AGRICULTURAL SITUATION IN INDIA

MAY, 2014

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Contents

Part I

Officials of the Publication Division, Directorate of Economics and Statistics, Department of Agriculture and Co-operation, New Delhi associated in preparation of this publication :

D. K. Gaur—*Technical Asstt.*

Uma Rani—*Technical Asstt.*
(Printing)

S. K. Kaushal—*Technical Asstt.*
(Printing)

The Journal is brought out by the Directorate of Economics and Statistics, Ministry of Agriculture. It aims at presenting a factual and integrated picture of the Food and Agricultural Situation in India on month to month basis. The views expressed, if any, are not necessarily those of the Government of India.

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PART II

STATISTICAL TABLES

Abbreviations used

N.A. —Not Available.
N.Q. —Not Quoted.
N.T. —No Transactions.
N.S. —No Supply/No Stock.
R. —Revised.
M.C. —Market Closed.
N.R. —Not Reported.
Neg. —Negligible.
Kg. —Kilogram.
Q. —Quintal.
(P) —Provisional.
Plus (+) indicates surplus or increase.
Minus (–) indicates deficit or decrease.

A. General Survey

Agriculture

Rainfall: With respect to rainfal situation in India, the year is categorized into four seasons: winter season (January-February); pre monsoon (March-May); south west monsoon (June- September) and post monsoon (October-December). South west monsoon accounts for more than 75 per cent of annual rainfall. The actual rainfall received during the Monsoon period 01.06.2014 - 11.06.2014, has been 23.0 mm as against the normal at 41.0 mm. Rainfall has been in excess and normal in 8 sub divisions as compared to 30 during the corresponding period last year. As per the India Meteorological Department (IMD) Long Range Forecast report released on 9th June, 2014, the ESSO-IITM coupled dynamical model predicts moderate El-Nino conditions in the tropical Pacific for summer months and chances of El Nino occurring during monsoon are very high (more than 70%). On the other hand conditions in the tropical Indian Ocean are warmer than normal uniformly throughout the basin.

All India production of foodgrains: As per the 3rd advance estimates released by Ministry of Agriculture on 15.05.2014, production of total foodgrains during 2013-14 is estimated at 264.38 million tonnes as compared to 257.13 million tonnes in 2012-13

TABLE 1— PRODUCTION OF MAJOR AGRICULTURAL CROPS (IN MILLION TONNES)

Crop	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14 (3rd advance estimates)
Rice	99.18	89.09	95.98	105.30	105.24	106.29
Wheat	80.68	80.80	86.87	94.88	93.51	95.85
Total Pulses	14.57	14.66	18.24	17.09	18.34	19.57
Total Foodgrains	234.47	218.11	244.49	259.29	257.13	264.38
Total Oilseeds	27.72	24.88	32.48	29.79	30.94	32.41
Sugarcane	285.03	292.30	342.38	361.04	341.20	348.38

Procurement: Procurement of rice as on 13.06.2014 was 29.60 million tonnes d.uring 2013-14 and procurement of wheat as on 13.06.2014 was 27.79 million tonnes during 2014-15.

TABLE 2—PROCUREMENT (IN MILLION TONNES)

Crop	2010-11	2011-12	2012-13	2013-14	2014-15
Rice	34.20	35.04	34.04	29.60*	
Wheat	22.51	28.34	38.15	25.09	27.79*
Total	56.71	63.38	72.19	54.69	

* Position as on 13.06.2014

Off-take

Off-take of rice during the month of April 2014 was 21.54 lakh tonnes. This comprises 19.30 lakh tonnes under TPDS and 2.24 lakh tonnes under other schemes. In respect of wheat, the total off take was 17.91 1akh tonnes comprising of 16.19 lakh tonnes under TPDS and 1.72 lakh tonnes under other schemes.

Stocks

Stocks of foodgrains (rice and wheat) held by FCI as on June 1, 2014 were 69.84 million tonnes, lower by 10.1 per cent compared to the level of 77.70 million tonnes as on June 1, 2013.

TABLE 3—Off-take and stocks of foodgrains (IN MILLION TONNES)

Crop	Off-take			Stocks	
	2011-12	2012-13	2013-14 (Up to April 1, 2014)	June 1. 2013	June 1, 2014#
Rice	32.12	32.64	21.53	33.31	20.65
Unmilled Paddy in terms of Rice					7.61
Wheat	24.26	33.21	17.91	44.39	41.58
Total	**56.38**	**65.85**	**39.44**	**77.70**	**69.84**

Note: Buffer Norms for Rice and Wheat are 14.20 Million Tonnes and 7.00 Million Tonnes respectively as on 01.04.2014 and 11.80 million tonnes & 20.10 million tonnes as on 01-07-2014 respectively

Since September, 2013, FCI gives separate figures for rice and unmilled paddy lying with FCI & state agencies in terms of rice.

Growth of Economy

As per the Provisional Estimates of the Central Statistics Office (CSO), the growth in Gross Domestic Product (GDP) at factor cost at constant (2004-05 prices) is estimated at 4.7 per cent in 2013-14 with agriculture, industry and services registering growth rates of 4.7 per cent, 0.4 per cent and 6.8 per cent respectively. The GDP growth rate is placed at 4.7 per cent, 5.2 per cent in the first and second quarters respectively 4.6 per cent each in the third and fourth quarter of 2013-14.

TABLE 4— GROWTH OF GDP AT FACTOR COST BY ECONOMIC ACTIVITY

(at 2004-05 Prices)

Sector	Growth (in per cent)			Percentage Share in GDP		
	2011-12	2012-13 (1R)	2013-14 (PE)	2011-12	2012-13 (1R)	2013-14 (PE)
1. Agriculture, forestry & fishing	**5.0**	**1.4**	**4.7**	**14.4**	**13.9**	**13.9**
2. Industry	7.8	1.0	0.4	28.2	27.3	26.1
a. Mining & Quarrying	0.1	-2.2	-1.4	2.1	2.0	1.9
b. Manufacturing	7.4	1.1	-0.7	16.3	15.8	14.9
c. Electricity, Gas & Water Supply	8.4	2.3	5.9	1.9	1.9	1.9
d. Construction	10.8	1.1	1.6	7.9	7.7	7.4
3 Services	**6.6**	**7.0**	**6.8**	**57.4**	**58.8**	**59.9**
a. Trade, Hotels, Transport & Communication	4.3	5.1	3.0	26.7	26.9	26.4
b. Financing, Insurance, Real Estate & Business Services	11.3	10.9	12.9	18.0	19.1	20.6
c. Community, Social & Personal Services	4.9	5.3	5.6	12.7	12.8	12.09
4 GDP at factor cost	**6.7**	**4.5**	**4.7**	**100**	**100**	**100**

