by the Technical Committee . The distribution of sample villages, state-wise, category-wise reported growing paddy during the period of survey is presented in the following table :

**TALBE NO. 3**

**DISTRIBUTION OF SAMPLE VILLAGES GROWING JOWAR  
(BASED ON DATA FOR 1993-94 AND 1994-95)**

S.No.	State	No. of sample villages	No. of villages growing jowar	No. of cultivator households growing jowar			
				Category			
				Small	Medium	Large	Total
1	A.P.	75	35	60	40	44	144
2	Aru. Pr.	30	0	0	0	0	0
3	Assam	75	0	0	0	0	0
4	Bihar	165	8	0	4	0	4
5	Goa	15	0	0	0	0	0
6	Gujarat	60	47	72	65	72	209
7	Haryana	45	15	14	11	14	39
8	H.P.	45	0	0	0	0	0
9	J.& K.	45	0	0	0	0	0
10	Karnataka	60	39	97	82	91	270
11	Kerala	45	0	0	0	0	0
12	M.P.	135	95	299	98	131	528
13	Maharashtra	90	65	172	144	157	473
14	Manipur	15	0	0	0	0	0
15	Meghalaya	15	0	0	0	0	0
16	Mizoram	15	0	0	0	0	0
17	Nagaland	15	0	0	0	0	0
18	Orissa	90	21	25	12	0	37
19	Punjab	45	0	0	0	0	0
20	Rajasthan	90	33	36	27	12	75
21	Sikkim	15	0	0	0	0	0
22	T. Nadu	75	38	37	41	56	134
23	Tripura	15	0	0	0	0	0
24	U.P.	180	63	41	47	54	142
25	W.B.	45	1	0	1	0	1
	All India	1500	460	853	572	631	2056

3.2.2 It is observed that out of 1500 villages selected, 460 villages were growing Jowar. In other words 30.67 % were Jowar growing villages selected in the sample. It is also observed that the sample villages growing Jowar covered under the survey included 95 villages in Madhya Pradesh, 65 villages in Maharashtra, 63 villages in Uttar Pradesh, 21 villages in Orissa, etc.

3.2.3 Average area under cultivation, average area under Jowar and percentages thereof are furnished in Table No. 4

**TABLE NO. 4**

**AVERAGE AREA UNDER CULTIVATION OF JOWAR  
AND PERCENTAGES THEREOF PER SAMPLE VILLAGE  
(AVERAGE: 1996-97, 1997-98 & 1998-99)**

(Area in hectare)

S. No.	State	No. of sample villages	Average area under cultivation	Average area under Jowar	
				Area	Col 5 as % of Col 4
1	2	3	4	5	6

1	A.P.	75	544.79	93.97	17.25
2	Aru. Pr.	30	198.80	0.00	0.00
3	Assam	75	145.86	0.00	0.00
4	Bihar	165	270.22	3.05	1.13
5	Goa	15	163.42	0.00	0.00
6	Gujarat	60	471.74	89.46	18.96
7	Haryana	45	841.15	9.56	1.14
8	H.P.	45	106.15	0.00	0.00
9	J.& K.	45	337.52	0.00	0.00
10	Karnataka	60	492.72	203.22	41.24
11	Kerala	45	998.56	0.00	0.00
12	M.P.	135	357.42	50.73	14.19
13	Mah.State	90	474.03	274.58	57.92
14	Manipur	15	282.67	0.00	0.00
15	Meghalaya	15	69.80	0.00	0.00
16	Mizoram	15	141.09	0.00	0.00
17	Nagaland	15	318.20	0.00	0.00
18	Orissa	90	190.49	0.83	0.44
19	Punjab	45	1065.79	0.00	0.00
20	Rajasthan	90	483.29	39.90	8.26
21	Sikkim	15	116.51	0.00	0.00
22	T. Nadu	75	323.54	84.03	25.97
23	Tripura	15	339.51	0.00	0.00
24	U.P.	180	215.97	7.58	3.51
25	W.B.	45	495.86	0.09	0.02
	All India	1500	379.60	45.63	12.01

It is observed that in States like Maharashtra, the area under Jowar was 57.92 per cent of the area under cultivation of food grains (average for 1996-99) followed by Karnataka (41.24 %) and Tamil Nadu (25.97 %). In other Jowar growing states, it was less than 20.00 per cent.

## CHAPTER-IV

### ESTIMATION PROCEDURE

Let

$h$  denote the  $h^{\text{th}}$  stratum of district groups i.e. 'High', 'Medium' and 'Low' based on average annual production of foodgrains for the last three years,

$i$  denote the  $i^{\text{th}}$  district selected from the  $h^{\text{th}}$  district group,

$h'$  denote the  $h'^{\text{th}}$  stratum of village groups i.e. 'High', 'Medium' and 'Low' on the basis of total area cultivated under foodgrains,

$j$  denote the  $j^{\text{th}}$  village selected from  $h^{\text{th}}$  village group of  $i^{\text{th}}$  selected district from  $h^{\text{th}}$  district group,

$k$  denote the  $k^{\text{th}}$  category of cultivator i.e 'Large', 'Medium', or 'Small' on the basis of area under foodgrains in the village and

$l$  denote the  $l^{\text{th}}$  cultivator selected from  $k^{\text{th}}$  category of the  $j^{\text{th}}$  selected village from  $h'^{\text{th}}$  village group of  $i^{\text{th}}$  selected district from  $h^{\text{th}}$  district group.

$Y_{hih'jkl}$  = Value of character under study  $Y$  of  $(hih'jkl)$ -th cultivator.

$x_{hih'jkl}$  = Area under the crop of the  $(hih'jkl)$ -th cultivator.

$m_{hih'jk}$  = Number of cultivators selected in  $(hih'jk)$ -th category of cultivator.

$M_{hih'jk}$  = Total number of cultivators in  $(hih'jk)$ -th category of cultivators.

$v_{hih'}$  = Number of selected villages from  $(hih')$ -th village group.

$V_{hih'}$  = Total number of villages in  $(hih')$ -th village group.

$n_h$  = Number of districts selected from the  $h$ -th district group.

$N_h$  = Total number of districts in the  $h$ -th district group.

$X_h$  = Total area under the crop in the  $h$ -th district group.

The estimate of total for the  $k$ -th category of the cultivator can be obtained as

$$\hat{Y}_k = \sum_{h=1}^H \frac{\hat{X}_{hk}}{X_{hk}} X_{hk}$$

Where,

$$\hat{Y}_{hk} = \frac{N_h}{n_h} \sum_{i=1}^{n_h} \sum_{h'=1}^{H'} \frac{V_{hih'}}{v_{hih'}} \sum_{j=1}^{v_{hih'}} \frac{M_{hih'jk}}{m_{hih'jk}} \sum_{l=1}^{m_{hih'jk}} y_{hih'jkl}$$

$$\hat{X}_{hk} = \frac{N_h}{n_h} \sum_{i=1}^{n_h} \sum_{h'=1}^{H'} \frac{V_{hih'}}{v_{hih'}} \sum_{j=1}^{v_{hih'}} \frac{M_{hiah'jk}}{m_{hiah'jk}} \sum_{l=1}^{m_{hiah'jk}} x_{hiah'jkl}$$

$$X_{hk} = \frac{\hat{X}_{hk}}{H'} X_h$$

$$\sum_{k=1} \hat{X}_{hk}$$

The estimate of variance of  $\hat{Y}_k$  is

$$\hat{V}(\hat{Y}_k) = \sum_{h=1}^H \left[ \frac{N_h^2}{n_h} (1-f_{nh}) A_{hk} + \frac{N_h}{n_h} \sum_{i=1}^{n_h} \sum_{h'=1}^{H'} \frac{V_{hiah'}}{v_{hiah'}} (1-f_{viah'}) B_{hiah'k} + \right.$$

$$\left. \frac{N_h}{n_h} \sum_{i=1}^{n_h} \sum_{h'=1}^{H'} \frac{V_{hiah'}}{v_{hiah'}} \sum_{j=1}^{v_{hiah'}} \frac{M_{hiah'jk}^2}{m_{hiah'jk}} (1-f_{mhiah'jk}) C_{hiah'jk} \right]$$

where,

$$A_{hk} = \frac{1}{n_h - 1} \sum_{i=1}^{n_h} (\hat{Y}_{hik} - \hat{R}_{hk} \hat{X}_{hik})^2$$

$$B_{hiah'k} = \frac{1}{V_{hiah'} - 1} \sum_{j=1}^{v_{hiah'}} [(\hat{Y}_{hiah'jk} - \hat{R}_{hk} \hat{X}_{hiah'jk}) - (\hat{\bar{Y}}_{hiah'k} - \hat{R}_{hk} \hat{\bar{X}}_{hiah'k})]^2$$

$$C_{hiah'jk} = \frac{1}{M_{hiah'jk} - 1} \sum_{l=1}^{m_{hiah'jk}} [(\hat{Y}_{hiah'jkl} - \hat{R}_{hk} \hat{X}_{hiah'jkl}) - (\hat{\bar{Y}}_{hiah'jk} - \hat{R}_{hk} \hat{\bar{X}}_{hiah'jk})]^2$$

$$\hat{R}_{hk} = \frac{\hat{Y}_{hk}}{\hat{X}_{hk}}$$

$$\hat{Y}_{hiah'jk} = \frac{M_{hiah'jk}}{m_{hiah'jk}} \sum_{l=1}^{m_{hiah'jk}} y_{hiah'jkl}$$

$$\hat{\bar{Y}}_{hiah'jk} = \frac{1}{m_{hiah'jk}} \sum_{l=1}^{m_{hiah'jk}} Y_{hiah'jkl}$$

$$\frac{M_{hiah'jk}}{M_{hiah'jk}}$$

$$\hat{X}_{hih'jk} = \frac{\sum_{l=1}^{m_{hih'jk}} Y_{hih'jkl}}{m_{hih'jk}}$$

$$\hat{\bar{X}}_{hih'jk} = \frac{\sum_{l=1}^{m_{hih'jk}} X_{hih'jkl}}{m_{hih'jk}}$$

$$f_{mhih'jk} = \frac{m_{hih'jk}}{M_{hih'jk}}$$

$$\hat{Y}_{hih'k} = \frac{\sum_{j=1}^{V_{hih'}} \hat{Y}_{hih'jk}}{V_{hih'}}$$

$$\hat{\bar{Y}}_{hih'k} = \frac{\sum_{j=1}^{V_{hih'}} \hat{Y}_{hih'jk}}{V_{hih'}}$$

$$\hat{X}_{hih'k} = \frac{\sum_{j=1}^{V_{hih'}} \hat{X}_{hih'jk}}{V_{hih'}}$$

$$\hat{\bar{X}}_{hih'k} = \frac{\sum_{j=1}^{V_{hih'}} \hat{X}_{hih'jk}}{V_{hih'}}$$

$$f_{Vhih'} = \frac{V_{hih'}}{V_{hih'}}$$

$$\hat{Y}_{hik} = \sum_{h'=1}^{H'} \hat{Y}_{hih'k}$$

$$\hat{X}_{hik} = \sum_{h'=1}^{H'} \hat{X}_{hih'k}$$

The estimates of total of Y pooled over all the categories of farmers is

$$\hat{Y} = \sum_{K=1}^K \hat{Y}_k$$

and estimate of variance of  $\hat{Y}$  is

$$\hat{V}(\hat{Y}) = \sum_{K=1}^K \hat{V}(\hat{Y}_k)$$

## CHAPTER V

### AREA AND PRODUCTION OF JOWAR:

#### 5.1 AREA UNDER JOWAR: IRRIGATED & UNIRRIGATED.

- 5.1.1 The state-wise estimated annual average area under jowar for the year 1996-97 to 1998-99 with breakup of irrigated and unirrigated and category of cultivators are given in annexure I. The overall summary of the same is presented in the following table.

TABLE NO. 5

**AREA UNDER JOWAR - IRRIGATED, UNIRRIGATED  
AND TOTAL JOWAR (CATEGORY-WISE)  
(AVERAGE 1996-97,1997-98,1998-99)**

(\*000 hectares)

Category	Area Sown		
	Irrigated	Unirrigated	Total
(1)	(2)	(3)	(4)
Small	444.90(8.89) (38.59)	4559.66(91.11) (48.89)	5004.56(100.00) (47.75)
Medium	289.77(10.54) (25.13)	2460.62(89.46) (26.38)	2750.39(100.00) (26.25)
Large	418.35(15.35) (36.28)	2307.10(84.65) (24.73)	2725.45(100.00) (26.00)
Total	1153.02(11.00) (100.00)	9327.38(89.00) (100.00)	10480.40(100) (100.00)

(The figures in parenthesis are of the percentage to the total of the column/row)

- 5.1.2 It is observed that out of total estimated area of 10480.40 thousand hectares, under jowar in the country, small category of cultivators contributed 5004.56 thousand hectares i.e., 47.75 percent, medium category cultivators contributed 2750.39 thousand hectares i.e., 26.25 percent and large category of cultivators contributed 2725.45 thousand hectares i.e., 26 percent.
- 5.1.3 Category-wise analysis showed that in small category the share of irrigated area was 8.89 percent, in medium category it was 10.54 percent, and large category, it was 15.35 percent. **It is observed that irrigation potential still remained to be exploited.**



TABLE NO. 6

**STATE-WISE AREA UNDER JOWAR - IRRIGATED/  
UNIRRIGATED)**

**(AVERAGE 1996-97, 97-98 & 98-99).**

('000 hectares)

SL No	Name Of State	All Categories					
		Irrigated		Unirrigated		<u>Total Area</u>	
		Area	%	Area	%	Area	%
1	2	3		4		5	
1	Andhra Pradesh	5.47	0.47	708.53	7.60	714.00	6.81
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.57	0.14	0.00	0.00	1.57	0.01
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	18.73	1.62	260.27	2.79	279.00	2.66
7	Haryana	50.64	4.39	0.02	0.00	50.66	0.48
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	132.15	11.46	1782.92	19.11	1915.07	18.28
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	205.65	17.84	666.48	7.15	872.13	8.32
13	Maharashtra	653.95	56.73	4654.09	49.90	5308.04	50.66
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	4.43	0.38	0.87	0.01	5.30	0.05
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	572.45	6.14	572.45	5.46
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	36.47	3.16	343.66	3.68	380.13	3.63
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	43.91	3.81	338.05	3.62	381.96	3.64
25	West Bengal	0.05	0.004	0.04	0.00	0.09	0.00
26	All India	1153.02	100.00	9327.38	100.00	10480.40	100.00

5.1.4 It is observed that maximum area under jowar was in the State of Maharashtra (5308.04 thousand hectares), followed by Karnataka (1915.07 thousand hectares), Madhya Pradesh (872.13 thousand hectares), Andhra Pradesh (714.00 thousand hectares), Rajasthan (572.45 thousand hectares), Uttar Pradesh (381.96 thousand hectares), Tamil Nadu (380.13 thousand hectares) and Gujarat (279.00 thousand hectares). These states accounted for 99.45 percent of area under jowar.

**5.2 AREA UNDER JOWAR: HIGH YIELDING VARIETIES AND TRADITIONAL VARIETIES.**

5.2.1 The estimates of area under High Yielding Varieties and Traditional Varieties are furnished in Annexure II and summarised in Table No. 7.

TABLE NO. 7

**AREA UNDER JOWAR : HIGH YIELDING VARIETIES (HYV) AND TRADITIONAL VARIETIES (TV) (AVERAGE 1996-97/1997-98/1998-99).**

('000 hectares)

Category	Area Sown		
	HYV	TV	Total
(1)	(2)	(3)	(4)
Small	3157.68(63.10)  (47.58)	1846.88(36.90)  (48.05)	5004.56(100.00)  (47.75)
Medium	1688.33(61.39)  (25.44)	1062.06(38.61)  (27.63)	2750.39(100.00)  (26.25)
Large	1790.32(65.69)  (26.98)	935.13(34.31)  (24.32)	2725.45(100.00)  (26.00)
Total	<b>6636.33(63.32)</b> <b>(100.00)</b>	<b>3844.07(36.68)</b> <b>(100.00)</b>	<b>10480.40(100.00)</b> <b>(100.00)</b>

(The figures in parenthesis are percentage to the total of the column/row)

- 5.2.2 It is observed that the coverage of high yielding varieties of jowar was of the order of 6636.33 thousand hectares or 63.32 percent of the total area under jowar. The coverage of traditional varieties was 3844.07 thousand hectares or 36.68 percent. **This is a reflection of the efforts for promotion of high yielding varieties by the Ministry of Agriculture.**
- 5.2.3 The State-wise distribution of area under 'High Yielding Varieties' and 'Traditional Varieties' is given in Table No. 8.

TABLE NO. 8

STATE-WISE DISTRIBUTION OF AREA UNDER HIGH YIELDING VARIETIES (HYV)  
AND TRADITIONAL VARIETIES.

(AVERAGE 1996-97, 97-98 &amp; 98-99).

('000

hectares)

SL No	Name Of State	Area under					
		HYV		TV		<u>Total</u>	
		3		4		5	
1	2	Area	%	Area	%	Area	%
1	Andhra Pradesh	129.67	1.95	584.33	15.20	714.00	6.81
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.00	0.02	0.57	0.01	1.57	0.01
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	197.00	2.97	82.00	2.13	279.00	2.66
7	Haryana	40.99	0.62	9.67	0.25	50.66	0.48
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	617.33	9.30	1297.74	33.77	1915.07	18.29
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	596.00	8.98	276.13	7.18	872.13	8.32
13	Maharashtra	4846.00	73.02	462.04	12.02	5308.04	50.65
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	3.34	0.05	1.96	0.05	5.30	0.05
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	21.00	0.32	551.45	14.35	572.45	5.46
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	60.00	0.90	320.13	8.33	380.13	3.63
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	124.00	1.87	257.96	6.71	381.96	3.64
25	West Bengal	0.00	0.00	0.09	0.00	0.09	0.00
26	All India	6636.33	100.00	3844.07	100.00	10480.40	100.00

- 5.2.4 On All India basis, the area coverage under 'High Yielding Varieties' was around 63.32 % and rest was under traditional varieties. **In Maharashtra State, it is noteworthy that out of total area under jowar, 91.30 percent area was covered under high yielding varieties**

## 5.3 PRODUCTION OF JOWAR - IRRIGATED/UNIRRIGATED

- 5.3.1 The estimated production of jowar 'irrigated and unirrigated' is furnished in Annexure – III and is summarised in table No. 9

**TABLE NO. 9**  
**PRODUCTION OF JOWAR -IRRIGATED AND UNIRRIGATED**

('000 tonnes)

S.No.	Category	Production		
		Irrigated	Unirrigated	Total
1.	Small	536.77(10.20) (38.79)	4720.71(89.80) (50.93)	5257.48(100.00) (49.36)
2.	Medium	354.43(13.00) (25.61)	2371.07(87.00) (25.58)	2725.50(100.00) (25.58)
3.	Large	492.60(18.45) (35.60)	2176.61(81.55) (23.49)	2669.21(100.00) (25.06)
All India		1383.80(12.99) (100.00)	9268.39(87.01) (100.00)	10652.19(100.00) (100.00)

(The figures in parenthesis are percentages to the total of the column/row)

5.3.2 The contents of the Table No. 9 showed that out of total estimated production of **10652.19** thousand tonnes, the small category cultivators contributed 5257.48 thousand tonnes, i.e., 49.36 %. Out of this, production of 536.77 thousand tonnes was from irrigated crop i.e., 10.20 percent. Similarly, medium category and large category cultivators shared 25.61% and 35.60% of production respectively. The large category had slightly higher percentage under irrigation.