1R: 1st Revised Estimates; PE: Provisional Estimates. Source: CSO

TABLE 5— GROWTH OF QUARTERLY ESTIMATES OF GDP AT CONSTANT (2004-05) PRICES

Sector	2011-12				2012-13				2013-14			
	Q1	Q 2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Agriculture, forestry & fishing	**6.5**	**4.0**	**5.9**	**3.4**	**1.8**	**1.8**	**0.8**	**1.6**	**4.0**	**5.0**	**3.7**	**6.3**
2. Industry	10.1	8.2	6.9	6.3	0.3	-0.4	1.7	2.1	-0.4	2.6	-0.4	-0.2
a. Mining & Quarrying	0.3	-4.6	-1.9	5.8	-1.1	-0.1	-2.0	-4.8	-3.9	0.0	-1.2	-0.4
b. Manufacturing	12.4	7.8	5.3	4.7	-1.1	0.0	2.5	3.0	-1.2	1.3	-1.5	-1.4
c. Electricity, Gas & Water Supply	8.5	10.3	9.6	5.4	4.2	1.3	2.6	0.9	3.8	7.8	5.0	7.2
d Construction	8.9	11.9	12.2	10.2	2.8	-1.9	1.0	2.4	1.1	4.4	0.6	0.7
3 Services	**6.7**	**7.0**	**6.5**	**6.1**	**7.2**	**7.6**	**6.9**	**6.3**	**7.2**	**6.3**	**7.2**	**6.4**
a. Trade, Hotels, Transport & Comm.	5.5	4.7	4.0	3.3	4.0	5.6	5.9	4.8	1.6	3.6	2.9	3.9
b. Financing, Insurance, Real Estate & Business Services	11.3	12.0	11.1	11.0	11.7	10.6	10.2	11.2	12.9	12.1	14.1	12.4
c. Community, Social & Personal Services	2.4	5.4	5.7	5.7	7.6	7.4	4.0	2.8	10.6	3.6	5.7	3.3
4 GDP at factor cost	**7.6**	**7.0**	**6.5**	**5.8**	**4.5**	**4.6**	**4.4**	**4.4**	**4.7**	**5.2**	**4.6**	**4.6**

Source: CSO.

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B. Articles

Cropping Patterns and Diversification in India

RADHA R. ASHRIT*

India being a vast country with different agro climatic zones has the immense potential to cultivate various crops across the States. Various initiatives taken by the Government in consultation with the States have resulted in increasing agriculture production; especially food grains production over a period of time. The agriculture sector is the only sector in the country which provides livelihood to more than 55% of the population directly (census 2011) and raw materials to other sectors.

The agricultural land is a limited natural resource and it is the vital input for agriculture production. Any changes in its usage will have a long term impact in the food and nutrition security to the billion plus poputation in the country as well as the livelihood of the sizeable population (State of India Agriculture 2013).

During 1960s the Green Revolution was started in our country to feed our people through technological interventions in the agriculture sector. Many of the States adopted necessary activities to tap these interventions (mainly enhancing irrigation facilities, use of fertilisers, use of high yielding variety seeds etc.), however, desired results were observed mainly in the area where water was available. Towards the end of 1980s stagnation in crop output started setting in. This prompted the farmers, policy makers and all the stake holders to search for a major break through in terms of technological interventions. Due to rising population, lands got fragmented and fuelled by the economic liberalisation in 1990s, farmers started getting meagre returns for outputs from the fields (G.S. Bhalla, etal, 2009).

Since more than 55% of our population depend on agricultural sector, sustainable income and employment generation have to be met within this sector. Studies have suggested that adoption of crop diversification can be argued as a viable method for augmentation of natural resources, retaining soil fertility and enhancement of economic returns (Vyas, V.S., 1996).

Further, Crop diversification has got various benefits such as harnessing food and nutrition security, reduction in poverty, availability of more employment opportunities, sustainable development of agriculture, environment friendly agriculture practices etc. Hence on this back drop, in the present study an attempt has been made to assess the changes in the cropping pattern since 1960-61 to 2010-11 for the selected States. The study first quantifies the crop diversification using different indices.

Objectives:

1. To assess trend and pattern of crop diversification and find out nature of changes in cropping pattern during the period 1960-:61, 1970-71, 1980-81,1990-91,2000-01 and 2011-12 for the selected 20 States.
2. To find out nature and magnitude of the diversification during the study period.

Data Source:

The data for the analysis comprises of area under 16 crops/ crop groups at 20 selected States during 1960-61, 1970-71, 1980-81, 1990-91, 2000-01 and 2010-11. The selected 20 States constitute 94% of the total cropped area in the country. Similarly, selected crops/cropped groups constitute 84% of the total cultivated crops. The selected states and crops are tabulated below :-

TABLE-1 : SELECTED STATES AND CROPS

Selected States	Selected crop/cropped Groups
Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttrakhand and West Bengal	Rice, Jowa Bajra, Maize, Ragi, Wheat Barley, Total pulses, sugarcane, total condiments, total fruits, total vegetables, total Oilseeds, total fibre Crops, drugs and narcotics, fodder narcotics, fodder crops

* Additional Statistical Adviser, Directorate of Eco. & Statistics, M/o Agriculture.

Methodology

(A) Measure of Crop Diversification

There are different indices used for measuring crop diversification. These indices measure by single quantitative indicator, the extent of diversification and concentration of different crops at a different point of time and place.

They are Hefindahl Index (HI), Entropy Index (El), Modified Entropy Index (MEI) and many others.

Hefindahl Index (HI) - This index is the sum of the squares of. the acreage proportion of each crop in the total cropped area.

$HI = Lp\ i2$

where, pi is share of each crop, defined as,

$$pi \quad \frac{A_i}{EA_i}$$

Here, Ai is area under each crop; and i= 1,2,3 .... N ,where N is the total number of Crops.

HI takes value between 0 and 1. When the value of HI is 0 it is said to be complete diversification and when it is 1 maximum concentration occurs. In other words, this index takes a maximum value of 1 when there is only one crops is grown in the cropped area.

Entropy Index (El) - It is defined as

$EI = - LP_i \ln P_i$

$i = 1, 2, ... N$

It reaches a maximum value of log (N) when maximum diversification is attained. It reaches a minimum value of 0 when there is specialisation of a single crop. This index can not be used to compare the degree of diversification in different regions where different number of crops are grown because the upper limit of El is 10g(N) (which depend on N).

Modified Entropy Index (MEI) - it is defined as

$MEI = - LP_i \log n P_i$

$i = 1, 2, ... N$

It is the same as El when the base of log is N when N is the total number of crops. MEI reaches a value of 1 when there is a perfect diversification of crop in the region and the value of 0 when there is a perfect concentration. The advantage of MEI over HI and El is that based on this index one can rank the concentration of crops.

(B) **Extent of Diversification**

Disparities in agriculture can be analysed by cropping intensity (Cl) which is defined as

$$CI = \frac{\text{Gross cropped area}}{\text{Net area sown}}$$

The extent of disparity is defined with a coefficient of variation (CV)

$$CV = \frac{\text{Standard deviation}}{\text{Mean}} * 100$$

Results and Discussions

Trends in Diversification

Change in percentage share of area under 16 crops/crop groups in the total cropped area have been analysed in 20 selected States for the analysis (as indicated in Table-1). From the Annexure-1, one can see that under cereal category, area under rice has shown increase for States like Andhra Pradesh, Gujarat, Haryana, Karnataka, Odisha and Punjab. At all India level the percentage share of area under rice remained more or less the same around 22 to 23%. States like Assam, Bihar, Jammu & Kashmir, Kerala, Madhya Pradesh, Tamil Nadu and West Bengal showed a decreasing trend for the percentage share of area under rice during the study period. Further, one can notice that States like Kerala showed a very sharp decline of the percentage share of area under rice from 33.2% in 1960-61 to nearly a mere minimum of 8.1 % in 2010-11. Similarly the share of area under rice has decreased from 70.2% in 1960-61 to 61.8% in 2010-11 in Assam. A similar pattern can also be observed in West Bengal with percentage share of area under rice 72.5% in 1960-61 to 58.9% in 2010-11.

In respect of percentage share of area under wheat crop one can notice an increasing trend for States like Bihar, Gujarat, Haryana, Jammu & Kashmir, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh etc. At all India level there was an increase of percentage share of area under wheat crop from 8.5% in 1960-61 to 15% in 2010-11.