5.3.3 The state-wise break up of estimated production is furnished in Table No. 10.

**TABLE NO. 10**

**STATEWISE BREAK UP OF PRODUCTION OF JOWAR : IRRIGATED/UNIRRIGATED.**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99)**

('000

tonnes)

SL No	Name Of State	Production					
		Irrigated		Unirrigated		<u>Total</u>	
		3		4		5	
1	2	Prod.	%	Prod.	%	Prod.	%
1	Andhra Pradesh	6.27	0.45	498.76	5.38	505.03	4.74
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	2.45	0.18	0.00	0.00	2.45	0.02
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	20.83	1.51	237.24	2.56	258.07	2.42

7	Haryana	36.07	2.61	0.02	0.00	36.09	0.34
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	146.45	10.58	1431.18	15.44	1577.63	14.81
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	200.25	14.47	594.19	6.41	794.44	7.46
13	Maharashtra	839.26	60.64	5607.29	60.49	6446.55	60.53
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	5.73	0.41	0.68	0.01	6.41	0.06
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	318.46	3.44	318.46	2.99
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	48.37	3.50	268.45	2.90	316.82	2.97
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	78.05	5.64	312.07	3.37	390.12	3.66
25	West Bengal	0.07	0.01	0.05	0.00	0.12	0.00
26	All India	1383.80	100.00	9268.39	100.00	10652.19	100.00

5.3.4 The major states producing jowar were Maharashtra (60.53%), Karnataka (14.81%), and Madhya Pradesh (7.46%). Share of other states was 17.20%.

#### 5.4 PRODUCTION OF JOWAR: HIGH YIELDING VARIETIES AND TRADITIONAL VARIETIES.

5.4.1. The estimated production of jowar – High Yielding Varieties (HYV) and Traditional Varieties (TV) is furnished in Annexure IV and summarised in Table No.11.

**TABLE NO. 11**

#### **PRODUCTION OF JOWAR: HIGH YIELDING VARIETIES AND TRADITIONAL VARIETIES.** (‘000 tonnes)

S.No.	Category	Production		
		HYV	TV	Total
1.	Small	3926.46(74.68) (49.55)	1331.02(25.32) (48.79)	5257.48(100.00) (49.29)
2.	Medium	1976.29(72.51) (24.93)	749.21(27.49) (27.46)	2725.50(100.00) (25.56)
3.	Large	2021.62(75.74) (25.52)	647.59(24.26) (23.75)	2669.21(100.00) (25.15)
All category		7924.37(74.39) (100.00)	2727.82(25.61) (100.00)	10652.19(100.00) (100.00)

(The figures in parenthesis are percentages to the totals of the column/row)

- 5.4.2 As stated earlier, the share of small category cultivators was 49.29 percent and other categories were sharing the balance of production. It is also noticed that in small category, the percentage of HYV was nearly 74.68 percent, medium category was 72.51 percent and in large category, it was 75.74 percent. It is an indicator of the fact that the small category cultivators were not lagging behind in adopting modern techniques like use of high yielding varieties.
- 5.4.3 The state-wise breakup of estimated production of jowar of high yielding varieties and traditional varieties is given in Table No. 12.

**TABLE NO. 12**

**STATE-WISE BREAKUP OF PRODUCTION OF JOWAR : HIGH YIELDING VARIETIES  
(HYV) AND TRADITIONAL VARIETIES (TV)  
(AVERAGE 1996-97, 1997-98 AND 1998-99)**

**(‘000 tonnes)**

SL No	Name Of State	Production					
		HYV		TV		<b>Total</b>	
		3		4		5	
1	2	Prod.	%	Prod.	%	Prod.	%
1	Andhra Pradesh	107.13	1.35	397.90	14.59	505.03	4.74
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.72	0.02	0.73	0.03	2.45	0.02
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	185.90	2.35	72.17	2.65	258.07	2.42
7	Haryana	31.30	0.39	4.79	0.18	36.09	0.34
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	624.17	7.88	953.46	34.94	1577.63	14.82
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	594.27	7.50	200.17	7.34	794.44	7.46
13	Maharashtra	6114.32	77.16	332.23	12.18	6446.55	60.52
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	4.48	0.06	1.93	0.07	6.41	0.06
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	14.59	0.18	303.87	11.14	318.46	2.99
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	90.68	1.14	226.14	8.29	316.82	2.97
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	155.74	1.97	234.38	8.59	390.12	3.66
25	West Bengal	0.07	0.00	0.05	0.00	0.12	0.00
26	All India	7924.37	100.00	2727.82	100.00	10652.19	100.00

- 5.4.4 In the total production of 10652.19 thousand tonnes of jowar, share of Maharashtra was 6446.55 thousand tonnes (60.52%) followed by Karnataka 1577.63 thousand tonnes (14.82%); Madhya Pradesh 794.44 thousand tonnes (7.46%).
- 5.4.5 The total share of these states was 82.80 percent and 17.20 percent was contributed by remaining states. The share of high yielding varieties was more than 80 percent of the total crop in states like Maharashtra and Haryana.

## CHAPTER – VI

### **RETENTION OF JOWAR BY FARM HOUSEHOLD**

#### 6.1 Jowar is retained for

- i) farm family consumption,
- ii) consumption by permanent labour and temporary labour engaged on the farm,
- iii) seed purpose,
- iv) animal feed,
- v) barter (now nearly disappeared) and
- vi) payments in kind and cash for different purposes.

#### 6.2 RETENTION FOR FARM FAMILY CONSUMPTION

- 6.2.1 The total quantity of jowar retained for farm family consumption was estimated at 3643.16 thousand tonnes. It worked out to 34.20 percent of total production. The State-wise, Category-wise estimates of jowar retained for farm family consumption as averages for the years 1996-97 to 98-99 are presented in Annexure – V. The overall summary of the Annexure – V is given in Table No. 13 below :

**TABLE NO. 13**

#### **RETENTION OF JOWAR FOR CONSUMPTION BY THE FARM FAMILY.**

(‘000 tonnes)

S.No.	Category	Total production	quantity retained	Percent to production
1.	Small	5257.48	2091.41	39.78
2.	Medium	2725.50	926.14	33.98
3.	Large	2669.21	625.61	23.44
All categories		10652.19	3643.16	34.20

- 6.2.2 State-wise break-up of the total retention of jowar for consumption by the farm family is furnished in Table No. 14.

**TABLE NO. 14**

#### **STATE-WISE RETENTION OF JOWAR (ALL CATEGORIES) FOR FARM FAMILY CONSUMPTION.**

**(AVERAGE 1996-97, 1997-98 AND 1998-99)**

(‘000 tonnes)

S.No.	State	Total production	quantity retained	Percent to total production
1	Andhra Pradesh	505.03	132.27	26.19
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00

4	Bihar	2.45	1.82	74.29
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	70.82	27.44
7	Haryana	36.09	2.49	6.90
8	Himachal Pradesh	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	854.09	54.14
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	289.70	36.47
13	Maharashtra	6446.55	1973.02	30.61
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	5.24	81.75
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	143.89	45.18
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	41.03	12.95
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	128.67	32.98
25	West Bengal	0.12	0.12	100.00
26	All India	10652.19	3643.16	34.20

It is observed that retention for farm family consumption was highest in Orissa (81.75%) followed by Bihar (74.29%), Karnataka (54.14%), etc. In states like Haryana, A.P., Tamil Nadu, Jowar was not the staple food and hence retention for farm family consumption was very meagre.

### 6.3 RETENTION OF JOWAR FOR CONSUMPTION OF PERMANENT LABOUR AND TEMPORARY LABOUR.

- 6.3.1 The state-wise and category-wise details of estimated retention for consumption by permanent labour and temporary labour engaged on the farm by the farm household are furnished in Annexures VI and VII respectively. The overall summary with category-wise break-up is presented in Table No. 15 .



TABLE NO. 15

**RETENTION BY THE FARM FAMILY FOR CONSUMPTION BY PERMANENT LABOUR  
AND TEMPORARY LABOUR ENGAGED ON THE FARM.  
(AVERAGE 1996-97, 1997-98 AND 1998-99)**

('000 tonnes)

S. No.	Category	Total production	Quantity retained for consumption			
			Permanent labour	Percent	Temporary labour	Percent
1.	Small	5257.48	1.55	0.03	147.29	2.80
2.	Medium	2725.50	6.00	0.22	73.12	2.68
3	Large	2669.21	43.36	1.62	75.90	2.84
All India		10652.19	50.91	0.48	296.31	2.78

The estimated quantity of jowar retained for consumption by permanent labour and temporary labour worked out to 0.48 percent and 2.78 percent of production respectively.

- 6.3.2 The State-wise retentions of jowar by all categories of cultivators taken together for consumption of **permanent labour and temporary labour** employed on the farm are furnished in Annexures VI and VII and summary thereof is furnished in Table No. 16.

TABLE NO. 16

**STATE-WISE RETENTION BY THE FARM FAMILY FOR CONSUMPTION BY THE  
PERMANENT LABOUR AND TEMPORARY LABOUR EMPLOYED ON THE FARM (ALL  
CATEGORIES).  
(AVERAGE 1996-97, 1997-98 AND 1998-99)**

('000 tonnes)

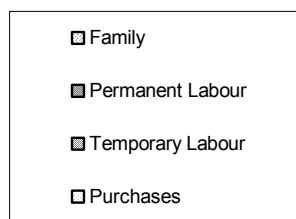
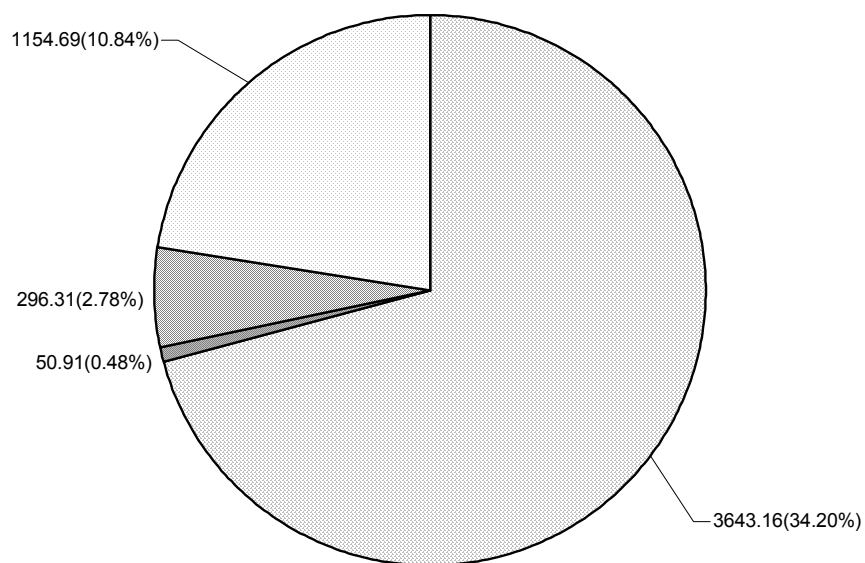
S. No.	State	Total production	Quantity retained for consumption				Total	
			Permanent labour		Temporary labour			
			quantity	Percent	quantity	Percent	quantity	Percent
1	2	3	4	5	6	7	8	9
1	Andhra Pradesh	505.03	1.54	0.30	0.00	0.00	1.54	0.30
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	2.45	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	258.07	0.00	0.00	1.11	0.43	1.11	0.43
7	Haryana	36.09	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	1577.63	0.00	0.00	15.56	0.99	15.56	0.99
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	794.44	6.49	0.82	17.59	2.21	24.08	3.03
13	Maharashtra	6446.55	41.28	0.64	246.45	3.82	287.73	4.46
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	6.41	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	318.46	1.57	0.49	7.76	2.44	9.33	2.93
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	316.82	0.00	0.00	0.00	0.00	0.00	0.00
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	390.12	0.03	0.01	7.84	2.01	7.87	2.02
25	West Bengal	0.12	0.00	0.00	0.00	0.00	0.00	0.00
26	All India	10652.19	50.91	0.48	296.31	2.78	347.22	3.26

It is observed that the quantity retained for consumption of permanent labour and temporary labour was nil in few states, whereas in other states it varied from 0.30 percent to 4.46 percent.

**6.4 TOTAL RETENTION FOR CONSUMPTION AT FARM LEVEL (FARM FAMILY CONSUMPTION AND CONSUMPTION BY PERMANENT LABOUR AND TEMPORARY LABOUR ENGAGED AT FARM).**

6.4.1 The state-wise and category-wise details of estimated total retention of jowar for consumption at farm level are furnished in Annexure – VIII. The overall summary with category-wise breakup is presented in Table No. 17.

**Retention of Jowar by Farm Family For Consumption at Farm Level  
(Quantity in '000 tonnes and percentage of total production)**



**TABLE NO. 17****TOTAL RETENTION OF JOWAR FOR CONSUMPTION AT FARM LEVEL**

('000 tonnes)

S. No.	Category	Total production	Retention for consumption at farm level	Percent to total production
1.	Small	5257.48	2240.25	42.61
2.	Medium	2725.50	1005.26	36.88
3.	Large	2669.21	744.87	27.91
	All India	10652.19	3990.38	37.46

Thus the total retention of jowar for consumption at farm level was estimated at 37.46 percent.

- 6.4.2 The state-wise break up of total retention of jowar by all categories of cultivators taken together for consumption at farm level is furnished in Table No. 18.

**TABLE NO. 18****TOTAL RETENTION OF JOWAR FOR CONSUMPTION AT FARM LEVEL  
(AVERAGE 1996-97, 1997-98 AND 1998-99)**

('000 tonnes)

S.No.	State	Total Production	Retention for consumption at farm level	Percent to total production
1	Andhra Pradesh	505.03	133.81	26.50
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	1.82	74.29
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	71.93	27.87
7	Haryana	36.09	2.49	6.90
8	Himachal Pradesh	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	869.65	55.12
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	313.78	39.50
13	Maharashtra	6446.55	2260.75	35.07
14	Manipur	0.00	0.00	0.00

15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	5.24	81.75
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	153.22	48.11
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	41.03	12.95
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	136.54	35.00
25	West Bengal	0.12	0.12	100.00
26	All India	10652.19	3990.38	37.46

In West Bengal, the retention of jowar for consumption at farm level was cent percent and was the highest in the country. The lowest retention on this account was reported to be 6.90 percent in Haryana. The state-wise analysis is presented below:

Upto 10 percent	10 percent to 50 percent	50 percent to 100 percent
Haryana (6.90)	Rajasthan (48.11) M.P. (39.50) Maharashtra (35.07) Uttar Pradesh (35.00) Gujarat (27.87) Andhra Pradesh (26.50) Tamil Nadu (12.95)	West Bengal (100) Orissa (81.75) Bihar (74.29) Karnataka(55.12)

## 6.5 PURCHASES OF JOWAR FOR CONSUMPTION

6.5.1 There are purchases of jowar by the farm household for two or more reasons: either the production is not adequate or the produce is sold immediately after harvest to meet immediate money needs. The farmer resorts to purchases subsequently to meet the consumption requirements. This is an important component to evaluate the total retention by the farmer. The statewide and categorywise details of the estimated purchases of jowar for consumption are presented in Annexure-IX. The overall summary with categorywise breakup is given in Table No. 19 below:

**TABLE NO. 19**

### **PURCHASE OF JOWAR FOR CONSUMPTION (AVERAGE 1996-97, 1997-98 AND 1998-99)**

(‘000 tonnes)				
S. No.	Category	Total production	quantity purchased for consumption	Percent to total production

1.	Small	5257.48	801.84	15.25
2.	Medium	2725.50	245.25	9.00
3.	Large	2669.21	107.60	4.03
All categories		10652.19	1154.69	10.84

It is clear that the small category of farmers resorted to purchases of large quantity of jowar when compared with the farmers of medium category and large category.

- 6.5.2 The state-wise break up of the total purchases of jowar by the farm households of all categories taken together for consumption is furnished in Table No. 20.

**TABLE NO. 20**

**STATE-WISE BREAKUP OF PURCHASES OF JOWAR.  
(AVERAGE 1996-97, 1997-98 AND 1998-99)**

S.No.	State	Total Production	('000 tonnes)	
			Total quantity purchased	Percent to total production
1	Andhra Pradesh	505.03	111.34	22.05
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	0.00	0.00
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	38.15	14.78
7	Haryana	36.09	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	293.78	18.62
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	102.00	12.84
13	Maharashtra	6446.55	584.79	9.07
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	0.00	0.00
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	0.00	0.00

21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	22.36	7.06
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	2.27	0.58
25	West Bengal	0.12	0.00	0.00
26	All India	10652.19	1154.69	10.84

It is observed that in States like A.P, Karnataka, Gujarat, M.P., Maharashtra and Tamil Nadu, the buy back was sizable, whereas in Uttar Pradesh the purchases for consumption were almost negligible

#### 6.6 TOTAL REQUIREMENT OF JOWAR FOR CONSUMPTION (RETENTION FOR CONSUMPTION AT FARM LEVEL AND PURCHASES).

6.6.1 The details of total requirements of jowar statewide and category-wise are furnished in Annexure – X. The overall summary with categorywise breakup thereof is presented in Table No. 21. below :

**TABLE NO. 21**

#### **TOTAL REQUIREMENT OF JOWAR FOR CONSUMPTION (AVERAGE 1996-97, 1997-98, and 1998-99).**

(‘000 tonnes)				
S. No.	Category	Total production	Total requirement for consumption	Percent to total production
1.	Small	5257.48	3008.09	57.22
2.	Medium	2725.50	1250.51	45.88
3	Large	2669.21	852.47	31.94
All India		10652.19	5111.07	47.98

On all India bases, the total requirement of jowar for farm level consumption was estimated to be 47.98 percent. The requirement of small category was highest at 57.22 percent followed by medium category 45.88 percent and large category 31.94 percent.