Coarse cereals like Jowar, Bajra, Ragi, Barley have shown a decreasing trend for all the selected 20 States and at all India level from 1960- 61 to 2010-11. However, the percentage share of area under Maize crop is showing a stagnant/increasing trend across the States including all India level.

Regarding the percentage share of area under pulses, one can see that there is an increasing trend for the States like Andhra Pradesh (10.6%), Gujarat (5.2% to 7.3%), Karnataka (12.1% to 21.2%), Madhya Pradesh (20.6% to 23.6%), Maharashtra (12.5% to 16.8%), Punjab (26.5% to 0.3%), Tamil Nadu (5.8% to 11.1 %). The remaining

show either decreasing or fluctuating trend including all India level. Percentage share of area under sugarcane crop has marginally increased from 1.6% in 1960-61 to 2.7% in 2010-11 at all India level. Similarly, states like Andhra Pradesh, Bihar, Karnataka, Tamil Nadu, Uttar Pradesh show a marginal increasing trend. The percentage share of area under fruits and vegetables category all the selected States have shown an increasing trend during the study period. At all India level there is an increase of 1.7% in 1960-61 to 4.9% in 2010-11.

Across the States, the percentage share of area under fodder crops has shown an increasing trend.

Percentage share of area under total oil seeds has shown in increasing trend from 8.4% in 1960-61 to 14.6% in 2010-11 which could be mainly due to Technology Mission on Oil and Oil Palm scheme (TMOP) for enhancing the oil seeds production in the country initiated by the Government.

Crop Diversification Pattern

The below table (Table 2) gives the computed value of modified entropy index (MEI) for the selected States. The table shows that at all India level, the diversification index remained more or less same at 0.81 to 0.84 for the last 50 years. However, there is a variation of extent of diversification across the States during the same period.

One can see that minimum diversification is noticed in States like Assam (0.43 to 0.51), Odisha (0.39 to 0.26) and West Bengal (0.38 to 0.58) during the study period.

Maximum diversification is indicated in States like Gujarat (0.76 to 0.9), Karnataka 0.75 to 0.86), Maharashtra (0.73 to 0.82), Rajasthan (0.71 to 0.74) and Tamil Nadu (0.68 to 0.76). The remaining states have shown a moderate diversification indices.

In the State of Odisha the MEI was 0.39 in 1960-61 and in 1991 0.58 and further 0.26 in 2010-11 indicate that only about 26% of the agricultural area are cultivated by different crops. This shows that there is not much diversification has happened in this State during the Study period. The similar picture can be observed in Assam and West Bengal.

TABLE 2 : COMPUTED VALUE OF MODIFIED ENTROPY INDEX FOR THE SELECTED STATES.

Sl. No.	Name of the States	1960-61	1970-71	1980-81	1990-91	2000-01	2001-11	Mean	SD	CV
1.	Andhra Pradesh	0.69	0.71	0.73	0.72	0.73	0.71	0.7	0.014	2.0
2.	Assam	0.43	0.43	0.48	0.48	0.48	0.51	0.5	0.033	7.1
3.	Bihar	0.63	0.64	0.63	0.56	0.57	0.60	0.6	0.033	5.5
4.	Chhattishgarh					0.34	0.36	0.3	0.016	4.5
5.	Gujarat	0.76	0.77	0.80	0.81	0.79	0.79	0.8	0.019	2.4
6.	Haryana		0.76	0.77	0.74	0.68	0.65	0.7	0.053	7.3
7.	Himachal Pradesh	0.61	0.62	0.76	0.59	0.60	0.61	0.6	0.064	10.2
8.	Jammu & Kashmir	0.63	0.62	0.64	0.64	0.64	0.66	0.6	0.013	2.0
9.	Jharkhand					0.40	0.44	0.4	0.027	6.3
10.	Karnataka	0.75	0.78	0.82	0.80	0.85	0.86	0.8	0.042	5.2
11.	Kerala	0.63	0.62	0.64	0.63	0.61	0.59	0.6	0.018	2.9
12.	Madhya Pradesh	0.68	0.70	0.70	0.70	0.68	0.63	0.7	0.029	4.3
13.	Maharashtra	0.73	0.75	0.74	0.76	0.79	0.82	0.8	0.036	4.7
14.	Odisha	0.39	0.44	0.57	0.58	0.52	0.26	0.5	0.122	26.4
15.	Punjab	0.76	0.69	0.65	0.56	0.53	0.50	0.6	0.103	16.7
16.	Rajasthan	0.71	0.71	0.73	0.73	0.75	0.74	0.7	0.016	2.2
17.	Tamil Nadu	0.68	0.68	0.72	0.75	0.75	0.76	0.7	0.037	5.1
18.	Uttar Pradesh	0.76	0.76	0.73	0.72	0.68	0.67	0.7	0.039	5.4
19.	Uttarakhand					0.66	0.66	0.7	0.005	0.8
20.	West Bengal	0.38	0.44	0.45	0.46	0.52	0.53	0.5	0.054	11.8
	All India	0.81	0.83	0.83	0.83	0.84	0.84	0.8	0.008	1.0

Ranking of selected States based on Crop Diversification index (Modified Entropy Index) is as follows :

TABLE 3

Sl. No.	Range of Category	Category	Name of States during the period 1960-61 to 2010-11
1.	above 0.65	Highly diversed	Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttrakhand
2.	0.55-0.65	Moderately	Bihar, Himachal Pradesh, Jammu & Kashmir, Kerala, Punjab
3.	0.45-0.55	Less diversed	Odisha, West Bengal
4.	below 0.45	Specialised	Assam, Chhattishgarh, Jharkhand.

The above table provides category-wise change of pattern of crop diversification for the years during 1960-61, 1970-71, 1980-81, 1990-91, 2000-01, 2010-11 based on the MEI Index (Mean). The States come under highly diversed category have been shown more than 65% of diversification while States under the category less diversed and Specialised less than 55% crop diversification.

Disparity in Cropping Pattern

Disparity in Cropping Pattern can be measured with using cropping intensity and the extent of disparity can be measured through cropping pattern one can identify the nature of intensification of crops in various States during the study period. The cropping pattern of the State is determined by the availability of technological intervention like irrigation facility, fertilizer input, usage of high yielding variety of seeds, mechanisation of the farm, availability of credit, forward and backward market linkages etc.

States can be categorised into 4 categories based on the cropping intensity pattern as indicated below :

TABLE 4

Sl. No.	Range of Category	Category	Name of State
1.	above 150	High	Haryana, Himachal Pradesh, Punjab, Uttrakhand, West Bengal
2.	140-150	Medium	Uttar Pradesh
3.	130-140	Low	Assam, Bihar, Jammu & Kashmir, Jharkhand, Kerala
4.	below 130	Very Low	Andhra Pradesh, Chhattishgarh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu.

The study reveals that high intensity cropping (<150%) which is prevalent in Haryana, Himachal Pradesh, Punjab, Uttrakhand are due to the availability of fertile soil, irrigation facilities, high rainfall etc. Some States like, Andhra Pradesh, Gujarat etc which come under the category Very Low of cropping intensity have shown high levels of crop diversification during the same period

The cropping intensity pattern has shown maximum disparity during the study period in the States of Haryana (11.1%), Odisha (14.6%), Punjab (14.8%) and West Bengal (18.5%). This in line with the Table 3 suggest that States like Odisha, West Bengal have gone for one or two crop cultivation rather than crop diversification.