6.6.2 The State-wise break up of estimated total requirement of jowar for farm level consumption by all categories of cultivators taken together is furnished in Table No. 22. Below :

TABLE NO. 22

## STATE-WISE TOTAL REQUIREMENT OF JOWAR

S. No.	State	Total Production	Total requirement	(‘000 tonnes)
				Percent of total production
1	Andhra Pradesh	505.03	245.15	48.54
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	1.82	74.29
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	110.08	42.66
7	Haryana	36.09	2.49	6.90
8	Himachal Pradesh	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	1163.43	73.75
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	415.78	52.34
13	Maharashtra	6446.55	2845.54	44.14
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	5.24	81.75
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	133.22	41.83
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	49.39	15.59
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	138.81	35.58
25	West Bengal	0.12	0.12	100.00
26	All India	10652.19	5111.07	47.98



It is observed that the States to be deficit were Karnataka and Maharashtra. Incidentally, Karnataka and Maharashtra are major producing and consuming states.

#### 6.7 RETENTION OF JOWAR FOR SEED PURPOSE

- 6.7.1 The details of estimated retention of jowar for seed purpose statewise and category-wise are furnished in Annexures XI & XIA. The categorywise details are further summarised on all India basis, in Table No. 23. Below :

**TABLE NO. 23**

**RETENTION OF JOWAR FOR SEED PURPOSE  
(AVERAGE 1996-97, 1997-98 & 1998-99)**

S.No	Category	Total production	quantity retained for seed purpose	(‘000 tonnes)
				Percent to total production
1.	Small	5257.48	53.30	1.01
2.	Medium	2725.50	29.30	1.08
3.	Large	2669.21	28.53	1.07
All India		10652.19	111.13	1.04

It is seen that retention of jowar for seed purpose, on an average was 1.04 percent.

- 6.7.2 The state-wise break up of total retention of jowar for seed purpose by all categories of cultivators taken together is given in Table No. 24, below :

**TABLE NO. 24**

**RETENTION OF JOWAR FOR SEED PURPOSE: STATE-WISE BREAKUP  
(AVERAGE 1996-97, 1997-98 & 1998-99)**

S. No.	State	Total Production	quantity retained for seed purpose	(‘000 tonnes)
				Percent to total production
1	Andhra Pradesh	505.03	0.22	0.04
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	0.03	1.22
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	1.65	0.64
7	Haryana	36.09	6.47	17.93

8	Himachal Pradesh	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	28.85	1.83
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	11.90	1.50
13	Maharashtra	6446.55	24.48	0.38
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	0.07	1.09
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	9.16	2.88
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	19.27	6.08
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	9.03	2.31
25	West Bengal	0.12	0.00	0.00
26	All India	10652.19	111.13	1.04

- 6.7.3 The statewise and category wise details of estimated retention of jowar for seed purpose – for irrigated crop and unirrigated crop are presented in Annexure XI-A. A summary of this Annexure is presented in Table No. 25, below :

**TABLE NO. 25**  
**RETENTION OF JOWAR FOR SEED PURPOSE: IRRIGATED CROP AND**  
**UNIRRIGATED CROP.**  
**(AVERAGE 1996-97, 1997-98 & 1998-99)**

S. No.	Crop	Total production	Retention for seed	(‘000 tonnes)
				Percent of total retention
1.	Irrigated	1153.02	21.32	19.18
2.	Unirrigated	9327.38	89.81	80.82
Total		10480.40	111.13	100.00

On an average, the retention for seed purpose was 1.04 percent of the total production. The percentage of retention under unirrigated crops was reported more than that under irrigated crop. It could be attributed to higher level of area under unirrigated crop.

## 6.8 RETENTION OF JOWAR FOR ANIMAL FEED.

- 6.8.1 Jowar as animal feed was not very common in all states except Haryana. However, in some states, it was fed to milch animals, beef and pork stock, poultry etc. The statewide and category wise details of the estimated retention of jowar for animal feed are furnished in Annexure –XII. Table No. 26 shows all India retention of jowar for animal feed with category wise break up.

**TABLE NO. 26**

### **RETENTION OF JOWAR FOR ANIMAL FEED (AVERAGE 1996-97, 1997-98 & 1998-99)**

(‘000 tonnes)				
S. No.	Category	Total production	Retention for animal feed	Percent to total production
1.	Small	5257.48	94.33	1.79
2.	Medium	2725.50	61.75	2.27
3.	Large	2669.21	87.47	3.28
All India		10652.19	243.55	2.29

- 6.8.2 The state-wise break up of the total retention of jowar for use as animal feed is furnished in Table No. 27, below :

**TABLE NO. 27**

### **RETENTION OF JOWAR FOR ANIMAL FEED: STATE-WISE BREAKUP (AVERAGE 1996-97, 1997-98 & 1998-99)**

(‘000 tonnes)				
S. No.	State	Total production	Retention for animal feed	Percent to total production
1	Andhra Pradesh	505.03	0.61	0.12
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	0.00	0.00
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	94.92	36.78
7	Haryana	36.09	21.32	59.07
8	Himachal Pradesh	0.00	0.00	0.00

9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	18.34	1.16
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	8.66	1.09
13	Maharashtra	6446.55	15.58	0.24
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	0.00	0.00
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	9.18	2.88
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	34.55	10.91
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	40.39	10.35
25	West Bengal	0.12	0.00	0.00
26	All India	10652.19	243.55	2.29

Retention of jowar for animal feed was mainly reported from Haryana, Gujarat, Tamil Nadu and Uttar Pradesh. The quantity of jowar retained as animal feed was 59.07 percent in Haryana and 36.78 percent in Gujarat. Incidentally these States have well-developed dairy industry and jowar is used in feed mixture for milch animals for better milk yield. On all India basis, nearly 2.29 percent of the total production of jowar was retained for animal feed.

## 6.9 UTILISATION OF JOWAR FOR BARTER.

- 6.9.1 In the past, 'barter' was very common. But over a period of time, because of modernisation, the practice of 'barter' has almost disappeared.

## 6.10 UTILISATION OF JOWAR FOR PAYMENT TO PERMANENT LABOUR – IN CASH AND KIND.

- 6.10.1 The permanent labour is employed on the farm for various operations and is paid both in kind and cash. The estimated utilisation of jowar for this purpose is furnished category-wise in Annexures XIII, XIV and XV and the total of all categories of cultivators taken together is furnished in Annexure XVI. Table No. 28 gives overall summary of the same with category wise break up.

**TABLE NO. 28**

**UTILISATION OF JOWAR FOR PAYMENT IN CASH AND KIND TO PERMANENT LABOUR  
(AVERAGE 1996-97, 1997-98, and 1998-99).**

(‘000 tonnes)

S. No.	Category	Total production	Utilisation* for payment in kind & cash	Percent to total production
1.	Small	5257.48	23.60	0.45
2.	Medium	2725.50	27.77	1.02
3.	Large	2669.21	119.92	4.49
	All India	10652.19	171.29	1.61

(\* Includes utilisation from previous year crop and current years crop).

Thus the quantity of jowar utilised for payments in cash and kind to permanent labour was around 1.61 percent of the total production.

- 6.10.2 The State-wise breakup of jowar utilised for payments in cash and kind to permanent labour by all categories of cultivators taken together is furnished in Table No. 29.

**TABLE NO. 29**

**STATE-WISE BREAKUP OF UTILISATION OF JOWAR FOR PAYMENT IN CASH AND KIND  
TO THE PERMANENT LABOUR  
(AVERAGE 1996-97, 1997-98, and 1998-99).**

(‘000 tonnes)

S. No.	State	Total production	Utilisation of jowar for payment in kind and cash to permanent labour	
			Quantity	Percent of total production
1	Andhra Pradesh	505.03	14.35	2.84
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	0.00	0.00
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	2.47	0.96
7	Haryana	36.09	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00

9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	13.66	0.87
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	23.14	2.91
13	Maharashtra	6446.55	109.92	1.71
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	0.00	0.00
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	1.16	0.36
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	6.59	2.08
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	0.00	0.00
25	West Bengal	0.12	0.00	0.00
26	All India	10652.19	171.29	1.61

It is seen that the utilisation of jowar for payment to the permanent labour in kind or cash was less than 2 percent, barring 2.91 percent in M.P., 2.84 percent in A.P. and 2.08 percent in Tamil Nadu.

#### 6.11 UTILISATION OF JOWAR FOR PAYMENTS IN CASH OR KIND FOR VARIOUS PURPOSES FROM CURRENT YEAR'S CROP OR PREVIOUS YEAR'S CROP.

The farm households are required to make payments in cash or kind towards:

- Temporary farm labour;
- Farm machinery & equipments (on hire);
- Customary payments to village artisans;
- To land owner as share of produce;
- Repayment of loans;
- Land revenue;
- Irrigation and other causes applicable;
- Other miscellaneous payments.

6.11.1 The category-wise break up for utilisation of jowar towards cash payment on these items from current years crop is furnished in Annexures XVII, XVIII, XIX and total for all categories is furnished in Annexure XX. A summary of these annexures is presented in Table No. 30.

**TABLE NO. 30**  
**UTILISATION OF JOWAR TOWARDS PAYMENT IN CASH FROM CURRENT YEARS**  
**CROP.**

(AVERAGE 1996-97, 1997-98 1998-99).

('000 tonnes)

S. No.	Item	(Category)			Total quantity sold
		Small	Medium	Large	
		quantity sold	quantity sold	quantity sold	
1.	Temp. farm labour	43.94(9.79) (34.07)	373.18(83.15) (76.96)	31.67(7.06) (26.88)	448.79(100.00) (61.33)
2.	Farm machine & equipments	10.86(17.85) (8.43)	44.60(73.32) (9.20)	5.37(8.83) (4.56)	60.83(100.00) (8.31)
3.	Customary payments to artisans	3.05(19.13) (2.36)	11.51(72.21) (2.38)	1.38(8.66) (1.17)	15.94(100) (2.18)
4.	As rent land owner	0.00(0.00) (0.00)	0.12(100.00) (0.02)	0.00(0.00) (0.00)	0.12(100.00) (0.02)
5.	As share of produce to land owner	0.05(71.43) (0.04)	0.00(0.00) (0.00)	0.02(28.57) (0.02)	0.07(100.00) (0.01)
6.	Repayment of loan	4.91(27.77) (3.81)	5.50(31.11) (1.13)	7.27(41.12) (6.17)	17.68(100.00) (2.42)
7.	Land revenue	0.29(23.59) (0.22)	0.63(51.21) (0.13)	0.31(25.20) (0.26)	1.23(100.00) (0.17)
8.	Irrigation and other cess	4.94(71.08) (3.83)	0.63(9.06) (0.13)	1.38(19.86) (1.17)	6.95(100) (0.95)
9.	Others	60.93 (33.83) (47.24)	48.73(27.07) (10.05)	70.42(39.10) (59.77)	180.08(100.00) (24.61)
Total		128.97(17.63) (100.00)	484.90(66.67) (100.00)	117.82(16.10) (100.00)	731.69(100.00) (100.00)

(Figures in parenthesis is percentage to total quantity sold)

It is observed that small category farmers utilised 17.63 percent, medium category utilised 66.67 percent and large category utilised 16.10 percent of the total quantity of 731.69 thousand tonnes utilised for the purposes indicated in the table 30. This quantity was nearly 6.87 percent of total production. **It may be noted here that this cash payment had been accounted for in total sales. The data shown here is for academic interest.**

- 6.11.2 The category-wise use of jowar for payment in cash from sale proceeds of produce of previous years' crop is furnished in Annexures XXI, XXII, XXIII and total of all categories taken together is furnished in Annexure XXIV. All India brief of the same is furnished in Table No. 31, below:

**TABLE NO. 31**  
**UTILISATION OF JOWAR TOWARDS PAYMENTS IN CASH FROM SALE PROCEEDS**  
**OF PREVIOUS YEARS CROP**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**

('000 tonnes)

S. N o.	Item	Category			Total
		Small	Medium	Large	
1.	Temp. farm labour	175.48(22.96) (75.32)	540.45(70.71) (93.17)	48.37(6.33) (61.95)	764.30(100.00) (85.77)
2.	Farm machine & equipments	15.54(41.85) (6.67)	7.80(21.01) (1.34)	13.79(37.14) (17.66)	37.13(100.00) (4.17)
3.	Customary payment to village artisans	0.00(0.00) (0.00)	0.00(0.00) (0.00)	0.26(100.00) (0.33)	0.26(100.00) 0.03
4.	Rent to land owner	0.00(0.00) (0.00)	0.07(100.00) (0.01)	0.00(0.00) (0.00)	0.07(100.00) (0.00)
5.	Share to the land owner	0.00(0.00) (0.00)	0.15(100.00) (0.03)	0.00(0.00) (0.00)	0.15(100.00) (0.02)
6.	Loans	0.21(24.71) (0.09)	0.00(0.00) (0.00)	0.64(75.29) (0.82)	0.85(100.00) (0.10)
7.	Land revenue	0.11(27.50) (0.05)	0.12(30.00) (0.02)	0.17(42.50) (0.22)	0.40(100.00) (0.04)
8.	Irrigation and other cess	0.33(17.10) (0.14)	0.09(4.66) (0.02)	1.51(78.24) (1.93)	1.93(100.00) (0.23)
9.	Miscellaneous	41.32(48.03) (17.73)	31.37(36.46) (5.41)	13.34(15.51) (17.09)	86.03(100.00) (9.65)
Total		232.99(26.15) (100.00)	580.05(65.09) (100.00)	78.08(8.76) (100.00)	891.12(100.00) (100.00)

(Figures in parenthesis is percentage to total)

It is observed that out of total quantity, 891.12 thousand tonnes of jowar were utilised towards payments in cash from the sale proceeds of previous year crop, the farmers of small category utilised 232.99 thousand tonnes, farmers of medium category utilised 580.05 thousand tonnes and farmers of large category utilised 78.08 thousand tonnes. The shares of small category, medium category and large category farmers were found to be 26.15 percent, 65.09 percent and 8.76 percent respectively. The total quantity of jowar utilised was around 8.37 percent of production of all categories. This had been accounted for under the 'Sales'.

- 6.11.3 As stated earlier, one of the obligations of the farmer is towards payment in kind. The state-wise break up of retention and utilisation of jowar for payments in kind by small, medium and large is furnished in Annexures XXV, XXVI, XXVII respectively and all category total is furnished in Annexure XXVIII. A summary of the same on all India basis for all categories taken together is furnished in Table No. 32, below:



**TABLE NO. 32.**  
**UTILISATION OF JOWAR FOR PAYMENT IN KIND FOR DIFFERENT PURPOSES.**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**

('000 tonnes)

	Item()	Category			Total
		Small	Medium	Large	
	Temp. farm labour	444.95(51.27) (67.99)	203.61(23.46) (56.44)	219.31(25.27) (60.42)	867.87(100.00) (62.97)
	Farm machine & equipments	132.52(38.99) (20.25)	123.50(36.33) (34.24)	83.89(24.68) (23.12)	339.91(100.00) (24.66)
	Customary payment to village artisans	65.77(48.22) (10.04)	23.23(17.03) (6.44)	47.40(34.75) (13.06)	136.40(100.00) (9.90)
	Rent to land owner	0.66(32.20) (0.10)	0.83(40.49) (0.23)	0.56(27.31) (0.16)	2.05(100.00) (0.16)
5.	Share to the land owner	1.63(17.79) (0.25)	2.19(23.91) (0.61)	5.34(58.30) (1.47)	9.16(100.00) (0.66)
6.	Payment of loans	0.00(0.00) (0.00)	0.47(40.52) (0.13)	0.69(59.48) (0.19)	1.16(100.00) (0.08)
7.	Land revenue	0.00(0.00) (0.00)	0.00(0.00) (0.00)	0.09(100.00) (0.02)	0.09(100.00) (0.01)
8.	Irrigation and other cess	0.00(0.00) (0.00)	0.10(17.24) (0.03)	0.48(82.76) (0.13)	0.58(100.00) (0.04)
9.	Miscellaneous	8.94(42.73) (1.37)	6.79(32.46) (1.88)	5.19(24.81) (1.43)	20.92(100.00) (1.52)
Total		654.47(47.49) (100.00)	360.72(26.17) (100.00)	362.95(26.34) (100.00)	1378.14(100.00) (100.00)

(Figures in parenthesis is percentage to total)

It is observed that the single major item of utilisation for payment in kind in all categories was payment towards temporary labour. On all India basis, total payment in kind was 1378.14 thousand tonnes. Out of this payment to temporary labour in kind accounted for 867.87 thousand tonnes or 62.97 percent. The total payment in kind accounted to about 12.94 percent of total production.

6.11.4 The state-wise breakup of total utilisation of jowar by all categories of cultivators taken together towards payments in kind for different items is furnished in Table No. 33 below.

TABLE NO. 33

**STATE-WISE BREAK UP OF UTILISATION OF JOWAR TOWARDS PAYMENTS IN KIND.  
(AVERAGE 1996-97, 1997-98 AND 1998-99).**

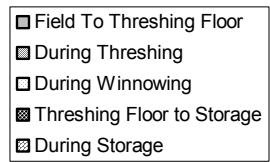
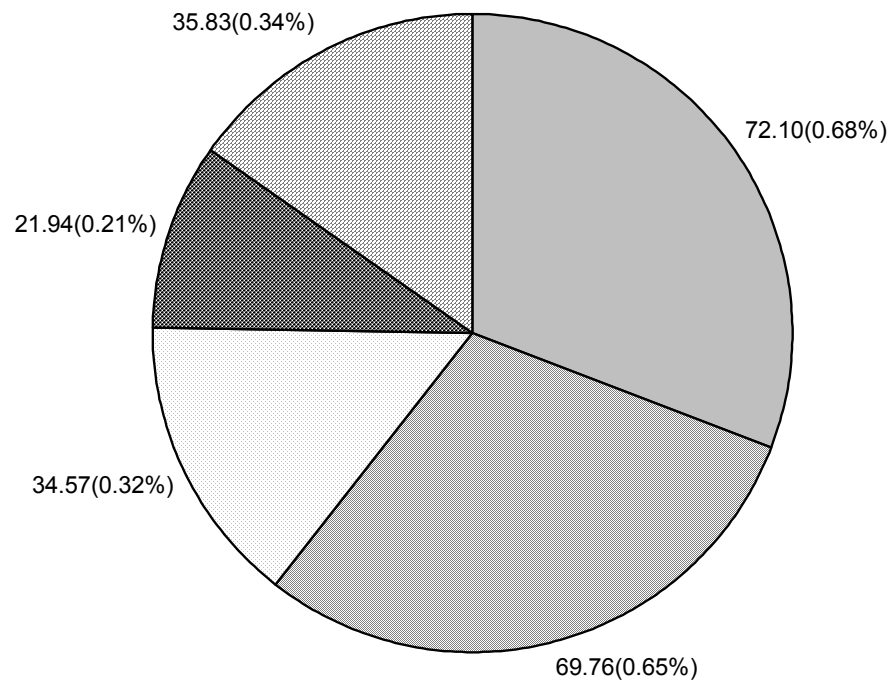
('000 tonnes)

S.No.	State	Total Production of Jowar	Total utilisation towards payments in kind.			
			Small	Medium	Large	Total
1	Andhra Pradesh	505.03	79.41	22.06	28.43	129.90
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00
4	Bihar	2.45	0.16	0.00	0.02	0.18
5	Goa	0.00	0.00	0.00	0.00	0.00
6	Gujarat	258.07	4.29	0.00	0.06	4.35
7	Haryana	36.09	0.00	0.00	1.59	1.59
8	Himachal Pr.	0.00	0.00	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00	0.00	0.00
10	Karnataka	1577.63	49.88	25.23	27.36	102.47
11	Kerala	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	794.44	19.84	16.04	14.64	50.52
13	Maharashtra	6446.55	464.01	282.34	260.02	1006.37
14	Manipur	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00
18	Orissa	6.41	0.14	0.31	0.00	0.45
19	Punjab	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	318.46	24.62	6.27	16.01	46.90
21	Sikkim	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	316.82	0.12	5.07	10.64	15.83
23	Tripura	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	390.12	12.00	3.40	4.18	19.58

25	West Bengal	0.12	0.00	0.00	0.00	0.00
26	All India	10652.19	654.47	360.72	362.95	1378.14

Utilisation of jowar towards these payments in kind was seen predominantly in States like Maharashtra, Andhra Pradesh, Karnataka, Rajasthan, and U.P. etc.

**Total Post Harvest Losses of Jowar**  
(Quantity in '000 tonnes and percentage of total production)



## CHAPTER – VII

### POST HARVEST LOSSES OF JOWAR AT FARM LEVEL.

- 7.1 During this survey the losses of jowar at producers level were studied and the data is presented in the annexures listed below :
- Estimated losses of jowar at **threshing floor**, category-wise and source-wise – Annexures XXIX & XXX;
  - Estimated losses of jowar in **winnowing**, category-wise and sources wise – Annexures XXXI & XXXII;
  - Estimated losses of jowar in **transport** from field to threshing floor, category-wise and mode of transport wise – Annexures XXXIII & XXXIV;
  - Estimated losses of jowar in **transport** from threshing floor to storage at farm level, category-wise and source wise – Annexures XXXV
  - Estimated losses of jowar in transport **from field to threshing floor and from threshing floor to storage – according to mode of Transport (in bulk or in bags) and mode of packing** - Annexures XXXVI & XXXVII;
  - Estimated losses of jowar in **storage at producer's level** – category-wise and according to type of storage – Annexures XXXVIII & XXXIX;
  - Estimated losses of jowar at producers level according to **causes of losses** – Annexure XXXX;
  - Estimated total post harvest losses** – category-wise Annexure XXXXI, XXXXII & XXXXIII;
  - Total post harvest losses – total of all categories – Annexure XXXXIV.

- 7.1.2 The overall summary of total post harvest losses of jowar at producers' level during different operations viz; threshing, winnowing, transport from field to threshing floor, further to storage at producers' level and therein storage is given in the following Table No. 34

**TABLE NO. 34**

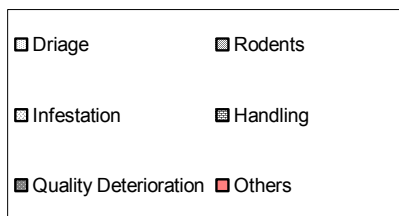
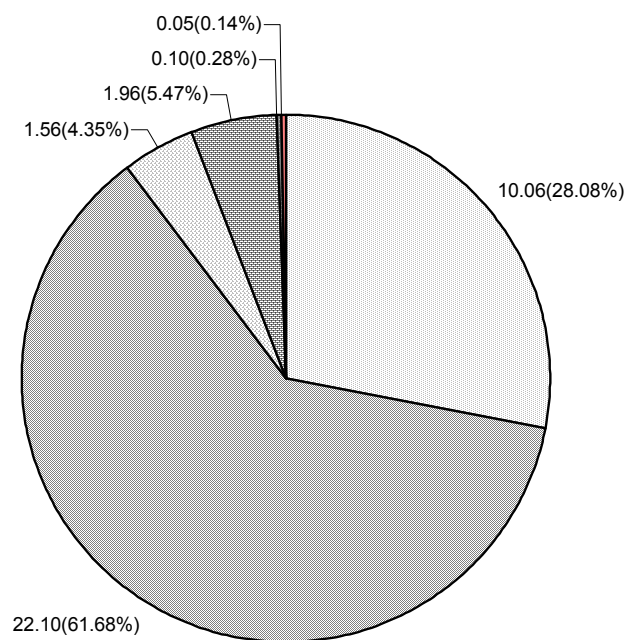
**LOSSES OF JOWAR AT PRODUCERS LEVEL  
(AVERAGE 1996-97, 1997-98 AND 1998-99).**

S. No	Item	Quantity lost	(‘000 tonnes)
			Percent to total production
1.	Losses in transport from field to threshing floor	72.10	0.68
2.	Losses in threshing	69.76	0.65
3.	Losses in winnowing	34.57	0.32
4.	Losses in transport from threshing floor to storage	21.94	0.21
5.	Losses in storage at producers level	35.83	0.34
Total losses at producers level		234.20	2.20

As stated earlier the study of post harvest losses had been confined to the losses at the producers' level, stretching from transport from the field after harvest to the threshing floor, and thereafter upto storage at producers level and not beyond that. The study did not cover the losses in transport from the farmer's storage to market for sale, in the market and thereafter in the process of distribution. The total post harvest losses of jowar at producers' level, as depicted in Table above, were estimated at 2.20 percent of the production.

- 7.1.3 A reference to Annexure XXX shows that the losses in threshing by mechanical means amounted to 45.50 thousand tonnes (0.42 percent of production), by animal power to 14.90 thousand tonnes (0.14%) and by manual means to 9.36 thousand tonnes(0.09%).Total loss was 0.65 percent
- 7.1.4 In winnowing, the total loss of jowar was estimated at 34.57 thousand tonnes (0.32 percent of production) – Annexure XXXI.

**Losses of Jowar During Storage and Their Causes**  
(Quantity in '000 tonnes and percentage of total Loss)

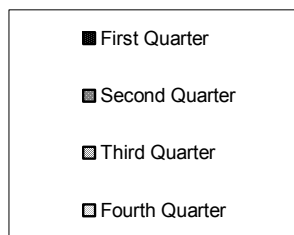
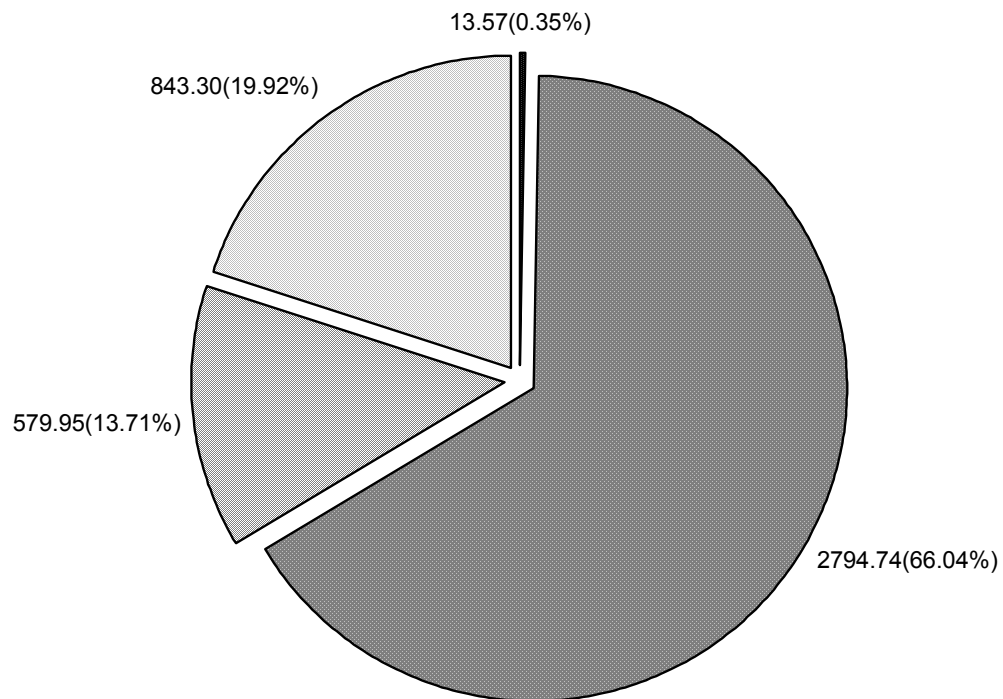


In transport at farm level, it is observed that the losses of jowar in transport from field to threshing floor amounted to 72.10 thousand tonnes or 0.68 percent of total production by various modes of transport used (Annexures XXXIV).

- 7.1.5 In transport from threshing floor to farm storage the total loss of jowar was 21.94 thousand tonnes (Annexure XXXV) or 0.21 percent.
- 7.1.6 The total losses of jowar in transport from field to farm storage amounted to 94.04 thousand tonnes (Annexure XXXVII) or 0.88 percent.
- 7.1.7 During the study of losses of jowar in storage, the startling fact coming to fore was that nearly 76.62 percent of the storage at the farm household continued to be in kutcha storage and 23.38 percent storage was pucca. The total quantity stored in kutcha godown at farm level was 4988.99 thousand tonnes and in pucca storage, 1522.35 thousand tonnes (Annexure XXXIX).
- 7.1.8 The total quantity of jowar lost in storage was estimated at 35.83 thousand tonnes. (Annexure XXXVIII) which was 0.34 percent of total production. The losses in storage were attributable to diriage, rodents, infestation, handling, etc.
- 7.1.10 The total post harvest losses of jowar at producers level were estimated at 234.20 thousand tonnes or 2.20% of production. It is to be noted here that the period of storage and quantity stored is small. Therefore, the storage losses at producer's level appeared 2.20 percent. **However, there is a scope to further curtail these losses at farm level by scientific storage practices.**



**Total Sale of Jowar - Quarterwise**  
(Quantity in '000 tonnes and percentage of total Sale)



## **CHAPTER – VIII**

### **MARKETED SURPLUS**

8.1 The farm households resort to sale of jowar over a period of time depending upon the needs. The small category farmers, who are hard pressed to meet the financial obligations resort to, distress sales – immediately after harvest, whereas the farmers with better holding capacity dispose of the produce when the market is favourable. The total produce sold by the farm households is termed as the marketed surplus, i.e., the surplus of produce, which is sold in the market irrespective of the actual requirement of the farm households. This is the quantity, which is made available for consumption to the non-farming population including the buy back by the farm households. During the survey the following aspects of the sales by the farm households were studied :

- i) Periodicity;
- ii) Agencies to whom sold;
- iii) Sale within the village; and
- iv) Sale outside the village.

### **8.2 PERIODICITY OF SALES**

The statewide estimated sales of jowar quarter-wise by the different categories of cultivators are furnished in Annexures XXXXV, XXXXVI & XXXXVII and for all categories of cultivators taken together are furnished in Annexure –XXXXVIII. Extract of these annexures is given in Table No. 35, as follows:

**TABLE NO. 35**

**SALES OF JOWAR**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**

('000 tonnes)

S. NO.	Quarter	Quarter-wise sales of jowar			
		Category			
		Small	Medium	Large	Total
1.	1 <sup>st</sup> Quarter	6.23 (0.33)	3.62 (0.33)	3.72 (0.30)	13.57 (0.32)
2.	2 <sup>nd</sup> Quarter	1435.34 (75.51)	642.05 (58.85)	717.35 (57.86)	2794.74 (66.05)
3.	3 <sup>rd</sup> Quarter	199.56 (10.50)	196.47 (18.01)	183.92 (14.84)	579.95 (13.71)
4.	4 <sup>th</sup> Quarter	259.73 (13.66)	248.82 (22.81)	334.75 (27.00)	843.30 (19.92)
Total		1900.86 (100)	1090.96 (100)	1239.74 (100)	4231.56 (100)

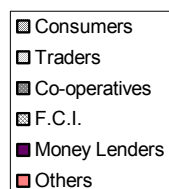
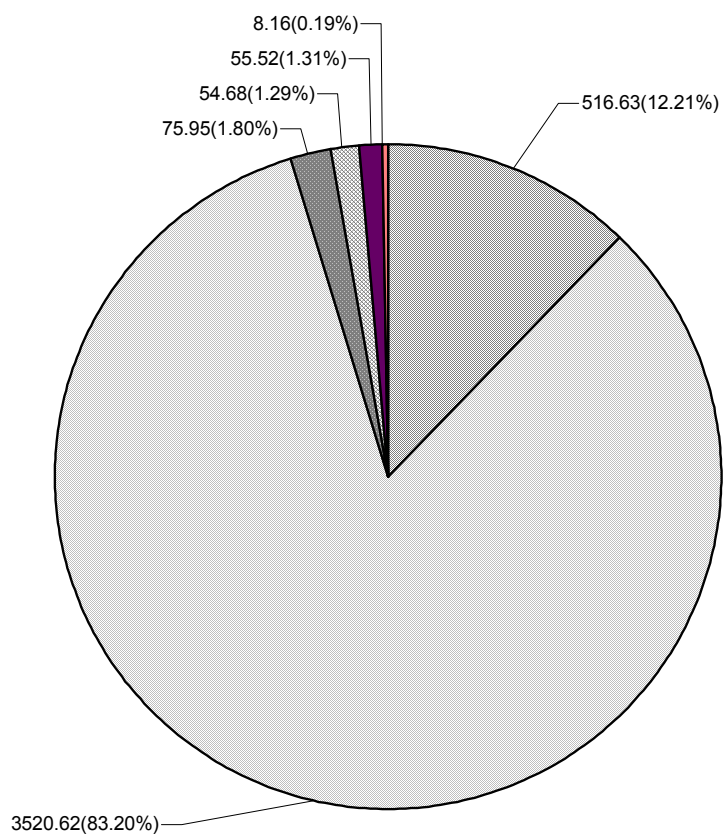
(Figures in parenthesis is percentage to total sale)

It is observed that 66.05 percent sales of jowar were effected during 2<sup>nd</sup> quarter followed by 19.92 percent and 13.71 percent of sales effected during 4<sup>th</sup> quarter and 3<sup>rd</sup> quarter respectively.

### 8.3 AGENCIES TO WHOM SOLD

The statewise details of agencywise sales of jowar by cultivators of small category, medium category, large category and total of all categories taken together are furnished in Annexures XXXIX, L, LI, and LII respectively. A summary of these annexures is furnished in Table No. 36, below:

**Sale of Jowar - Agencywise**  
**(Quantity in '000 tonnes and percentage of total Sale)**



**TABLE NO. 36**  
**SALES TO VARIOUS AGENCIES.**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**

('000 Tonnes)

S. No.	Agency	Quantity sold			
		Category			
		Small	Medium	Large	Total
1.	Consumers	312.78 (16.45)	109.96 (10.08)	93.89 (7.57)	516.63 (12.21)
2.	Traders	1517.27 (79.82)	965.29 (88.48)	1038.06 (83.73)	3520.62 (83.20)
3.	Co-operatives	19.56 (1.03)	6.71 (0.62)	49.68 (4.01)	75.95 (1.80)
4.	F.C.I.	2.44 (0.13)	0.00 (0.00)	52.24 (4.21)	54.68 (1.29)
5.	Money lenders	45.75 (2.41)	4.95 (0.45)	4.82 (0.39)	55.52 (1.31)
6.	Others	3.06 (0.16)	4.05 (0.37)	1.05 (0.09)	8.16 (0.19)
Total		1900.86 (100.00)	1090.96 (100.00)	1239.74 (100.00)	4231.56 (100.00)

(Figures in parenthesis is percentage to total sale)

The survey revealed that the direct sales of jowar by the producers to the consumers was hardly 12.21 percent, producers to co-operatives 1.80 percent; producers to FCI 1.29 percent. The major share of these sales was to the traders i.e. 83.20 percent. It is a matter of introspection for the co-operatives and FCI to evaluate their role in marketing of grains for the benefit of the farming community. The annexures LII showed that the role of FCI appeared to be confined to states like Maharashtra, Rajasthan, A.P. and Madhya Pradesh and that of co-operatives appeared prominent in Gujarat, Maharashtra and Rajasthan.