Conclusion

It may be concluded from the results obtained from the study that there exists a wide spacio-temporal diversification of crop in all the selected 20 States. From the analysis of trends of share of area under crops, fruits and vegetables, pulses, oilseeds, fooder crops have shown increasing area coverage across the States. In case of course cereals except, maize the area coverage is decreasing. Advent of food processing industries possibly contributes the increasing production of maize. Staple crops like rice and wheat have shown varying degrees of increase/ decrease area coverage in the selected states. Traditionally rice growing states like West Bengal, Assam, Tamil Nadu etc show a decreasing area coverage which is a matter of concern.

Further, based on the computed value of Modified Entropy Index, States like, Odisha, West Bengal, Assam show a less diversification of crops in the study period, while Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh etc show a high diversification of crops in the study period. The study reveals that high intensity cropping (<150%) which is prevalent in Haryana, Himachal Pradesh, Punjab, Uttarakhand are due to the availability of fertile soil, irrigation facilities, high rainfall etc. Some States like, Andhra Pradesh, Gutarat etc which come under the category Very Low of cropping intensity have shown high levels of crop diversification during the same period.

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SHIFTS IN AREA UNDER CROP/CROP GROUPS FOR SELECTED STATES

	Rice	Jowar	Bajra	Maize	Ragi/ Marua	Wheat	Barley	Total Pulses	Sugar cane	Total Condi-ments & Spices	Total Fruits	Total Vege tables	Total Oil seeds	Total Fibres	Total drugs, Narco-tics & Planta-tions	Fodder Crops
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
State/Union Territory/ ANDHRA PRADESH																
1960-61	25.1	23.1	5.2	1.5	3.0	0.2	0.0	10.6	0.8	2.0	1.2	0.3	12.0	3.3	1.2	1.2
1970-71	26.4	19.2	4.3	1.9	2.2	0.1	0.0	10.9	0.9	2.9	1.5	0.4	17.1	3.2	1.7	1.0
1980-81	29.3	16.7	4.2	2.6	2.1	0.1	0.0	11.8	1.4	2.5	1.9	0.7	15.2	4.3	1.4	1.0
1990-91	30.6	9.0	1.8	2.3	1.2	0.1	0.0	12.4	1.7	2.5	2.9	1.1	24.1	5.7	1.5	1.1
2000-01	31.3	5.0	1.1	3.9	0.7	0.1	0.0	14.0	2.8	2.8	4.5	1.8	20.9	8.2	0.8	0.8
2010-11	32.7	1.8	0.5	5.1	0.3	0.1	0.0	14.7	2.5	2.1	5.4	1.8	17.0	12.5	1.2	0.6
ASSAM																
1960-61	70.2	0.0	0.0	0.6	0.0	0.1	0.0	2.9	1.0	1.6	1.6	3.6	5.1	5.8	6.6	0.0
1970-71	70.7	0.0	0.0	0.4	0.0	0.7	0.0	3.0	1.1	1.5	1.3	3.0	5.5	6.0	6.7	0.0
1980-81	66.1	0.0	0.0	0.7	0.0	2.7	0.0	3.3	1.4	2.4	1.5	3.4	6.6	3.7	6.1	0.1
1990-91	65.4	0.0	0.0	0.5	0.0	2.2	0.0	3.0	0.9	2.7	1.8	3.7	8.7	2.8	6.2	0.1
2000-01	64.7	0.0	0.0	0.5	0.0	1.7	0.0	2.7	0.7	3.2	2.6	4.5	8.2	2.2	6.9	0.2
2010-11	61.8	0.0	0.0	0.5	0.0	1.1	0.0	3.0	0.7	3.7	2.9	7.7	7.2	2.0	7.4	0.2
BIHAR																
1960-61	47.2	0.0	0.1	7.2	1.9	5.9	3.5	21.0	1.7	1.3	1.8	3.1	2.8	1.9	0.1	0.3
1970-71	47.8	0.1	0.1	9.0	1.6	11.9	2.3	14.8	1.5	1.3	2.4	3.7	2.3	1.8	0.1	0.1
1980-81	50.0	0.1	0.1	7.9	1.6	15.8	1.1	12.2	1.0	1.2	2.9	4.0	2.4	1.8	0.2	0.1
1990-91	51.4	0.0	0.1	6.3	0.9	18.7	0.5	11.2	1.4	0.1	1.2	3.1	2.4	1.6	0.2	0.1
2000-01	45.8	0.0	0.0	7.8	0.3	25.9	0.3	9.0	1.2	0.2	1.5	3.7	1.9	2.1	0.2	0.1
2010-11	39.6	0.0	0.1	9.1	0.1	29.2	0.2	7.5	3.5	0.1	1.4	4.6	1.9	2.1	0.1	0.3
CHHATTISHGARH																
2000-01	70.8	0.2	0.0	1.8	0.2	1.5	0.1	12.6	0.1	0.3	0.3	1.7	5.1	0.1	0.0	0.0
2010-11	69.4	0.1	0.0	1.8	0.1	1.8	0.0	15.5	0.3	0.3	0.2	2.1	5.4	0.1	0.0	0.0
GUJARAT																
1960-61	5.5	13.5	14.7	2.3	0.8	3.7	0.0	5.2	0.3	0.4	0.3	0.6	22.5	18.5	1.0	8.7
1970-71	4.8	12.4	20.1	2.5	0.4	6.2	0.1	4.7	0.4	0.5	0.4	0.9	19.3	16.7	1.0	7.8
1980-81	5.3	10.2	14.0	2.9	0.3	5.8	0.1	7.3	0.9	0.6	0.7	1.3	24.8	14.7	1.5	8.0
1990-91	5.8	6.6	13.2	3.5	0.2	5.8	0.1	8.9	1.6	1.3	0.9	1.0	26.6	9.9	1.7	12.5
2000-01	6.5	2.3	11.1	4.4	0.1	3.4	01	7.0	2.5	1.6	1.3	1.3	27.3	16.1	1.6	10.5
2010-11	6.6	1.0	7.1	4.1	0.2	10.4	0.1	7.3	1.6	2.9	1.4	2.3	23.8	21.5	1.0	6.7
HARYANA																
1960-61															0.0	0.0
							data not available								0.0	0.0
1970-71	5.4	4.2	17.7	2.3	0.0	22.8	2.2	23.4	3.1	0.2	0.4	0.6	2.9	4.0	0.0	10.9
1980-81	8.9	2.5	15.9	1.3	0.0	27.1	2.3	14.5	2.1	0.1	0.7	0.9	5.7	5.9	0.0	12.7
1990-91	11.2	2.2	10.3	0.6	0.0	31.3	0.9	12.5	2.5	0.1	0.3	0.7	8.2	8.4	0.0	10.5
2000-01	17.2	1.8	9.9	0.3	0.0	38.5	0.7	2.6	2.3	0.1	0.2	0.8	6.8	9.1	0.1	9.3
2010-11	19.1	1.1	10.1	0.1	0.0	38.5	0.6	2.7	1.3	0.1	0.2	0.9	8.0	7.6	0.0	6.3

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
HIMACHAL PRADESH																
1960-61	10.6	0.0	0.0	27.5	3.7	33.1	7.0	6.2	0.3	0.4	0.4	3.1	0.8	0.1	0.3	0.5
1970-71	11.4	0.0	0.0	28.2	1.5	34.8	4.4	7.9	0.4	0.3	1.3	2.3	2.4	0.1	0.5	0.8
1980-81	8.9	2.5	15.9	1.3	0.0	27.1	2.3	14.5	2.1	0.2	0.1	0.7	5.7	5.9	0.0	12.7
1990-91	8.6	0.0	0.0	32.4	0.6	38.3	3.0	4.1	0.3	0.3	4.4	2.9	2.1	0.0	0.3	0.9
2000-01	8.6	0.0	0.0	31.5	0.4	38.3	2.7	3.3	0.3	0.5	6.3	3.6	1.9	0.0	0.3	1.1
2010-11	8.1	0.0	0.0	31.2	0.2	37.6	2.3	3.8	0.2	0.8	7.8	4.0	1.8	0.0	0.3	1.1
State/Union Territory/ JAMMU & KASHMIR																
1960-61	28.0	0.1	2.2	26.7	0.0	21.3	2.5	6.4	0.2	0.2	0.9	1.6	4.0	0.3	0.1	1.7
1970-71	25.8	0.1	2.2	31.7	0.0	21.3	1.8	6.0	0.2	0.2	1.6	1.5	3.0	0.2	0.0	2.0
1980-81	27.2	0.0	1.5	28.3	0.0	20.7	1.2	5.0	0.1	0.2	3.6	1.6	5.4	0.2	0.1	2.6
1990-91	25.8	0.0	1.5	27.7	0.0	23.0	0.8	3.8	0.0	0.1	4.3	1.3	6.3	0.1	0.0	3.6
2000-01	21.9	0.0	1.2	29.6	0.8	25.2	0.8	2.5	0.0	0.2	4.6	1.4	6.6	0.0	0.0	3.9
2010-11	22.9	0.0	1.5	27.0	0.4	25.5	1.2	2.6	0.0	0.2	6.0	1.7	5.7	0.0	0.0	4.7
JHARKHAND																
2000-01***	72.1	0.2	0.2	4.4	2.0	3.1	0.6	6.6	0.2	0.1	0.2	4.7	4.1	0.2	0.0	0.0
2010-11	67.3	0.1	0.3	5.0	1.8	4.0	0.3	8.7	0.1	0.1	0.3	7.2	3.4	0.3	0.0	0.0
KARNATAKA																
1960-61	9.6	27.9	4.7	0.1	9.0	3.1	0.0	12.1	0.7	1.9	0.6	0.5	12.4	9.7	1.2	1.5
1970-71	10.6	20.4	5.1	0.6	9.5	3.2	0.0	13.2	0.9	1.9	0.7	0.7	14.0	10.8	1.4	1.0
1980-81	10.5	18.7	5.3	1.5	9.9	3.0	0.0	14.4	1.4	2.5	1.0	0.9	13.4	9.8	3.1	1.1
1990-91	10.0	18.3	3.6	2.1	9.0	1.7	0.0	13.8	2.3	2.2	2.2	1.2	23.7	5.2	2.1	0.6
2000-01	12.0	14.5	3.8	5.4	8.1	2.2	0.0	16.6	3.4	3.0	3.0	1.7	18.1	4.5	2.3	0.4
2010-11	11.7	9.5	2.4	9.6	5.7	2.0	0.0	21.2	4.9	3.5	3.5	2.6	15.7	4.2	2.8	0.3
KERALA																
1960-61	33.2	0.1	0.0	0.0	0.2	0.0	0.0	1.9	0.4	9.4	9.3	11.7	22.9	0.4	7.6	0.0
1970-71	29.8	0.1	0.0	0.0	0.2	0.0	0.0	1.3	0.3	9.9	9.5	11.3	25.8	0.2	8.5	0.0
1980-81	28.0	0.1	0.0	0.0	0.1	0.0	0.0	1.2	0.3	9.0	12.1	10.9	23.7	0.2	11.9	0.1
1990-91	18.5	0.1	0.0	0.0	0.0	0.0	0.0	0.8	0.3	10.4	11.7	7.3	29.6	0.4	17.8	0.1
2000-01	11.5	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.1	12.4	13.7	6.4	30.9	0.1	20.1	0.1
2010-11	8.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	13.4	12.3	5.1	29.2	0.1	25.3	0.2
MADHYA PRADESH																
1960-61	22.6	11.5	1.0	2.6	0.1	17.0	1.1	20.6	0.3	0.6	0.2	0.4	9.4	4.4	0.2	0.2
1970-71	21.2	10.5	1.1	2.8	0.1	16.6	0.8	20.7	0.3	0.5	0.2	0.4	9.3	3.6	0.2	3.8
1980-81	22.6	10.9	0.9	3.6	0.1	15.7	0.9	21.4	0.3	0.5	0.2	0.5	8.4	2.9	0.1	4.1
1990-91	21.3	6.9	0.7	3.6	0.1	16.0	0.4	21.0	0.3	0.8	0.3	0.6	16.8	2.6	0.1	3.5
2000-01	9.5	3.5	0.9	4.6	0.0	18.5	0.5	19.9	0.4	1.0	0.3	0.7	30.9	2.8	0.1	3.8
2010-11	7.1	1.9	0.9	3.8	0.0	21.0	0.3	23.6	0.3	1.5	0.2	1.2	32.0	2.7	0.2	2.1
MAHARASHTRA																
1960-61	6.9	33.4	8.7	0.1	1.2	4.8	0.0	12.5	68.8	0.8	0.4	0.4	5.8	13.7	0.2	4.6
1970-71	7.2	30.4	10.9	0.2	1.0	4.3	0.0	13.7	68.8	1.1	0.5	0.6	4.8	15.1	0.1	3.6
1980-81	7.5	32.0	8.5	0.4	1.1	5.4	0.0	13.9	69.8	1.3	0.6	0.7	4.1	13.7	0.1	3.1
1990-91	7.3	28.8	8.9	0.5	0.9	4.0	0.0	14.9	2.5	0.8	1.1	1.2	13.0	12.6	0.1	2.9
2000-01	7.0	23.6	8.3	1.5	0.7	3.5	0.0	16.7	3.1	0.7	2.2	1.5	12.0	14.4	0.1	3.9
2010-11	6.3	16.9	4.3	3.7	0.5	5.4	0.0	16.8	4.0	0.6	4.1	1.3	15.2	16.5	0.1	4.0