#### 8.4 SALES OF JOWAR WITHIN VILLAGES

The statewide estimates of sales of jowar within villages quarter-wise and category-wise are presented in Annexures LIII, LIV and LV respectively and total of all categories of cultivators taken together in Annexure LVI. A gist of the same is furnished in Table No. 37, below:

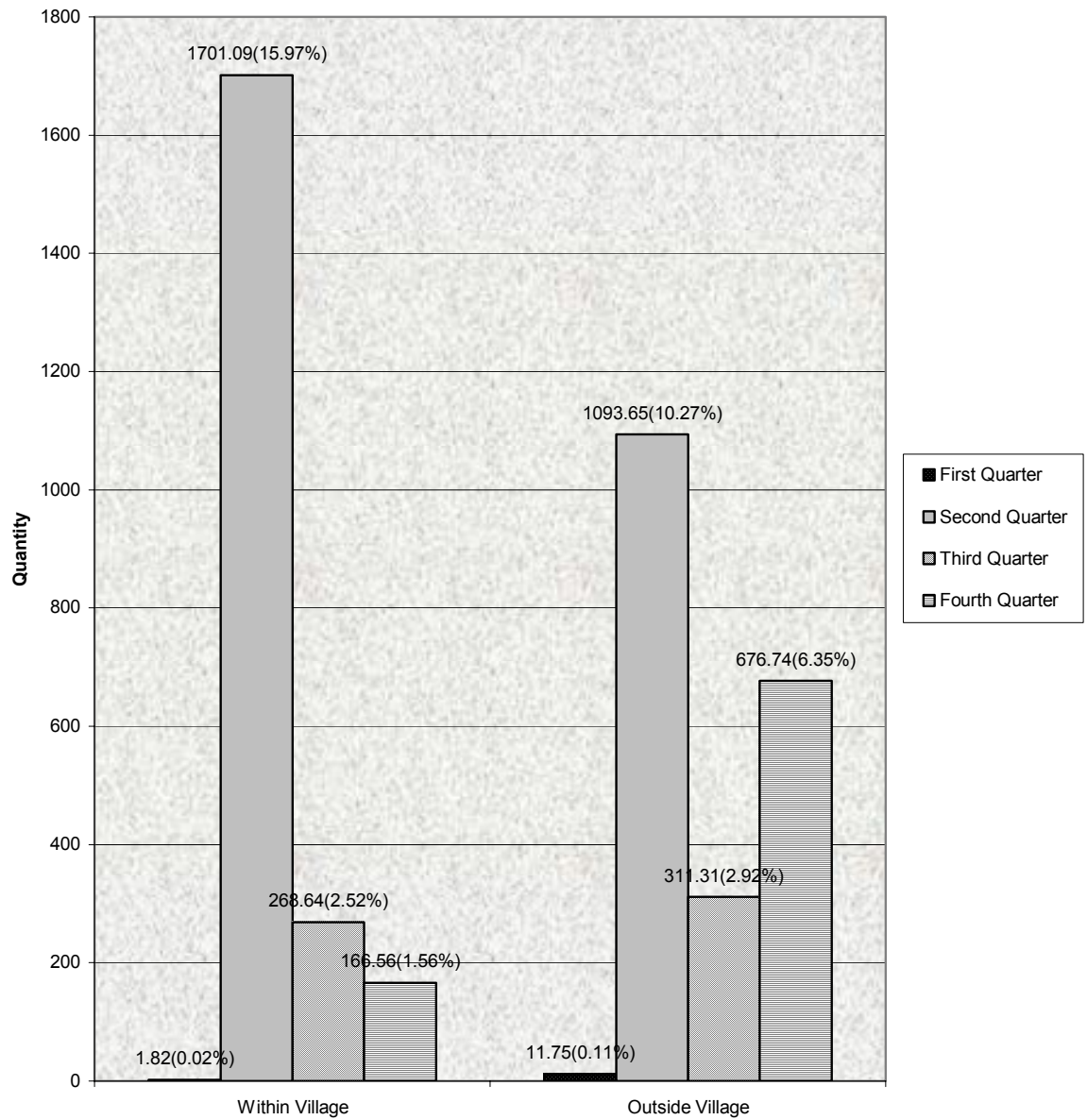
**TABLE NO. 37**  
**SALES OF JOWAR WITHIN VILLAGE**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**

('000 tonnes)

S. No.	Quarter	Sales within village			
		Category			
		Small	Medium	Large	Total
1.	1 <sup>st</sup> Quarter	0.00 (0.00)	0.59 (0.02)	1.23 (0.05)	1.82 (0.02)
2.	2 <sup>nd</sup> Quarter	933.81 (17.76)	354.78 (13.02)	412.50 (15.45)	1701.09 (15.97)
3.	3 <sup>rd</sup> Quarter	120.72 (2.30)	75.46 (2.77)	72.46 (2.71)	268.64 (2.52)
4.	4 <sup>th</sup> Quarter	50.11 (0.95)	52.18 (1.91)	64.27 (2.41)	166.56 (1.56)
Total		1104.64 (21.01)	483.01 (17.72)	550.46 (20.62)	2138.11 (20.07)

(Figures in parenthesis is percentage to production of category).

**Sale of Jowar - Within Village and Outside Village**  
(Quantity in '000 tonnes and percentage of total production)



It was observed that out of the total sales of 4231.56 thousand tonnes of jowar, the quantity sold within villages was 2138.11 thousand tonnes or 50.53 percent of the total sales.

#### 8.5 SALES OF JOWAR OUTSIDE THE VILLAGE

The estimates of quarter-wise and category-wise sales of jowar outside the village in different states of the country are furnished in Annexure LVII, LVIII, LIX and for all categories of cultivators taken together in Annexure LX. A summary of these estimates is furnished in Table No. 38.

**TABLE NO. 38**  
**SALES OF JOWAR OUTSIDE THE VILLAGE**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**  
(‘000 tonnes)

S. No.	Quarter	Sales outside the village			
		Category			
		Small	Medium	Large	Total
1.	1 <sup>st</sup> Quarter	6.23 (0.12)	3.03 (0.11)	2.49 (0.09)	11.75 (0.11)
2.	2 <sup>ND</sup> Quarter	501.53 (9.54)	287.27 (10.54)	304.85 (11.42)	1093.65 (10.27)
3.	3 <sup>rd</sup> Quarter	78.84 (1.50)	121.01 (4.44)	111.46 (4.18)	311.31 (2.92)
4.	4 <sup>th</sup> Quarter	209.62 (3.99)	196.64 (7.21)	270.48 (10.13)	676.74 (6.35)
Total		796.22 (15.15)	607.95 (22.03)	689.28 (25.82)	2093.45 (19.65)

(Figures in parenthesis are percentage to category of production).

Perusal of contents of Table No. 37 and Table No. 38 shows that out of total sales of 4231.56 thousand tonnes of jowar, the sales within the village were 2138.11 thousand tonnes (20.07 percent) and outside the village were 2093.45 thousand tonnes (19.65 percent). **This clearly establishes the need for development of infrastructural facilities at the village level to serve the interests of the farm households. It is also necessary to shift the focus of development from urban market centres (largely developed) to the rural market centres.**

#### 8.6 STATEWISE SALES OF JOWAR (MARKETED SURPLUS)

State-wise break up of total sales of jowar by all categories of cultivators taken together is furnished in Table No. 39.

**TABLE NO. 39**  
**STATE-WISE BREAKUP OF TOTAL SALES OF JOWAR**  
**(AVERAGE 1996-97, 1997-98 AND 1998-99).**  
(‘000 tonnes)

S. No.	State	Total Production	Total sales	Percentage to total production
1	Andhra Pradesh	505.03	205.86	40.76
2	Arunachal Pradesh	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00
4	Bihar	2.45	0.28	11.43
5	Goa	0.00	0.00	0.00
6	Gujarat	258.07	58.24	22.56
7	Haryana	36.09	2.69	7.45

8	Himachal Pradesh	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00
10	Karnataka	1577.63	433.40	27.47
11	Kerala	0.00	0.00	0.00
12	Madhya Pradesh	794.44	363.69	45.78
13	Maharashtra	6446.55	2738.17	42.47
14	Manipur	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00
18	Orissa	6.41	0.22	3.43
19	Punjab	0.00	0.00	0.00
20	Rajasthan	318.46	79.29	24.90
21	Sikkim	0.00	0.00	0.00
22	Tamil Nadu	316.82	185.84	58.65
23	Tripura	0.00	0.00	0.00
24	Uttar Pradesh	390.12	163.88	42.01
25	West Bengal	0.12	0.00	0.00
26	All India	10652.19	4231.56	39.72

The contribution to the overall marketed surplus of jowar by different states is further analysed in the following table :

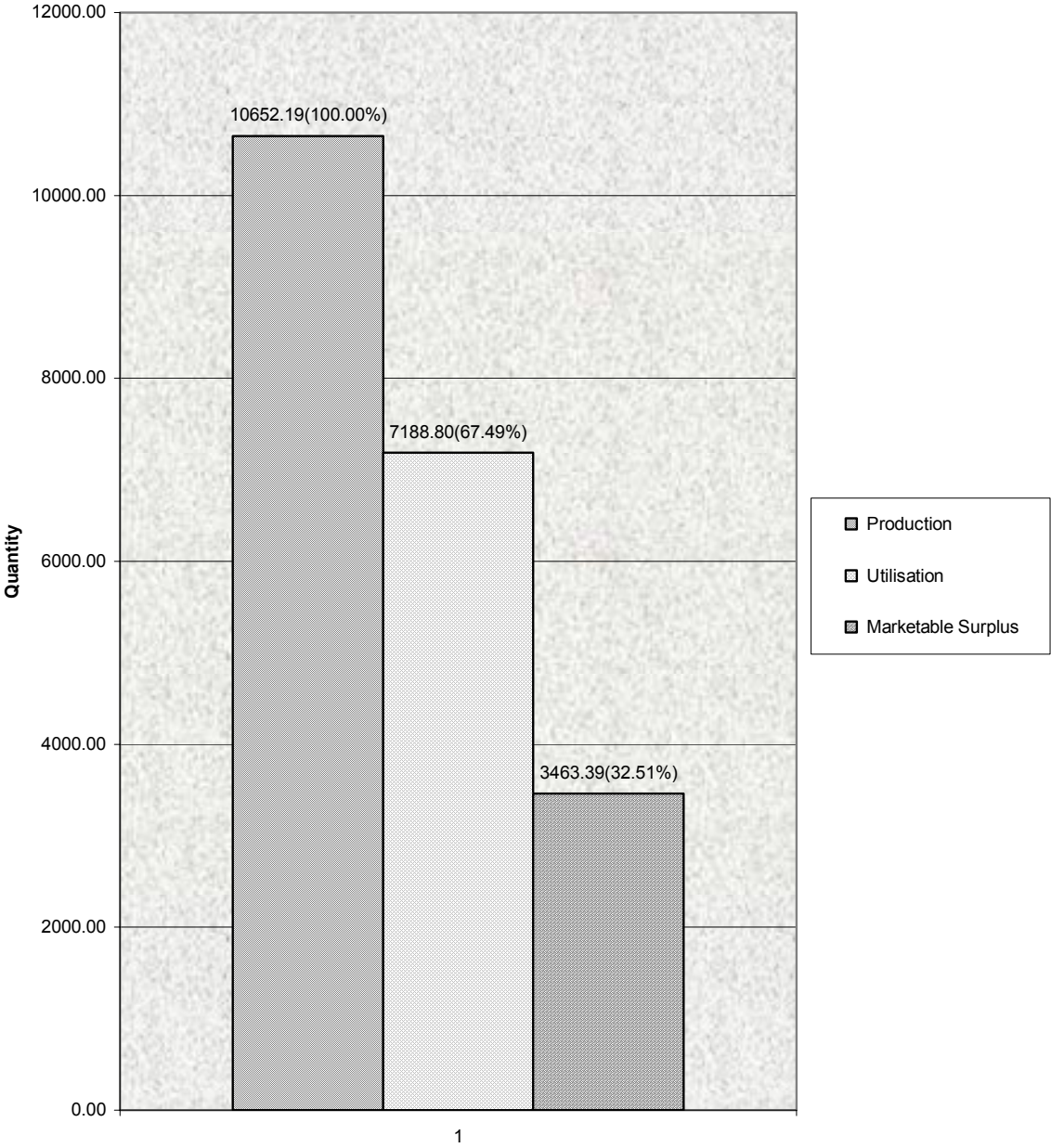


**TABLE NO. 40**  
**CONTRIBUTION OF STATES TO THE MARKETING SURPLUS**  
('000 tonnes)

S.No.	Contribution	States
1.	More than 2500	Maharashtra (2738.17)
2.	Less than 500 to 100	Karnataka (433.40) Madhya Pradesh (363.69) Andhra Pradesh (205.86) Tamil Nadu (185.84) Uttar Pradesh (163.88)
3.	Less than 100	Rajasthan (79.29) Gujarat (58.24) Haryana (2.69) Bihar (0.28) Orissa (0.22)

8.6.1 Thus the major contributor States to the marketed surplus of jowar were Maharashtra (2738.17), Karnataka (433.40), Madhya Pradesh (363.69), Andhra Pradesh (205.86), Tamil Nadu (185.84), and Uttar Pradesh (163.88) in which lions share is of Maharashtra.

Production, Utilisation and Marketable Surplus of Jowar  
(Quantity in '000 tonnes and percentage of total production)



## CHAPTER IX

### MARKETABLE SURPLUS

- 9.1 In earlier chapters, the estimates of production, retention for various purposes, purchases, losses, sales or marketed surplus, etc., have been discussed. In this chapter estimates of marketable surplus are discussed. Marketable Surplus is derived from the formula :

$$MS = A - B$$

Where A is total production;

B is total retention, plus total purchases and total losses at farm level or producers level.

MS is marketable Surplus.

- 9.2 The estimated marketable surplus – category-wise and total of all categories of farmers taken together is furnished in Annexures LXIV, LXV, LXVI and LXVII respectively. Summary thereof on all India basis is furnished in Table No. 41 below:

**TABLE NO. 41**

**TOTAL FARM FAMILY REQUIREMENT  
AND MARKETABLE SURPLUS.**

('000 tonnes)				
S. No.	Category	Total production A	Total farm family requirement including losses B	Marketable surplus (A-B)
(1)	(2)	(3)	(4)	(5)
1.	Small	5257.48	3993.27 (75.95)	1264.21 (24.05)
2.	Medium	2725.50	1782.20 (65.39)	943.30 (34.61)
3.	Large	2669.21	1413.33 (52.95)	1255.88 (47.05)
Total		10652.19	7188.80 (67.49)	3463.39 (32.51)

(Figures in parenthesis are percentage to total production)

- 9.3 It is apparently clear that the marketable surplus of jowar, over a period of time had improved in real terms whereas percent to production was slightly lower than that of the year 1974-75. The estimated marketable surplus now stood at 3463.39 thousand tonnes and the farm family requirement was estimated at 7188.80 thousand tonnes, including losses. Thus the marketable surplus now was 32.51 percent of the production and the farm family requirement was 67.49 percent of the production. As per 1974-75 survey the estimated production of jowar was 6967.43 thousand tonnes, the marketable surplus was estimated to be 2357.80 thousand tonnes or 33.14 percent of production. Thus the marketable surplus had more or less remained static even after two decades in terms of percentages.
- 9.4 A comparative analysis of Marketable Surplus and Marketed Surplus estimates by different categories of cultivators is presented in the following table.

TABLE NO. 42

## MARKETABLE SURPLUS OF JOWAR

('000 tonnes)

S. No.	Category	Total production A	Total farm family requirement including losses B		Marketable surplus (A-B)		Marketed surplus	
			quantity	%	quantity	%	quantity	%
1.	Small	5257.48	3993.27	75.95	1264.21	24.05	1900.86	36.16
2.	Medium	2725.50	1782.20	65.39	943.30	34.61	1090.96	40.03
3.	Large	2669.21	1413.33	52.95	1255.88	47.05	1239.74	46.45
Total		10652.19	7188.80	67.49	3463.39	32.51	4231.56	39.72

- 9.5 It is observed that out of total estimated production of 10652.19 thousand tonnes of jowar, the total farm family requirement including losses was 7188.80 thousand tonnes or 67.49 percent. The marketable surplus was estimated at 3463.39 thousand tonnes, which was 32.51 percent. As against this, the marketed surplus was 39.72 percent or 4231.56 thousand tonnes.
- 9.6 As per 1975 survey, the total farm family requirement was estimated at 4609.63 thousand tonnes or 66.16 percent of production and the marketable surplus available for non-farming consumption was estimated at 2357.80 thousand tonnes or 33.14 percent of production. The present survey revealed that the farm family requirement was almost doubled, as the total farm family requirement was 7188.80 thousand tonnes i.e. 67.49 percent of production. In other words, farmers are keeping the same percentage of jowar out of their production which they used to keep two decades ago.
- 9.7 The salient features of the results of the surveys on marketable surplus and post harvest losses of jowar conducted in 1975 versus 1996-99 are depicted in Table No. 43 below :