SHIFTS IN AREA UNDER CROP/CROP GROUPS FOR SELECTED STATES—CONTD.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
ODISHA																
1960-61	58.4	0.1	0.1	0.3	1.0	0.1	0.0	7.6	0.4	0.9	2.0	1.7	4.2	1.1	0.1	2.5
1970-71	66.1	0.3	0.1	1.1	2.3	0.2	0.0	12.5	0.4	0.9	1.5	5.9	5.0	1.2	0.2	0.0
1980.81	47.9	0.4	0.1	2.1	3.8	0.8	0.0	19.7	0.6	1.6	2.3	6.6	8.7	1.1	0.2	0.0
1990-91	45.9	0.3	0.1	1.7	2.6	0.4	0.0	22.2	0.5	1.7	2.2	8.2	12.4	0.9	0.2	0.0
2000-01	56.3	0.2	0.1	2.2	2.4	0.2	0.0	17.6	0.4	1.6	3.3	4.5	9.5	1.1	0.0	0.0
2010-11	77.8	0.0	0.0	2.2	1.2	0.1	0.0	11.0	0.2	0.0	0.0	0.1	3.6	0.1	0.0	0.0
PUNJAB																
1960-61	4.5	3.3	9.5	5.6	0.0	22.4	2.0	26.5	2.8	0.3	0.3	0.5	3.7	5.7	0.1	10.9
1970-71	6.9	0.1	3.6	9.8	0.0	40.5	1.0	7.3	2.2	0.3	0.4	0.6	5.2	7.1	0.1	14.7
1980-81	17.5	0.0	1.0	5.7	0.0	41.6	1.0	5.0	1.1	0.2	0.3	1.0	3.7	9.7	0.0	11.1
1990-91	26.9	0.0	0.2	2.5	0.0	43.6	0.5	2.0	1.3	0.0	0.4	0.7	1.4	9.4	0.1	9.4
2000-01	32.9	0.0	0.1	2.1	0.0	42.9	0.4	0.8	1.5	0.1	0.5	1.4	1.1	6.0	0.0	8.5
2010-11	35.8	0.0	0.0	1.7	0.0	44.5	0.2	0.3	0.9	0.0	0.9	1.3	0.7	6.1	0.2	6.8
RAJASTHAN																
1960-61	0.7	7.3	32.5	4.6	0.0	7.6	3.4	21.5	0.3	1.0	0.0	0.2	6.3	1.5	0.2	11.7
1970-71	0.7	7.0	30.7	4.5	0.0	8.8	3.1	21.6	0.2	1.2	0.1	0.2	6.5	1.4	0.1	13.0
1980-81	1.0	5.8	29.0	5.2	0.0	9.4	2.4	18.1	0.2	1.4	0.1	0.3	8.3	2.1	0.1	16.4
1990-91	0.6	4.8	25.1	5.1	0.0	9.4	1.2	19.0	0.1	1.5	0.1	0.3	15.9	2.4	0.3	14.0
2000-01	0.7	3.3	24.0	5.1	0.0	11.0	1.0	15.7	0.0	2.6	0.1	0.6	19.1	2.1	1.2	13.2
2010-11	0.5	2.8	21.2	4.4	0.0	11.7	1.3	18.3	0.0	2.8	0.1	0.6	21.2	1.3	0.9	12.6
TAMIL NADU																
1960-61	34.4	10.6	6.7	0.1	5.0	0.0	0.0	5.8	1.1	1.7	1.5	1.0	14.6	5.5	1.2	1.1
1970-71	35.7	10.1	6.4	0.2	3.8	0.0	0.0	6.7	1.5	1.9	1.9	1.3	16.5	4.0	1.2	1.1
1980-81	35.5	9.1	5.1	0.3	3.0	0.0	0.0	8.4	2.8	2.5	2.6	1.9	16.6	3.5	1.7	1.6
1990-91	28.0	8.2	4.1	0.4	2.6	0.0	0.0	12.8	3.5	2.0	3.2	2.2	20.1	3.7	1.9	3.2
2000-01	32.8	5.2	2.0	1.3	2.0	0.0	0.0	10.9	5.0	2.7	5.0	3.4	18.4	2.7	2.1	3.0
2010-11	33.1	4.2	0.9	4.0	1.3	0.0	0.0	11.1	5.5	2.6	6.8	3.9	15.0	2.1	2.5	3.4
UTTARAKHAND																
2000-01	23.5	0.0	0.0	2.7	10.4	30.8	2.1	4.4	9.5	0.7	1.1	1.5	2.1	0.0	0.0	3.3
2010-11	24.4	0.0	0.0	2.2	10.2	31.7	1.9	4.6	8.8	0.8	1.3	2.7	2.2	0.0	0.0	3.0
UTTAR PRADESH																
1960-61	19.0	3.2	4.8	6.5	1.1	25.5	5.7	16.5	5.8	0.2	0.4	1.3	3.1	0.5	0.1	3.3
1970-71	19.0	3.2	4.8	6.5	1.1	25.5	5.7	16.5	5.8	0.2	0.4	1.3	3.1	0.5	0.1	3.3
1980-81	21.5	2.8	4.0	5.0	0.7	33.0	3.2	12.0	5.8	0.2	0.8	1.8	3.1	0.4	0.1	3.3
1990-91	22.0	2.1	3.1	4.3	0.6	33.6	1.7	12.1	7.3	0.2	1.2	2.2	4.1	0.1	0.1	3.7
2000-01	23.3	1.4	3.5	3.6	0.0	36.5	1.1	10.7	7.7	0.2	1.2	2.5	3.4	0.0	0.1	3.5
2010-11	22.3	0.8	3.7	3.0	0.0	38.0	0.6	9.6	8.4	0.3	1.3	3.0	4.4	0.0	0.0	3.3
WEST BENGAL																
1960-61	72.5	0.0	0.0	0.9	0.2	0.5	0.6	12.2	0.6	0.2	0.1	2.2	2.2	5.8	1.6	0.0
1970-71	69.1	0.0	0.0	0.7	0.1	5.0	0.9	9.3	0.5	0.2	0.5	2.9	2.3	6.6	1.4	0.0
1980-81	67.9	0.0	0.0	0.7	0.2	3.7	0.5	6.9	0.2	0.5	0.9	4.0	4.1	8.6	1.5	0.0
1990-91	67.1	0.0	0.0	0.7	0.2	3.1	0.1	3.6	0.1	0.9	1.4	8.6	6.2	5.9	1.5	0.0
2000-01	59.6	0.0	0.0	0.4	0.1	4.7	0.0	3.0	0.2	1.2	1.6	12.2	6.8	6.9	2.6	0.1
2010-11	58.9	0.0	0.0	0.9	0.1	3.3	0.0	2.1	0.2	1.3	2.3	13.8	8.2	6.0	2.5	0.0
ALL INDIA																
1960-61	22.3	12.1	7.5	2.9	1.6	8.5	2.1	15.5	1.6	1.0	0.7	1.0	8.4	5.7	0.7	3.8
1970-71	22.6	10.2	8.1	3.5	1.5	11.0	1.5	14.0	1.6	1.1	0.9	1.3	8.9	5.5	0.8	4.2

SHIFTS IN AREA UNDER CROP/CROP GROUPS FOR SELECTED STATES—CONTD.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1980-81	23.3	9.5	6.8	3.5	1.5	12.9	1.0	13.2	1.6	1.2	1.1	1.7	9.2	5.4	0.9	4.6
1990-91	23.0	7.6	5.8	3.2	1.2	12.9	0.5	13.4	2.1	1.3	1.4	2.2	13.5	4.7	1.0	4.5
2000-01	24.2	5.3	5.4	3.7	1.0	13.9	0.4	11.5	2.5	1.5	1.9	2.5	13.3	5.2	1.2	5.0
2010-11	22.0	3.7	4.9	4.2	0.6	15.0	0.4	12.9	2.7	1.7	2.2	2.7	14.6	6.0	1.3	3.9

*** States came into existance from 2001
Source: DES, Ministry of Agriculture

Identification of Potato Market Structure of Kaimganj in the District of Farrukhabad, Uttar Pradesh

DR. G. D. DIWAKAR*

Introduction

One of the most important challenges today our country is facing i.e., violent fluctuations of spatial and temporal prices of different commodities. The price fluctuations in fruits and vegetables have been noticed more compared to cereal crops. These fluctuations have introduced an element of uncertainty in production of essential commodities and affecting very much adversely to producers and consumers in terms of too low prices received by farmers and high prices paid by consumers. Therefore, there is urgent need of an efficient marketing system to control violent price fluctuations in our country. But marketing efficiency (performance) depends to a large extent on market structure, organisation and conduct. All these are casual and sequential to each other. Market structure refers to those organisational characteristics which determine the relations of sellers in the market to each other, of buyers in market to each other, of the sellers to buyers, and of sellers established in the market to other actual or potential suppliers of goods, including potential new firm which might enter the market (I). In other words, market structure for practical purposes refers to those characteristics of organisation of market which seem to influence strategically the nature of competition and pricing within the market. Market structure determines, in large part, the market conduct, i.e., the pattern of behaviour which enterprise follows in adopting or adjusting to the markets in which they sell, which in turn, influences the market performance (I). To accelerate and sustain the production, the improvement in marketing system is an important task. However, any plan and policy for reforms of market, the understanding of the existing marketing structure is essential. Potato is the "King of Vegetables," nutritious, easily digestible, wholesome food containing carbohydrates (16%), proteins (2%) minerals (1%), high quality dietary fiber (0.6%) and vitamins.

Methology

Among 75 districts of the Uttar Pradesh; Farrukhabad district accounted 8 per cent potato of the total production of the state (41.6%) during 2004-05. Kaimganj is second most important primary market in the district of Farrukhabad. Therefore, Kaimganj market was selected purposely for study the cometitiveness of the potato market. Data was reccorded from the Mandi Samiti of the Kaimganj market for the year 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12. The buyers were wholesale purchasers who actually purchased the potato during above years. Number of buyers reported for a year, it refers to the firms which made transactions of potato in the above years. The year used in this study from first July to 30th June being agricultural year of the Mandi Samiti. The data on annual transactions of potato made by buyers was obtained from Mandi Samiti, Kaimganj. It was a very comprehensive job, labour intensive and time consuming of the survey period because annual transactions made by potato purchasers were not available. It was available on daily basis on Jabak Register (gate pass). In these gate pass registers, the quantity of different commodities purchased by different buyers and dispatched to other places including potato were mentioned. The information was sorted out from Jabak Registers of Mandi Samiti for potato.

Locale of Market: Kaimganj Market is situated nearby railway line on G.T. Road. The boundaries of the selected regulated market were defined to make the area compact and efficiently controlled. The principal crops grown in the hinter-land of the market covered under market regulations and major crops are given below.

Rabi: Potato, wheat, gram, mustard, pea etc. Kharif: Maize, jowar, paddy, mango, guava, bajra, urd, sugarcane, moong etc.

Analytical Frame Work:

(i) Lorenz Co-efficient Inequality:

The firms were arranged in ascending order according to their quantity of potato transacted annually. The range was divided into size categories of firms at a class interval of 2000 quintals for the market. The frequency distribution of firms and corresponding quantity of potato purchased by them in the year were worked out. The percentage of buyers and the purchases made by them were also worked out year wise. To measure the degree of inequality in different year in the quantity of potato transacted by

*Emeritus Scientist (UGC), CATAT, Indian Agricultural Research Institute, New Delhi-110012. Email-sgmdelhi@rediffmail.Com

purchasers, Lorenz Co-efficient of inequalities were worked out by employing following formula.

$$L=1-\acute{O}(p_i - P_{i-i})(Q_i + Q_{i-i})$$

Where L = Lorenz coefficent of inequality

P_i = Cumulative proportion of firms up to (including) i^{th} class

Q_i = Cumulative proportion of transactions of firms up to (including) i^{th} class

(ii) Lorenz Curve:

To obtain the Lorenz curves of distribution of firms, the cumulative percentages of firms were plotted against the corresponding cumulative percentage of volumes of potato handled. Lorenz curves of distribution of firms plotted for the years 2007-8, 2008-9, 2009-10, 2010-11 and 2011-12 separately for buyers. Thus departure of the curves from the diagonal straight line drawn at 45 angles from the origin represented an unequal distribution, which is an indication of imperfect market structure. If the curves differ from one year to another year from the equal distribution line, will indicate the sign of change over time.

(iii) Bain Classification to Measure Concentration among Buyers:

Bain (5) has classified the market structure as follow :

1. Highly concentrated oligopsony: The top 4 firms control from 75 to 100 per cent of the total purchase of the market arrival during a year;
2. Moderately concentrated oligopsony: The top 4 firms control from 50 to 75 per cent of the total purchase of the market arrivals during a year;
3. Slightly concentrated oligopsony: The Top 4 firms purchased from 25 to 50 per cent of the total purchase; and
4. Atomistically competitive: The top 4 firms control less than 25 per cent of the total purchase of arrivals during the year.

Result and Discussion

Category of Potato Firms:

In Kaimganj market, there were 34, 30, 32, 27 and 24 wholesale potato purchasers during the years 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 respectively. Over the years from 2007-08 to 2011-12, the wholesale purchasers of potato decreased substantially in the Kaimganj market from 34 to 24 respectively. These potato buyers were distributed in different categories on the basis of their volumes of potatoes transacted in market in different years and shown in given below Table-2.

TABLE—2 : CONCENTRATION OF WHOLESALE BUYERS IN DIFFERENT CATEGORIES IN POTATO MARKET OF KAIMGANJ.

Size category of Firms (Quintals)	Years									
	2007-08		2008-09		2009-10		2010-11		2011-12	
	Per cent of Buyers	Per cent of Potatoes Purchased	Per cent of Buyers	Per cent of Potatoes Purchased	Per cent of Buyers	Per cent of Potatoes Purchased	Per cent of Buyers	Per cent of Potatoes Purchased	Per cent of Buyers	Per cent of Potatoes Purchased
1-2000	88.24	26.19	70.00	10.06	81.25	13.28	66.67	7.20	58.33	4.35
2000-4000	2.94	6.14	13.33	12.07	3.12	4.45	7.41	6.97	12.50	7.34
4000-6000			3.33	3.91	3.12	5.56	7.41	8.73	12.50	9.60
6000-8000	2.94	15.60			3.12	7.07				
8000-10000	2.94	21.90								
10000-12000			6.67	21.79			3.70	10.29		
12000-14000	2.94	30.17					7.41	22.38		
14000-16000					3.12	17.58	3.70	14.20	4.17	10.81
16000-18000									4.17	12.64
18000-20000										
20000-22000					3.12	23.74				
22000-24000										
24000-26000			3.33	23.59	3.12	28.32				
26000-28000										
28000-30000			3.33	28.58						
30000-32000										
32000-34000							3.71	30.22		
34000-36000									4.17	27.27
36000-38000									4.17	28.19
38000-40000										
Total (%)	100	100	100	100	100	100	100	100	100	100
Total	34	41032	30	103063	32	87145	27	110502	24	131975

The above Table-2 is revealing the fact that firms handling less than 2000 quintals of potatoes per year were about 88,70, 81,67 and 58 per cent of the total purchasers of potato in year 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 respectively. On other hand, their share in purchasing the potato in above years very meagre i.e. 26.19, 10.06 13.28, 7.20 and 4.35 per cent respectively. Thus, above table is delineating the fact that in Kaimganj potato market, there was the highest concentration of firms belongs to smallest category in all years of study.

However, the total volume of potato transacted in Kaimganj market was accelerated substantially from 41032 quintals to 131725 quintals from 2007-08 to 2011-12. In year 2007-08, there was not a single potato purchaser who had purchased more than 14000 quintals of potato in the market. In year 2008-09, one potato wholesale purchaser had purchased 24313 q. of potato in the market and stood second highest purchaser. The highest wholesale purchaser of potato handled 29453 quintals of potato during the year. These first and second highest categories of firms handled 28.58 and 23.59 per cent of total arrivals of the potato in Kaimganj market during the year. In the year 2009-10, the top first and second category of firms had handled about 28.32 and 23.74 per cent of the market share during the year. However, in year 2011-12 about 58 per cent firms fall under the smallest category and handled barely 4.35 per cent arrivals of the potato in Kaimganj market. Under second and third category of firms, 3 firms falls in each category and handled 7.34 and 9.60 per cent of potato arrivals during the year. The top first and second category firms had handled 28.19 and 27.27 per cent of the total arrivals of potato in the market. This shows that inequalities among buyers were widely existed in all the years of study.