TABLE NO. 43

## FINDINGS OF THE SURVEYS ON MARKETABLE SURPLUS AND POST HARVEST LOSSES OF JOWAR.( 1975 VERSUS 1996-99)

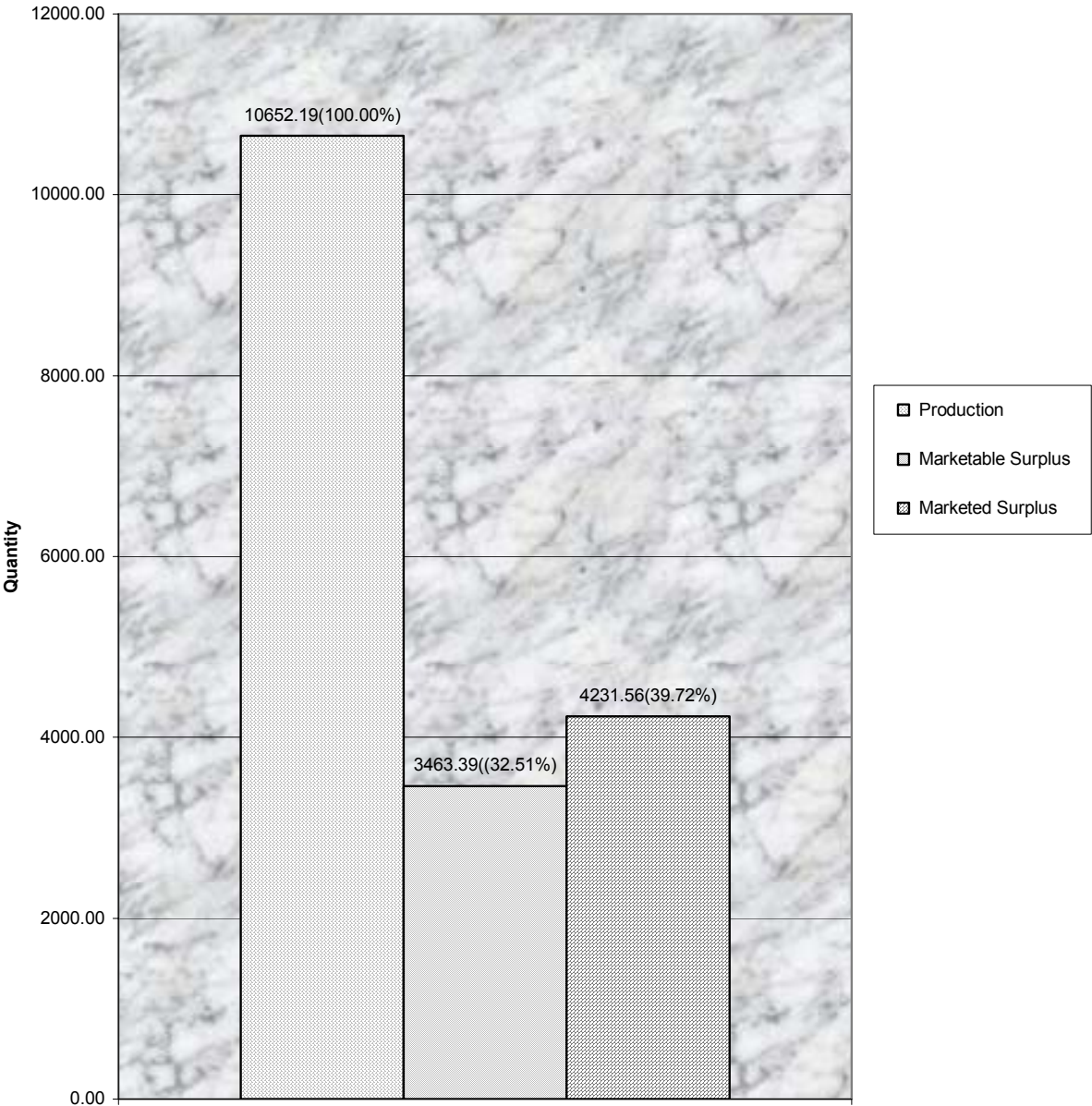
('000 tonnes)

S. No.	Item	Survey year 1975	Survey year 1996-97, 97-98 and 98-99
1.	Estimated production	6967.43	10652.19
	H.Y.V.	NA	7924.37
	T.V.	NA	2727.82
2.	Estimated farm family requirement (including losses at farm level)	4609.63 (66.16)	7188.80 (67.49)
3.	Marketable Surplus	2357.80 (33.14)	3463.39 (32.51)

(Figures in parenthesis are percentage of the total production)

- 9.7.1 Thus, it is very clear that over a period of two decades, a sea change had taken place in production.
- 9.7.2 The total requirement of jowar in real term by the farm family had increased substantially. But the marketable surplus had remained almost static at about 33%.
- 9.7.3 State-wise break up of the estimates of production, total farm family requirement including losses at farm level, marketable surplus and marketed surplus is presented in Table No. 44 below :

Production, Marketable Surplus  
and Marketd Surplus of Jowar  
(Quantity in '000 tonnes and percentage of total production)



**TABLE NO. 44****STATE-WISE BREAK UP OF PRODUCTION, FARM FAMILY REQUIREMENT, MARKETABLE SURPLUS AND MARKETED SURPLUS OF JOWAR.**

('000 tonnes)

S No	State	Total. production.	Total farm family requirement Including losses		Marketed surplus		Marketable surplus	
			Quantity	%	Quantity	%	Quantity	%
1	2	3	4	5	6	7	8	9
1	Andhra Pradesh	505.03	394.06	78.03	205.86	40.76	110.97	21.97
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	2.45	2.07	84.49	0.28	11.43	0.38	15.51
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	258.07	219.99	85.24	58.24	22.57	38.08	14.76
7	Haryana	36.09	32.32	89.55	2.69	7.45	3.77	10.45
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu & Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	1577.63	1358.34	86.10	433.40	27.47	219.29	13.90
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	794.44	511.60	64.40	363.69	45.78	282.84	35.60
13	Maharashtra	6446.55	4080.46	63.30	2738.17	42.47	2366.09	36.70
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	6.41	5.88	91.73	0.22	3.43	0.53	8.27
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	318.46	224.25	70.42	79.29	24.90	94.21	29.58
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	316.82	141.51	44.67	185.84	58.66	175.31	55.33
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	390.12	218.20	55.93	163.88	42.01	171.92	44.07
25	West Bengal	0.12	0.12	100.00	0.00	0.00	0.00	0.00
26	All India	10652.19	7188.80	67.49	4231.56	39.72	3463.39	32.51

The fact to be noted here is that the states like Tamil Nadu had marketable surplus of more than 55 percent and U.P. 44%, whereas in Maharashtra, Madhya Pradesh it was around 35%. In other states it varied from 10 percent to 30 percent.

- 9.7.4 The increased production obviously needs strengthening of agricultural marketing system by development of infrastructure and facilities, dissemination of knowledge for profitable marketing, supporting services like grading and standardisation, storage, finance etc. It is necessary to improve marketing efficiency by reducing marketing costs, improved physical infrastructure and thus facilitating better returns to the farmer.

Annexure – I  
Area under Jowar – Irrigated/Unirrigated  
(Triennium ending 1998-99)

(in '000 hect..)

S.No	Name of State	Category of cultivator											
		Small			Medium			Large			All		
		Irrigated	Unirrigated	Total Area	Irrigated	Unirrigated	Total Area	Irrigated	Unirrigated	Total Area	Irrigated	Unirrigated	Total Area
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Andhra Pradesh	2.85	445.19	448.04	1.38	157.27	158.65	1.24	106.07	107.31	5.47	708.53	714.00
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.16	0.00	1.16	0.00	0.00	0.00	0.41	0.00	0.41	1.57	0.00	1.57
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	11.10	120.63	131.73	2.99	65.73	68.72	4.64	73.91	78.55	18.73	260.27	279.00
7	Haryana	6.81	0.00	6.81	3.29	0.00	3.29	40.54	0.02	40.56	50.64	0.02	50.66
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	44.15	802.52	846.67	43.14	556.21	599.35	44.86	424.19	469.05	132.15	1782.92	1915.07
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	89.90	309.06	398.96	57.66	183.74	241.40	58.09	173.68	231.77	205.65	666.48	872.13
13	Maharashtra	259.16	2242.78	2501.94	152.15	1210.06	1362.21	242.64	1201.25	1443.89	653.95	4654.09	5308.04
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	1.64	0.87	2.51	2.79	0.00	2.79	0.00	0.00	0.00	4.43	0.87	5.30
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	329.20	329.20	0.00	86.28	86.28	0.00	156.97	156.97	0.00	572.45	572.45
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	13.30	94.75	108.05	11.60	128.15	139.75	11.57	120.76	132.33	36.47	343.66	380.13
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	14.78	214.66	229.44	14.77	73.14	87.91	14.36	50.25	64.61	43.91	338.05	381.96
25	West Bengal	0.05	0.00	0.05	0.00	0.04	0.04	0.00	0.00	0.00	0.05	0.04	0.09
26	ALL INDIA	444.90	4559.66	5004.56	289.77	2460.62	2750.39	418.35	2307.10	2725.45	1153.02	9327.38	10480.40

**Annexure – II**  
**Area under Jowar – High Yielding Varieties (HYV) and Traditional Varieties (TV)**  
**(Triennium ending 1998-99)**

(in '000 hect.)

S. No	Name of State	Category of cultivator											
		Small			Medium			Large			All		
		HYV	TV	Total Area	HYV	TV	Total Area	HYV	TV	Total Area	HYV	TV	Total Area
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Andhra Pradesh	66.67	381.37	448.04	40.67	117.98	158.65	22.33	84.98	107.31	129.67	584.33	714.00
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.67	0.49	1.16	0.00	0.00	0.00	0.33	0.08	0.41	1.00	0.57	1.57
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	104.67	27.06	131.73	45.00	23.72	68.72	47.33	31.22	78.55	197.00	82.00	279.00
7	Haryana	2.33	4.48	6.81	1.33	1.96	3.29	37.33	3.23	40.56	40.99	9.67	50.66
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	244.67	602.00	846.67	199.33	400.02	599.35	173.33	295.72	469.05	617.33	1297.74	1915.07
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	271.00	127.96	398.96	170.33	71.07	241.40	154.67	77.10	231.77	596.00	276.13	872.13
13	Maharashtra	2366.00	135.94	2501.94	1176.33	185.88	1362.21	1303.67	140.22	1443.89	4846.00	462.04	5308.04
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.67	1.84	2.51	2.67	0.12	2.79	0.00	0.00	0.00	3.34	1.96	5.30
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	329.20	329.20	12.33	73.95	86.28	8.67	148.30	156.97	21.00	551.45	572.45
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	21.00	87.05	108.05	16.67	123.08	139.75	22.33	110.00	132.33	60.00	320.13	380.13
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	80.00	149.44	229.44	23.67	64.24	87.91	20.33	44.28	64.61	124.00	257.96	381.96
25	West Bengal	0.00	0.05	0.05	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.09	0.09





24	Uttar Pradesh	24.11	179.70	203.81	24.21	76.19	100.40	29.73	56.18	85.91	78.05	312.07	390.12
25	West Bengal	0.07	0.00	0.07	0.00	0.05	0.05	0.00	0.00	0.00	0.07	0.05	0.12
26	All INDIA	536.77	4720.71	5257.48	354.43	2371.07	2725.50	492.60	2176.61	2669.21	1383.80	9268.39	10652.19

Annexure –

IV

**Production of Jowar – High Yielding Varieties (HYV) and Traditional Varieties (TV)  
(Triennium ending 1998-99)**

(in

‘000 tonnes)

S.No	Name of State	<u>Category of cultivator</u>											
		Small			Medium			Large			All		
		HYV	TV	Total production	HYV	TV	Total production	HYV	TV	Total production	HYV	TV	Total production
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Andhra Pradesh	54.74	267.09	321.83	32.32	69.37	101.69	20.07	61.44	81.51	107.13	397.90	505.03
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.22	0.66	1.88	0.00	0.00	0.00	0.50	0.07	0.57	1.72	0.73	2.45
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	98.86	23.71	122.57	44.00	20.78	64.78	43.04	27.68	70.72	185.90	72.17	258.07
7	Haryana	2.10	1.90	4.00	1.05	0.85	1.90	28.15	2.04	30.19	31.30	4.79	36.09
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	309.07	475.98	785.05	165.05	286.12	451.17	150.05	191.36	341.41	624.17	953.46	1577.63
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	245.79	87.50	333.29	173.80	62.38	236.18	174.68	50.29	224.97	594.27	200.17	794.44
13	Maharashtra	3094.87	89.78	3184.65	1492.14	122.04	1614.18	1527.31	120.41	1647.72	6114.32	332.23	6446.55
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.78	1.78	2.56	3.70	0.15	3.85	0.00	0.00	0.00	4.48	1.93	6.41



16	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	2.14	83.59	3.10	80.52	0.00	0.00	5.24	81.75
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	106.05	52.29	21.41	50.70	16.43	22.38	143.89	45.18
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	18.99	20.00	13.76	12.62	8.28	7.34	41.03	12.95
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	86.32	42.35	27.77	27.66	14.58	16.97	128.67	32.98
25	West Bengal	0.07	100.00	0.05	100.00	0.00	0.00	0.12	100.00
26	ALL INDIA	2091.41	39.78	926.14	33.98	625.61	23.44	3643.16	34.20

Annexure – VI

**Retention of Jowar for Consumption of Permanent Labour  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Category of Cultivator							
		Small		Medium		Large		All	
		Quantity	%to production of category	Quantity	%to production of category	Quantity	%to production of category	Quantity	% to total production
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	0.00	0.00	0.32	0.31	1.22	1.50	1.54	0.30
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	0.31	0.09	1.94	0.82	4.24	1.88	6.49	0.82



10	Karnataka	2.19	0.28	5.61	1.24	7.76	2.27	15.56	0.99
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	8.55	2.57	4.06	1.72	4.98	2.21	17.59	2.21
13	Maharashtra	126.07	3.96	60.21	3.73	60.17	3.65	246.45	3.82
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	4.06	2.00	1.54	3.65	2.16	2.94	7.76	2.44
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	6.42	3.15	0.59	0.59	0.83	0.97	7.84	2.01
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	147.29	2.80	73.12	2.68	75.90	2.84	296.31	2.78

Annexure – VIII

**Total Retention of Jowar for Consumption at Farm Level**

**(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Category of cultivator							
		Small		Medium		Large		All	
		Quantity	%to production of category	Quantity	%to production of category	Quantity	%to production of category	Quantity	% to total production
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	96.66	30.03	21.88	21.52	15.27	18.73	133.81	26.50
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.38	73.40	0.00	0.00	0.44	77.19	1.82	74.29
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	45.50	37.12	15.10	23.31	11.33	16.02	71.93	27.87



3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	22.57	18.41	9.93	15.33	5.65	7.99	38.15	14.78
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	182.12	23.20	73.43	16.28	38.23	11.20	293.78	18.62
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	58.03	17.41	31.01	13.13	12.96	5.76	102.00	12.84
13	Maharashtra	438.81	13.78	106.53	6.60	39.45	2.39	584.79	9.07
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	12.43	13.09	5.74	5.26	4.19	3.71	22.36	7.06
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	1.09	0.53	0.67	0.67	0.51	0.59	2.27	0.58
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	801.84	15.25	245.25	9.00	107.60	4.03	1154.69	10.84

Annexure – X

**Total Requirement of Jowar for Consumption by Farm Family including Purchase  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Category of cultivator							
		Small		Medium		Large		All	
		Quantity	%to production of category	Quantity	%to production of category	Quantity	%to production of category	Quantity	% to total production
1	2	3	4	5	6	7	8	9	10



1	Andhra Pradesh	183.45	57.00	39.82	39.16	21.88	26.84	245.15	48.54
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.38	73.40	0.00	0.00	0.44	77.19	1.82	74.29
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	68.07	55.54	25.03	38.64	16.98	24.01	110.08	42.66
7	Haryana	0.32	8.00	0.12	6.32	2.05	6.79	2.49	6.90
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	609.93	77.69	329.83	73.11	223.67	65.52	1163.43	73.75
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	199.97	60.00	128.10	54.24	87.71	38.99	415.78	52.34
13	Maharashtra	1740.16	54.64	652.98	40.45	452.40	27.46	2845.54	44.14
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	2.14	83.59	3.10	80.52	0.00	0.00	5.24	81.75
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	91.35	45.04	22.95	54.35	18.92	25.77	133.22	41.83
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	17.42	18.35	19.50	17.88	12.47	11.05	49.39	15.59
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	93.83	46.04	29.03	28.91	15.95	18.57	138.81	35.58
25	West Bengal	0.07	100.00	0.05	100.00	0.00	0.00	0.12	100.00
26	ALL INDIA	3008.09	57.22	1250.51	45.88	852.47	31.94	5111.07	47.98

Annexure – XI

**Total Retention of Jowar for Seed  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Category of cultivator							
		Small		Medium		Large		All	
		Quantity	%to production of category	Quantity	%to production of category	Quantity	%to production of category	Quantity	% to total production
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	0.06	0.02	0.14	0.14	0.02	0.02	0.22	0.04
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.02	1.06	0.00	0.00	0.01	1.75	0.03	1.22
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.26	0.21	0.86	1.33	0.53	0.75	1.65	0.64
7	Haryana	0.65	16.25	0.35	18.42	5.47	18.12	6.47	17.93
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	14.80	1.89	8.04	1.78	6.01	1.76	28.85	1.83
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	8.74	2.62	1.67	0.71	1.49	0.66	11.90	1.50
13	Maharashtra	11.97	0.38	6.79	0.42	5.72	0.35	24.48	0.38
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.03	1.17	0.04	1.04	0.00	0.00	0.07	1.09
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	4.54	2.24	3.14	7.44	1.48	2.02	9.16	2.88
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	7.14	7.52	6.08	5.57	6.05	5.36	19.27	6.08
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	5.09	2.50	2.19	2.18	1.75	2.04	9.03	2.31

25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	53.30	1.01	29.30	1.08	28.53	1.07	111.13	1.04

Annexure – XI-A

**Total Retention of Jowar for Seed Irrigated / Unirrigated  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Irrigated			Unirrigated			Total Qty. retained
		Area	Qty. retained	Percent to col. 9	Area	Qty. retained	Percent to col. 9	
1	2	3	4	5	6	7	8	9
1	Andhra Pradesh	0.00	0.00	0.00	12.48	0.22	100.00	0.22
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.56	0.03	100.00	0.00	0.00	0.00	0.03
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	12.04	0.43	26.06	55.04	1.22	73.94	1.65
7	Haryana	40.56	6.47	100.00	0.00	0.00	0.00	6.47
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	80.68	1.76	6.10	1230.88	27.09	93.90	28.85
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	185.99	5.43	45.63	305.89	6.47	54.37	11.90
13	Maharashtra	377.61	2.65	10.83	4602.35	21.83	89.17	24.48
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	4.01	0.05	71.43	0.82	0.02	28.57	0.07
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	553.52	9.16	100.00	9.16
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	37.52	3.36	17.44	299.02	15.91	82.56	19.27





17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	1.24	0.00	1.24	0.00	0.00	0.00	1.24	1.31
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	19.01	2.22	21.23	2.37	0.00	2.37	23.60	0.45

Annexure – XIV

**Utilisation of Jowar for Cash and Kind Payment to Permanent Labours – Medium Category Cultivators  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Quantity used for payment in kind			Quantity used for payments in cash (Out of Total Sale)			Total quantity used for payments (5+8)	%to production of category
		From current year crop	From previous year crop	Total quantity paid in kind	From sale of current year crop	From sale of previous year crop	Total quantity sold for cash payment		
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	2.20	1.25	3.45	0.00	0.36	0.36	3.81	3.75
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.60	0.00	0.60	0.00	0.00	0.00	0.60	0.93
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	2.51	0.40	2.91	0.60	0.40	1.00	3.91	0.87
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	3.27	0.36	3.63	0.71	0.00	0.71	4.34	1.84
13	Maharashtra	12.98	0.00	12.98	1.22	0.00	1.22	14.20	0.88

14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.18	0.07	0.25	0.54	0.12	0.66	0.91	0.83
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	21.74	2.08	23.82	3.07	0.88	3.95	27.77	1.02

**Annexure – XV**

**Utilisation of Jowar for Cash and Kind Payment to Permanent labour – Large Category Cultivators  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Quantity used for payment in kind			Quantity used for payments in cash (Out of Total Sale)			Total quantity used In payment (5+8)	%to production of category
		From current year crop	From previous year crop	Total quantity paid in kind	From sale of current year crop	From sale of previous year crop	Total quantity sold for cash payment		
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	3.00	2.80	5.80	0.00	0.00	0.00	5.80	7.12
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.41	0.00	0.41	0.00	0.00	0.00	0.41	0.58
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.89	1.22	2.11	0.84	1.45	2.29	4.40	1.29









3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	6.86	1.89	0.73	0.00	0.00	0.50	0.00	0.00	0.00	9.98
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	7.31	0.00	0.00	0.00	0.00	0.06	0.00	0.14	2.82	10.33
13	Maharashtra	345.79	40.82	9.58	0.00	0.00	0.00	0.27	0.00	45.31	441.77
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	6.97	1.87	0.43	0.12	0.00	4.94	0.36	0.04	0.46	15.19
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.17	0.02	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.64
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	373.18	44.60	11.51	0.12	0.00	5.50	0.63	0.63	48.73	484.90

**Annexure – XIX****Utilisation of Jowar for payment in Cash to Temporary Farm Labour and Other Purposes (from the sale of current year crop) – Large Category Cultivators****(Triennium ending 1998-99)****(in '000 tonnes)**

S.No	Name of State	<b><u>Quantity Utilised</u></b>									
		Temporary farm labourers	Farm machine & equipment	Customary payments to village artisans	Land owner as rent	Land owner as share of produce	repayment of loan	Land revenue	Irrigation charges & other cesses	Others	Total payment in kind
1	2	3	4	5	6	7	8	9	10	11	12
1	Andhra Pradesh	1.41	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.04	1.78
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	4.56	3.50	0.64	0.00	0.00	0.36	0.00	0.00	0.00	9.06
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	9.44	0.18	0.13	0.00	0.00	0.00	0.00	0.53	11.97	22.25
13	Maharashtra	11.74	0.34	0.00	0.00	0.00	0.60	0.04	0.18	55.21	68.11
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.99	2.99
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	4.32	1.35	0.28	0.00	0.02	6.31	0.27	0.23	0.21	12.99

















4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	15.91	2.42	3.79	0.00	0.00	0.37	0.00	0.00	2.74	25.23
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	11.42	0.22	0.20	0.00	0.00	0.10	0.00	0.10	4.00	16.04
13	Maharashtra	164.06	100.69	14.70	0.70	2.19	0.00	0.00	0.00	0.00	282.34
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	1.90	3.09	1.15	0.13	0.00	0.00	0.00	0.00	0.00	6.27
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	3.91	1.06	0.10	0.00	0.00	0.00	0.00	0.00	0.00	5.07
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	2.80	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	3.40
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	203.61	123.50	23.23	0.83	2.19	0.47	0.00	0.10	6.79	360.72

## Annexure – XXVII

### Utilisation of Jowar for Payment in Kind to Temporary Labour and Other Purposes – Large Category Cultivators (Triennium ending 1998-99)

(in '000 tonnes)

[illegible]

24	Uttar Pradesh	3.75	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	4.18
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	219.31	83.89	47.40	0.56	5.34	0.69	0.09	0.48	5.19	362.95

**Annexure – XXVIII**

**Utilisation of Jowar for Payment in Kind to Temporary Labour and Other Purposes – All Category Cultivators  
(Triennium ending 1998-99)**

(in

‘000 tonnes)

S.No.	Name of State	Quantity Utilised									
		Temporary farm labourers	Farm machine & equipment	Customary payments to village artisans	Land owner as rent	Land owner as share of produce	Repayment of loan	Land revenue	Irrigation charges & other cesses	Others	Total payment in kind
1	2	3	4	5	6	7	8	9	10	11	12
1	Andhra Pradesh	52.48	16.12	60.87	0.08	0.22	0.00	0.00	0.00	0.13	129.90
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	4.29	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.35
7	Haryana	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	58.95	15.11	16.96	0.56	0.70	0.37	0.00	0.00	9.82	102.47
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	37.94	0.66	0.75	0.00	0.00	0.10	0.00	0.10	10.97	50.52
13	Maharashtra	665.70	289.20	47.32	0.70	2.19	0.69	0.09	0.48	0.00	1006.37
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	20.69	17.60	7.90	0.71	0.00	0.00	0.00	0.00	0.00	46.90











9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.73	0.05	9.09	7.30	0.46	90.91	8.03	0.51
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	2.20	0.28	56.99	1.66	0.21	43.01	3.86	0.49
13	Maharashtra	10.87	0.17	83.55	2.14	0.03	16.45	13.01	0.20
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.01	0.16	50.00	0.01	0.16	50.00	0.02	0.31
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.51	0.16	65.38	0.27	0.08	34.62	0.78	0.24
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.77	0.24	35.32	1.41	0.45	64.68	2.18	0.69
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	1.29	0.33	65.48	0.68	0.17	34.52	1.97	0.50
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	16.59	0.16	47.99	17.98	0.17	52.01	34.57	0.32

**Annexure – XXXIII**

**Losses of Jowar in Transport from Field to Threshing Floor  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Category of cultivator							
		Small		Medium		Large		All	
		Quantity	Percent to production of category	Quantity	Percent to production of category	Quantity	Percent to production of category	Quantity	Percent to production of category
1		3	4	5	6	7	8	9	10
1	Andhra Pradesh	1.43	0.44	0.40	0.39	0.20	0.25	2.03	0.40
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.01	0.53	0.00	0.00	0.00	0.00	0.01	0.41
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.07	0.06	0.05	0.08	0.00	0.00	0.12	0.05



3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.01	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.41
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.09	0.03	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.12	0.05
7	Haryana	0.09	0.25	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.10	0.28
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	4.75	0.30	0.03	0.00	4.25	0.27	0.78	0.05	0.00	0.00	9.81	0.62
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	1.11	0.14	0.15	0.02	1.31	0.16	1.24	0.16	0.00	0.00	3.81	0.48
13	Maharashtra	14.41	0.22	0.00	0.00	35.52	0.55	0.91	0.01	0.01	0.00	50.85	0.79
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.02	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.31
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.39	0.12	0.00	0.00	1.44	0.45	0.09	0.03	0.00	0.00	1.92	0.60
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	1.08	0.34	0.00	0.00	0.17	0.05	0.06	0.02	0.00	0.00	1.31	0.41
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.65	0.17	0.00	0.00	1.35	0.35	0.12	0.03	0.00	0.00	2.12	0.54
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	24.59	0.23	0.18	0.00	44.11	0.41	3.21	0.03	0.01	0.00	72.10	0.68

Annexure – XXXV

### Losses of Jowar in Transport from Threshing Floor to Storage (Triennium ending 1998-99)

(in '000 tonnes)

[illegible]







10	Karnataka	8.30	0.53	1.51	0.10	0.00	0.00	2.56	0.16	12.37	0.78
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	2.51	0.32	1.30	0.16	0.00	0.00	2.26	0.28	6.07	0.76
13	Maharashtra	48.25	0.75	2.60	0.04	0.00	0.00	14.43	0.22	65.28	1.01
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.02	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.31
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	1.91	0.60	0.01	0.00	0.00	0.00	0.39	0.12	2.31	0.73
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	1.26	0.40	0.05	0.02	0.00	0.00	0.00	0.00	1.31	0.41
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	2.01	0.52	0.11	0.03	0.00	0.00	1.82	0.47	3.94	1.01
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	66.32	0.62	5.78	0.05	0.00	0.00	21.94	0.21	94.04	0.88

Annexure – XXXVIII

**Losses of Jowar during Storage at Farm Level  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Category of cultivator											
		Small			Medium			Large			All		
		Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Andhra Pradesh	187.66	1.86	0.99	50.04	0.39	0.78	27.37	0.20	0.73	265.07	2.45	0.92
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.38	0.01	0.72	0.00	0.00	0.00	0.44	0.00	0.00	1.82	0.01	0.55
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	44.53	0.20	0.45	16.72	0.05	0.30	11.21	0.00	0.00	72.46	0.25	0.35

7	Haryana	0.32	0.00	0.00	0.12	0.00	0.00	2.05	0.02	0.98	2.49	0.02	0.80
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	510.63	2.44	0.48	323.25	1.42	0.44	238.82	0.80	0.33	1072.70	4.66	0.43
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	264.00	1.37	0.52	215.59	1.08	0.50	177.24	0.85	0.48	656.83	3.30	0.50
13	Maharashtra	1988.36	12.37	0.62	958.28	5.43	0.57	965.19	4.36	0.45	3911.83	22.16	0.57
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	2.14	0.02	0.93	3.10	0.02	0.65	0.00	0.00	0.00	5.24	0.04	0.76
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	107.76	0.68	0.63	26.79	0.15	0.56	23.66	0.13	0.55	158.21	0.96	0.61
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	41.26	0.34	0.82	32.62	0.26	0.80	21.33	0.12	0.56	95.21	0.72	0.76
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	195.55	0.94	0.48	48.59	0.21	0.43	25.34	0.11	0.43	269.48	1.26	0.47
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	3343.59	20.23	0.61	1675.10	9.01	0.54	1492.65	6.59	0.44	6511.34	35.83	0.55

**Losses of Jowar during Storage at Farm Level – By Type and Mode of Storage**  
(Triennium ending 1998-99)

**Annexure – XXXIX**  
(in '000 tonnes)

S. No.	NAME OF STATE	TYPE OF STORAGE						MODE OF STORAGE						Partly in Bags & Bulk		
		Kutcha storage			Pucca storage			In bulks			In bags					
		Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %	Quantity Stored	Quantity Lost	Loss %
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Andhra Pradesh	180.81	1.66	0.92	84.26	0.79	0.94	17.72	0.30	1.69	243.48	2.11	0.87	3.87	0.04	1.03
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.82	0.01	0.55	0.00	0.00	0.00	1.82	0.01	0.55	0.00	0.00	0.00	0.00	0.00	0.00

5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	22.87	0.20	0.87	49.59	0.05	0.10	40.60	0.17	0.42	31.86	0.08	0.25	0.00	0.00
7	Haryana	0.90	0.01	1.11	1.59	0.01	0.63	1.07	0.01	0.93	1.42	0.01	0.70	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	930.77	4.17	0.45	141.93	0.49	0.35	138.58	0.65	0.47	896.70	3.89	0.43	37.42	0.12
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	557.86	3.02	0.54	98.97	0.28	0.28	105.53	0.57	0.54	518.60	2.51	0.48	32.70	0.22
13	Maharashtra	3047.65	18.94	0.62	864.18	3.22	0.37	85.60	0.93	1.09	3763.67	20.68	0.55	62.56	0.55
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	3.14	0.03	0.96	2.10	0.01	0.48	2.17	0.02	0.92	2.09	0.01	0.48	0.98	0.01
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	96.03	0.72	0.75	62.18	0.24	0.39	29.23	0.45	1.54	74.50	0.27	0.36	54.48	0.24
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	8.13	0.08	0.98	87.08	0.64	0.73	0.77	0.01	1.30	94.44	0.71	0.75	0.00	0.00
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	139.01	0.68	0.49	130.47	0.58	0.44	23.17	0.28	1.21	245.94	0.98	0.40	0.37	0.00
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	4988.99	29.52	0.59	1522.35	6.31	0.41	446.26	3.40	0.76	5872.70	31.25	0.53	192.38	1.18

**Annexure – XXXX**

**Losses of Jowar during Storage at Farm Level–By Causes of Losses**

**(Triennium ending 1998-99)**

**(in '000**

**tonnes)**

S.No	Name of State	CAUSES OF LOSSES												Total quantity lost
		Driage		Rodents		Infestation		Handling		Quality deterioration		Others		
		Quantity lost	Percent to col. 15	Quantity lost	Percent to col. 15	Quantity lost	Percent to col. 15	Quantity lost	Percent to col. 15	Quantity lost	Percent to col. 15	Quantity lost	Percent to col. 15	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

1	Andhra Pradesh	1.64	66.94	0.76	31.02	0.03	1.22	0.01	0.41	0.01	0.41	0.00	0.00	2.45
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.01	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.25	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
7	Haryana	0.00	0.00	0.02	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.26	5.58	2.03	43.56	1.32	28.33	0.96	20.60	0.09	1.93	0.00	0.00	4.66
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	0.52	15.76	2.60	78.79	0.00	0.00	0.16	4.85	0.00	0.00	0.02	0.61	3.30
13	Maharashtra	6.62	29.87	14.50	65.43	0.18	0.81	0.83	3.75	0.00	0.00	0.03	0.14	22.16
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.01	25.00	0.03	75.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.16	16.67	0.80	83.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.72	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.13	10.32	1.10	87.30	0.03	2.38	0.00	0.00	0.00	0.00	0.00	0.00	1.26
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	10.06	28.08	22.10	61.68	1.56	4.35	1.96	5.47	0.10	0.28	0.05	0.14	35.83

### Total Post Harvest Losses of Jowar At Producer's Level – Small Category

(Triennium ending 1998-99)

(in '000 tonnes )

[illegible]













9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.00	0.00	33.22	27.17	86.50	70.76	2.53	2.07	122.25
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	1.42	1.33	89.74	83.99	11.53	10.79	4.15	3.88	106.84
13	Maharashtra	1.82	0.27	397.55	58.92	47.61	7.06	227.78	33.76	674.76
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.22	100.00	0.00	0.00	0.00	0.00	0.22
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	6.09	100.00	0.00	0.00	0.00	0.00	6.09
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.21	0.33	25.74	40.68	36.19	57.20	1.13	1.79	63.27
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	47.94	96.52	1.26	2.54	0.47	0.95	49.67
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	3.62	0.33	642.05	58.85	196.47	18.01	248.82	22.81	1090.96

Annexure – XXXXVII

**Total Sale of Jowar-Quarterwise – Large Category Cultivators**

(Triennium ending 1998-99)

(in '000 tonnes)

S.No	Name of State	Quarter of Sale								Total Sale
		I		II		III		IV		
		Qty.	% to col. 11	Qty.	% to col. 11	Qty.	% to col. 11	Qty.	% to col. 11	
1	2	3	4	5	6	7	8	9	10	11
1	Andhra Pradesh	1.09	3.47	27.49	87.49	0.74	2.36	2.10	6.68	31.42
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.06	100.00	0.00	0.00	0.00	0.00	0.06

5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	21.73	94.40	0.82	3.56	0.47	2.04	23.02
7	Haryana	0.00	0.00	2.13	100.00	0.00	0.00	0.00	0.00	2.13
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.60	0.63	29.58	30.82	61.44	64.02	4.35	4.53	95.97
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	0.77	0.66	92.55	79.12	13.58	11.61	10.07	8.61	116.97
13	Maharashtra	1.26	0.15	444.21	54.38	55.53	6.80	315.92	38.67	816.92
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	27.47	95.95	1.16	4.05	0.00	0.00	28.63
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.00	0.00	24.62	33.02	49.57	66.47	0.38	0.51	74.57
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	47.51	94.93	1.08	2.16	1.46	2.92	50.05
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	3.72	0.30	717.35	57.86	183.92	14.84	334.75	27.00	1239.74

## Annexure – XXXXVIII

**Total Sale of Jowar-Quarterwise – All Category Cultivators**  
**(Triennium ending 1998-99)**

(in '000 tonnes)

(in '000 tonnes)

S.No	Name of State	Quarter of Sale								Total Sale
		I		II		III		IV		
		Qty.	% to col. 11	Qty.	% to col. 11	Qty.	% to col. 11	Qty.	% to col. 11	
1	2	3	4	5	6	7	8	9	10	11
1	Andhra Pradesh	1.26	0.61	134.32	65.25	29.63	14.39	40.65	19.75	205.86
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.28	100.00	0.00	0.00	0.00	0.00	0.28
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	47.80	82.07	4.84	8.31	5.60	9.62	58.24
7	Haryana	0.00	0.00	2.57	95.54	0.12	4.46	0.00	0.00	2.69
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	6.58	1.52	174.78	40.33	235.36	54.31	16.68	3.85	433.40
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	2.19	0.60	307.91	84.66	33.58	9.23	20.01	5.50	363.69
13	Maharashtra	3.33	0.12	1825.27	66.66	154.36	5.64	755.21	27.58	2738.17
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.22	100.00	0.00	0.00	0.00	0.00	0.22
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	76.86	96.94	2.43	3.06	0.00	0.00	79.29





16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.22	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	5.50	90.31	0.00	0.00	0.00	0.00	0.59	9.69	0.00	0.00	6.09
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.82	1.30	61.91	97.85	0.54	0.85	0.00	0.00	0.00	0.00	0.00	0.00	63.27
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	1.12	2.25	48.18	97.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.74	49.67
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	109.96	10.08	965.29	88.48	6.71	0.62	0.00	0.00	4.95	0.45	4.05	0.37	1090.96

Annexure – LI

**Sale of Jowar – Agencywise – Large Category Cultivators**

**(Triennium ending 1998-99)**

**(in '000 tonnes)**

S.No	Name of State	Name of Agency												Total Sales
		Consumers		Traders		Co-operatives		F.C.I.		Money Lenders		Others		
		Quantity	Percent to col. 15	Quantity	Percent to col. 15	Quantity	Percent to col. 15	Quantity	Percent to col. 15	Quantity	Percent to col. 15	Quantity	Percent to col. 15	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Andhra Pradesh	1.51	4.81	29.36	93.44	0.00	0.00	0.00	0.00	0.33	1.05	0.22	0.70	31.42
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.06	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.06	0.26	7.18	31.19	15.78	68.55	0.00	0.00	0.00	0.00	0.00	0.00	23.02
7	Haryana	1.01	47.42	1.12	52.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	8.86	9.23	85.87	89.48	0.00	0.00	0.00	0.00	1.24	1.29	0.00	0.00	95.97
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	16.16	13.82	100.30	85.75	0.00	0.00	0.00	0.00	0.08	0.07	0.43	0.37	116.97





10	Karnataka	25.03	5.78	372.98	86.06	0.12	0.03	0.00	0.00	31.30	7.22	3.97	0.92	433.40
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	33.68	9.26	328.46	90.31	0.00	0.00	0.53	0.15	0.08	0.02	0.94	0.26	363.69
13	Maharashtra	428.23	15.64	2213.26	80.83	43.96	1.61	48.67	1.78	4.05	0.15	0.00	0.00	2738.17
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.22	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	4.40	5.55	47.44	59.83	4.91	6.19	4.54	5.73	18.00	22.70	0.00	0.00	79.29
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	5.29	2.85	179.81	96.76	0.74	0.40	0.00	0.00	0.00	0.00	0.00	0.00	185.84
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	3.47	2.12	159.64	97.41	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.47	163.88
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	516.63	12.21	3520.62	83.20	75.95	1.79	54.68	1.29	55.52	1.31	8.16	0.19	4231.56

Annexure – LIII

**Sale of Jowar – Within Village – Small Category Cultivators**  
(Triennium ending 1998-99)

(in '000 tonnes)

S.No	Name of State	Quarter of Sale							
		I		II		III		IV	
		Qty.	% to Production of category	Qty.	% to Production of category	Qty.	% to Production of category	Qty.	% to Production of category
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	0.00	0.00	18.66	5.80	1.51	0.47	2.41	0.75
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.22	11.70	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	4.49	3.66	2.15	1.75	1.04	0.85



4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	12.22	18.86	0.00	0.00	0.00	0.00
7	Haryana	0.00	0.00	0.15	7.89	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.00	0.00	9.22	2.04	28.75	6.37	2.53	0.56
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	0.21	0.09	29.63	12.55	4.87	2.06	2.15	0.91
13	Maharashtra	0.00	0.00	249.60	15.46	11.90	0.74	46.78	2.90
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.22	5.71	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.21	0.19	25.74	23.60	29.77	27.29	0.00	0.00
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	16.53	16.46	0.00	0.00	0.00	0.00
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	0.59	0.02	354.78	13.02	75.46	2.77	52.18	1.91

Annexure – LV

**Sale of Jowar – Within Village – Large Category Cultivators  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No	Name of State	Quarter of Sale							
		I		II		III		IV	
		Qty.	% to Production of category	Qty.	% to Production of category	Qty.	% to Production of category	Qty.	% to Production of category
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	0.17	0.21	9.03	11.08	0.13	0.16	0.12	0.15
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.06	10.53	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.82	1.16	0.00	0.00	0.47	0.66
7	Haryana	0.00	0.00	2.13	7.06	0.00	0.00	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	0.07	0.02	12.67	3.71	14.10	4.13	3.76	1.10
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	0.64	0.28	32.11	14.27	5.82	2.59	0.91	0.40
13	Maharashtra	0.35	0.02	321.22	19.49	16.43	1.00	59.01	3.58
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.00	0.00	23.38	20.73	35.98	31.90	0.00	0.00
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	11.08	12.90	0.00	0.00	0.00	0.00













12	Madhya Pradesh	1.34	0.17	202.74	25.52	16.72	2.10	14.41	1.81
13	Maharashtra	2.98	0.05	497.24	7.71	100.13	1.55	616.81	9.57
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	0.00	0.00	54.13	17.00	1.16	0.36	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.00	0.00	1.24	0.39	26.08	8.23	1.51	0.48
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	0.00	0.00	105.55	27.06	3.35	0.86	1.93	0.49
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	11.75	0.11	1093.65	10.27	311.31	2.92	676.74	6.35

**Annexure – LXI**

**Estimated Marketable Surplus – Small Category Cultivators  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No.	Name of state	Type of Retention												
		Total production	Family		Permanent labours		Temporary labours		Seed		Feed		Kind payment (pl)	
			Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	Andhra Pradesh	321.83	96.66	30.03	0.00	0.00	0.00	0.00	0.06	0.02	0.09	0.03	2.94	0.91
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	1.88	1.38	73.40	0.00	0.00	0.00	0.00	0.02	1.06	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	122.57	45.50	37.12	0.00	0.00	0.00	0.00	0.26	0.21	40.61	33.13	1.46	1.19
7	Haryana	4.00	0.32	8.00	0.00	0.00	0.00	0.00	0.65	16.25	2.40	60.00	0.00	0.00

8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	785.05	425.62	54.22	0.00	0.00	2.19	0.28	14.80	1.89	4.70	0.60	5.35	0.68	
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	333.29	133.08	39.93	0.31	0.09	8.55	2.57	8.74	2.62	2.83	0.85	0.61	0.18	
13	Maharashtra	3184.65	1175.28	36.90	0.00	0.00	126.07	3.96	11.97	0.38	6.87	0.22	7.41	0.23	
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	2.56	2.14	83.59	0.00	0.00	0.00	0.00	0.03	1.17	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	202.82	106.05	52.29	1.24	0.61	4.06	2.00	4.54	2.24	5.48	2.70	0.00	0.00	
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	94.95	18.99	20.00	0.00	0.00	0.00	0.00	7.14	7.52	12.61	13.28	1.24	1.31	
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	203.81	86.32	42.35	0.00	0.00	6.42	3.15	5.09	2.50	18.74	9.19	0.00	0.00	
25	West Bengal	0.07	0.07	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	5257.48	2091.41	39.78	1.55	0.03	147.29	2.80	53.30	1.01	94.33	1.79	19.01	0.36	

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S.No.	Name of state	Type of Retention				Total retention	Total Purchase	Total losses	Farm family requirement	Marketable surplus					
		Kind Payment (oth)		Barter											
		Qty	%	Qty	%						Qty	%	Qty	%	Qty
1	2	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	Andhra Pradesh	79.41	24.67	0.00	0.00	179.16	55.67	86.79	26.97	7.37	2.29	273.32	84.93	48.51	15.07
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.16	8.51	0.00	0.00	1.56	82.98	0.00	0.00	0.04	2.13	1.60	85.11	0.28	14.89
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	4.29	3.50	0.00	0.00	92.12	75.16	22.57	18.41	3.62	2.95	118.31	96.52	4.26	3.48



3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	64.78	13.99	21.60	0.00	0.00	1.11	1.71	0.86	1.33	22.01	33.98	0.60	0.93
7	Haryana	1.90	0.12	6.32	0.00	0.00	0.00	0.00	0.35	18.42	1.20	63.16	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	451.17	250.79	55.59	0.00	0.00	5.61	1.24	8.04	1.78	5.15	1.14	2.51	0.56
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	236.18	91.09	38.57	1.94	0.82	4.06	1.72	1.67	0.71	2.20	0.93	3.27	1.38
13	Maharashtra	1614.18	482.50	29.89	3.74	0.23	60.21	3.73	6.79	0.42	3.25	0.20	12.98	0.80
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	3.85	3.10	80.52	0.00	0.00	0.00	0.00	0.04	1.04	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	42.23	21.41	50.70	0.00	0.00	1.54	3.65	3.14	7.44	1.07	2.53	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	109.07	13.76	12.62	0.00	0.00	0.00	0.00	6.08	5.57	14.27	13.08	0.18	0.17
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	100.40	27.77	27.66	0.00	0.00	0.59	0.59	2.19	2.18	12.39	12.34	0.00	0.00
25	West Bengal	0.05	0.05	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	2725.50	926.14	33.98	6.00	0.22	73.12	2.68	29.30	1.08	61.75	2.27	21.74	0.80

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S.No .	Name of state	Type of Retention				Total retention		Total Purchase		Total losses		Farm family requirement		Marketable surplus	
		Kind Payment (oth)		Barter											
		Qty	%	Qty	%	Qty	%			Qty	%	Qty	%	Qty	%
1	2	16	17	18	19	20	21	22	23	24	25	26	27	28	29

1	Andhra Pradesh	22.06	21.69	0.00	0.00	46.49	45.72	17.94	17.64	1.80	0.36	66.23	65.13	35.46	34.87
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	0.00	0.00	0.00	0.00	38.57	59.54	9.93	15.33	1.67	0.65	50.17	77.45	14.61	22.55
7	Haryana	0.00	0.00	0.00	0.00	1.67	87.89	0.00	0.00	0.01	0.03	1.68	88.42	0.22	11.58
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	25.23	5.59	0.00	0.00	297.33	65.90	73.43	16.28	10.41	0.66	381.17	84.48	70.00	15.52
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	16.04	6.79	0.00	0.00	120.27	50.92	31.01	13.13	4.33	0.55	155.61	65.89	80.57	34.11
13	Maharashtra	282.34	17.49	0.00	0.00	851.81	52.77	106.53	6.60	34.40	0.53	992.74	61.50	621.44	38.50
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.31	8.05	0.00	0.00	3.45	89.61	0.00	0.00	0.06	0.94	3.51	91.17	0.34	8.83
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	6.27	14.85	0.00	0.00	33.43	79.16	0.00	0.00	0.73	0.23	34.16	80.89	8.07	19.11
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	5.07	4.65	0.00	0.00	39.36	36.09	5.74	5.26	2.42	0.76	47.52	43.57	61.55	56.43
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	3.40	3.39	0.00	0.00	46.34	46.16	0.67	0.67	2.35	0.60	49.36	49.16	51.04	50.84
25	West Bengal	0.00	0.00	0.00	0.00	0.05	100.00	0.00	0.00	0.00	0.00	0.05	100.00	0.00	0.00
26	ALL INDIA	360.72	13.24	0.00	0.00	1478.77	54.26	245.25	9.00	58.18	0.55	1782.20	65.39	943.30	34.61

**Annexure – LXIII**

**Marketable Surplus – Large Category Cultivators  
(Triennium ending 1998-99)**

(in '000 tonnes)

S.No.	Name of State	Total production	<b><u>Type of Retention</u></b>											
			Family		Permanent labours		Temporary labours		Seed		Feed		Kind payment (pl)	
			Qty	%	Qty	%	Qty	%	Qty	%	Qty	%	Qty	%
1	2	3	4	5	6	7	8	9		10	11	12	13	14
1	Andhra Pradesh	81.51	14.05	17.24	1.22	1.50	0.00	0.00	0.02	0.02	0.31	0.38	3.00	3.68
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.57	0.44	77.19	0.00	0.00	0.00	0.00	0.01	1.75	0.00	0.00	0.00	0.00
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	70.72	11.33	16.02	0.00	0.00	0.00	0.00	0.53	0.75	32.30	45.67	0.41	0.58
7	Haryana	30.19	2.05	6.79	0.00	0.00	0.00	0.00	5.47	18.12	17.72	58.69	0.00	0.00
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	341.41	177.68	52.04	0.00	0.00	7.76	2.27	6.01	1.76	8.49	2.49	0.89	0.26
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	224.97	65.53	29.13	4.24	1.88	4.98	2.21	1.49	0.66	3.63	1.61	4.24	1.88
13	Maharashtra	1647.72	315.24	19.13	37.54	2.28	60.17	3.65	5.72	0.35	5.46	0.33	27.42	1.66
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	73.41	16.43	22.38	0.33	0.45	2.16	2.94	1.48	2.02	2.63	3.58	0.00	0.00







15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	6.41	5.24	81.75	0.00	0.00	0.00	0.00	0.07	1.09	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	318.46	143.89	45.18	1.57	0.49	7.76	2.44	9.16	2.88	9.18	2.88	0.00	0.00
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	316.82	41.03	12.95	0.00	0.00	0.00	0.00	19.27	6.08	34.55	10.91	1.42	0.45
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	390.12	128.67	32.98	0.03	0.01	7.84	2.01	9.03	2.31	40.39	10.35	0.00	0.00
25	West Bengal	0.12	0.12	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	10652.19	3643.16	34.20	50.91	0.48	296.31	2.78	111.13	1.04	243.55	2.29	76.71	0.72

Cont-2

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S.No.	Name of state	Type of Retention				Total retention		Total Purchase		Total losses		Farm family requirement		Marketable surplus	
		Kind Payment (oth)		Barter											
		Qty	%	Qty	%	Qty	%			Qty	%	Qty	%	Qty	%
1	2	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	Andhra Pradesh	129.90	25.72	0.00	0.00	272.68	53.99	111.34	22.05	10.04	1.99	394.06	78.03	110.97	21.97
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.18	7.35	0.00	0.00	2.03	82.86	0.00	0.00	0.04	1.63	2.07	84.49	0.38	15.51
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	4.35	1.69	0.00	0.00	175.32	67.94	38.15	14.78	6.52	2.53	219.99	85.24	38.08	14.76
7	Haryana	1.59	4.41	0.00	0.00	31.87	88.31	0.00	0.00	0.45	1.25	32.32	89.55	3.77	10.45
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	102.47	6.50	0.00	0.00	1028.06	65.16	293.78	18.62	36.50	2.31	1358.34	86.10	219.29	13.90
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	50.52	6.36	0.00	0.00	392.98	49.47	102.00	12.84	16.62	2.09	511.60	64.40	282.84	35.60







3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	0.57	0.47	82.46	0.06	10.53	0.10	17.54	0.04	7.02
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	70.72	51.51	72.84	23.02	32.55	19.21	27.16	-3.81	-5.39
7	Haryana	30.19	27.22	90.16	2.13	7.06	2.97	9.84	0.84	2.78
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	341.41	273.25	80.04	95.97	28.11	68.16	19.96	-27.81	-8.15
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	224.97	115.48	51.33	116.97	51.99	109.49	48.67	-7.48	-3.32
13	Maharashtra	1647.72	778.82	47.27	816.92	49.58	868.90	52.73	51.98	3.15
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	73.41	40.23	54.80	28.63	39.00	33.18	45.20	4.55	6.20
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	112.80	39.16	34.72	74.57	66.11	73.64	65.28	-0.93	-0.82
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	85.91	32.68	38.04	50.05	58.26	53.23	61.96	3.18	3.70
25	West Bengal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	ALL INDIA	2669.21	1413.33	52.95	1239.74	46.45	1255.88	47.05	16.14	0.60

**Annexure-LXVIII**

**Marketed Surplus Vis-à-vis Marketable Surplus– All Category Cultivators  
(Triennium ending 1998-99)**

(in '000 Tonnes)

S.No .	Name of State	Total production	Total utilize qty		Marketed surplus		Marketable surplus		Difference	
			Qty.	%	Qty.	%	Qty.	%	Qty.	%
1	2	3	4	5	6	7	8	9	10	11
1	Andhra Pradesh	505.03	394.06	78.03	205.86	40.76	110.97	21.97	-94.89	-18.79
2	Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Bihar	2.45	2.07	84.49	0.28	11.43	0.38	15.51	0.10	4.08
5	Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	Gujarat	258.07	219.99	85.24	58.24	22.57	38.08	14.76	-20.16	-7.81
7	Haryana	36.09	32.32	89.55	2.69	7.45	3.77	10.45	1.08	2.99
8	Himachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Jammu and Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Karnataka	1577.63	1358.34	86.10	433.40	27.47	219.29	13.90	-214.11	-13.57
11	Kerala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	Madhya Pradesh	794.44	511.60	64.40	363.69	45.78	282.84	35.60	-80.85	-10.18
13	Maharashtra	6446.55	4080.46	63.30	2738.17	42.47	2366.09	36.70	-372.08	-5.77
14	Manipur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Meghalaya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	Orissa	6.41	5.88	91.73	0.22	3.43	0.53	8.27	0.31	4.84
19	Punjab	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Rajasthan	318.46	224.25	70.42	79.29	24.90	94.21	29.58	14.92	4.69
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	316.82	141.51	44.67	185.84	58.66	175.31	55.33	-10.53	-3.32
23	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	Uttar Pradesh	390.12	218.20	55.93	163.88	42.01	171.92	44.07	8.04	2.06



25	West Bengal	0.12	0.12	100.00	0.00	0.00	0.00	0.00	0.00	0.00
26	All India	10652.19	7188.80	67.49	4231.56	39.72	3463.39	32.51	-768.17	-7.21

**Standard Errors for Estimates of Marketable Surplus, Marketed Surplus and  
Post-harvest Losses of Jowar**

S. No.	State	Marketable Surplus	Marketed Surplus	Total post harvest losses
1	Andhra Pradesh	0.80	0.72	0.89
2	Arunachal Pradesh	-	-	-
3	Assam	-	-	-
4	Bihar	-	-	-
5	Goa	-	-	-
6	Gujarat	1.69	2.27	1.97
7	Haryana	-	-	-
8	Himachal Pradesh	-	-	-
9	Jammu & Kashmir	-	-	-
10	Karnataka	1.12	1.09	0.97
11	Kerala	-	-	-
12	Madhya Pradesh	1.67	1.01	1.23
13	Maharashtra	0.92	6.73	0.97
14	Manipur	-	-	-
15	Meghalaya	-	-	-
16	Mizoram	-	-	-
17	Nagaland	-	-	-
18	Orissa	0.94	6.82	1.00
19	Punjab	-	-	-
20	Rajasthan	1.24	1.37	0.35
21	Sikkim	-	-	-
22	Tamil Nadu	0.62	0.55	1.01
23	Tripura	-	-	-
24	Uttar Pradesh	0.88	1.00	0.89
25	West Bengal	-	-	-
	All India	0.62	0.55	0.89

## REFERENCES

1. Marketable Surplus & Post Harvest Losses of Paddy in India, 1979, P.160.
2. Marketable Surplus & Post Harvest Losses of Wheat in India, 1986, P.105.
3. Marketable Surplus & Post Harvest Losses of Jowar in India, 1984, P. 129.
4. Marketable Surplus & Post Harvest Losses of Bajra in India, 1985, P.129.
5. Marketable Surplus & Post Harvest Losses of Maize in India, 1987, P.187.
6. Pandey, P.H., “Post Harvest Process Technology”, Principles and Practices of Post Harvest Technology, (1998), P.3.
7. A World Bank Operations Evaluation Study, Agricultural Marketing, The World Bank’s Experience (1974-85), P. 42.
8. S.Z.Khadse, N.D.Pawar and K.V. Khupse “Study of the factors Governing the flow of Marketable Surplus of Kharif Jowar in Viderbha Region of Maharashtra State,Agricultural Marketing Journal , Jan- March 2001,pp34-36
9. N.D.Pawar (1998)“ Factors governing Marketable Surplus of Jowar in Marathwada Region of Maharashtra State” Agriculture Marketing, April-June 1998, pp30-33
10. Pawar P.P., Tagad B.N., and Sale D.L. (1990) “Marketable Surplus of cereals in Marathawada Region of Maharashtra State. Agriculture Marketing, Jan-March 1990, pp8-9.
11. Dogra singh and R.K. Khosla (1978) “Post harvest losses in India: A Review”,Agriculture Situation In India,pp499-500.

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