Lorenz Curvers :

Lorenz Curves were drawn to depict the degree of inequality among purchasers in the market for different years which are shown in Figure 1. The above Lorenz curves are showing the fact that a very high degree of inequality was in existence in potato market in all the years of study period. In year 2009-10, the inequality was more pronounced compared to other years specifically 2010-11.

Figure 1(enclosed)

Lorenz Coefficient of Inequality :

Lorenz coefficient of inequality among wholesale potato purchasers in Kaimganj market for years 2007-08 to 2011-12 are worked out and presented in Table-2.

TABLE—2 : LORENZ COEFFICIENTS OF INEQUALITY AMONG WHOLESALE BUYERS OF POTATO IN KAIMGANJ MARKET.

Sl. No.	Year	Lorenz Coefficients of inequality
1	2007-08	0.8245
2	2008-09	0.7948
3	2009-10	0.8452
4	2010-11	0.7606
5	2011-12	0.7645

The above table showed that in Kaimganj potato market was existed very high degree of inequality among wholesale purchasers of potato during years 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12. The highest inequality was observed in year 2009-10 compared to others of the study specifically 2010-11.

Bains Classification

On the basis of above classification, Kaimganj market was highly concentrated oilgopsony market during year 2007-08, 2008-09, 2009-10 and 2011-12 as 4 top most firms had handled on an average above 75 per cent of the total arrivals of potato in the market. In year 2010-11 it was under moderately concentrated oligopsony as 4 firms handled 67 per cent of the total arrivals of potato in the market.

Organisation and Conduct of the Market :

Kaimganj Market is a regulated market under the Uttar Pradesh Krishi Utpadan Mandi Adhiniyam, 1964. However, the enforcement of the regulations Act in this market is limited to only collection of Mandi fees. Physical transactions were conducted within a specific area known as market yard. The layout of market yard was not scientific and lack of space and sanitation facilities. Various marketing practices such as transportation, loading and unloading, weighing was carried out manually by the licensed functionaries in the market. The charges of the market functionaries were fixed in theory; in practice they charged higher amount than prescribed by Mandi Samiti. The weighing was performed on platform scale.

Method of Sale :

In the Kaimganj market, bid method of sales and sales by private agreement were prevalent for name sack. During the bid, all the purchasers of potato were not participated in bidding. Only few of them use to participate in biddig but get number of bags as per their agreement with the bidder earlier. Bidding of potato was not performed by authorised person of the Mandi Samiti.

Sellers Concentration:

Data on number of potato sellers and quantity of potato sold individually in the market over the years of study was not available. However, it is a fact that sellers of potato in Kaimganj market were numerous, unorganised as no association was observed, belong to widely dispersed area, having very small size of holdings (81.9% farmers were having less than 2 ha. of size of holdings), poor holding capacity of potatoes due to requirement of money, etc. These 81.90 per cent farmers were comprised of marginal and small category. It is estimated during study period that on an average about 105.75 and 177.33 quintals of potato were sold by the marginal and small category of farmers respectively twice in a year, i.e., immediate after harvest of potato and after storing potato in cold storages. Consequently, the marketed surplus of potato of individual farmer or a group of 5-10 farmers were not in position to influence the arrivals and prices of potato in the market.

If we assumed this pattern of the sale over times even with margin of 10 to 25 per cent higher marketed surplus of potato, the results of the application of Lorenz curves, Lorenz coefficients inequality and Basins' classification might have identified the Kaimganj potato market as the perfect market from seller point of view.

Summary & Recommendations

The market competitiveness was examined by analysing the market structure i.e., number of wholesale potato purchasers and their size on the basis of potato transacted in different years by employing Lorenz curves, Lorenz Coefficients of inequality, Bains classification and Categorisation of firms on the basis of volume of potato transacted. Data on number of potato sellers and quantity sold by each farmer over the years were not available.

In Kaimganj market, there were 34, 30, 32, 27, and 24 wholesale purchasers of potato during year 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12 respectively, Over the years, wholesale purchasers were decreased substantially in the market. Distribution of potato purchasers in different size categories showed that smallest size firms which have transacted less than 2000 q. of potato, were about 88, 70, 81, 66, and 58 per cent of the total purchasers during above years respectively. On the basis of Bains Classification of market, Kaimganj potato market was stood highly concentrated oligopsony during study period as 4 firms handled on an average more than 75% of the potato arrival except in year 2010-11. In this year, market was moderately concentrated oligopsony. Lorenz curves also depicted high degree of inequality in Kaimganj potato market in all the years of study. Lorenz Coefficients were found about 0.7606 which showed existence of high degree of inequality in potato market of Kaimganj over study period. Thus, structure of potato Market of Kaimganj was far away from the perfectly competitive market during study period.

Kaimganj market is a regulated market. But regulations and rules were existed on paper only and limited to collection of mandi fee. No pledge system and grading facility of potato were existed. Market functionaries were charging more than prescribed rate of Mandi Samiti.

Market structure may be made competitive by enhancing physical facilities, financial facilities far small traders at lowest interest rate. The business training may be organised for small traders and regulation rules may be enforced strictly in the market.

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C. Agro-Economic Research

Hulling and Milling Ratio in Major Paddy Growing States: A Case Study of Karnataka*

1:1 Introduction

Rice *(Oryza sativa L.)* has been the staple food for more than half of humanity in the world. In Asis, agricultural population density supported by rice cultivation is the highest in the world. Historically too, grain or paddy has shaped the culture, died and economy of the people of the continent. There is a strong positive correlation between population density and rice cultivation. Compared to other cereals, rice is more capable of sustaining land productively without the use of manure or fertilisers.

In the real sense of the term, *rice* is the processed form, which is ready for cooking and *paddy* is the raw output from the field that requires processing. Human beings cannot consume paddy as it is. It has to be suitably processed into rice for human consumption. The need for this process is the basic reason for the existence of the paddy processing industry. As such, the hulling and milling of paddy is the oldest and largest agro- processing industry in our country. Almost the entire production (90 per cent) of paddy is converted into rice every year by paddy processing units of varying sizes and capacities spread across the country. The remaining 10 per cent of paddy produced is stored as seed for next season's crop.

The present study tries to address the problems of paddy processing in Karnataka, which has been one of the leading producers of paddy in the country. In fact, the study further attempts to estimate the highly debated *'conversion ratios'* of paddy in the modern rice mills against the tradition huller type of paddy processing units in the state.

1.2: Area, Production and Productivity of Paddy in the State

Rice is the staple food of the people of Karnataka. The state contributed 3.32 per cent of the total production of rice in India and had 1.51 per cent of country's area under rice during 2008-09. The productivity of paddy in Karnataka has always been higher than the all India average but below the productivity level of states like Punjab, Andhra Pradesh and Haryana. However, the productivity increased from 2,069 kg/ha in 1990-91 to 2593 kg/ha in 2000-01 and further increased to 2,644 kg/ha in 2008-09.

The area under paddy production in Karnataka has been increasing at 0.56 per cent over 20 years from 1990-91 to 2009-10. If we break it into two periods, it was 1.72 per cent growth from 1990-91 to 1999-00 and 1.26 per cent from 2000-01 to 2009-10. Similarly, production and productivity of paddy also increased between 1990 and 2010 (though the growth was slower at the later stage) by 1.06 per cent and 0.69 per cent respectively. The productivity (kg/ha) of paddy in the state was at an annual compound growth of 1.87 per cent during 1990-91 to 1999-2000 and slightly decreased to 0.77 per cent during 2000-01 to 2009-10. In the case of production, the annual compound growth rate was 1.06 for 1990- 91 to 2009-10. To split the whole period into two, it was 3.62 per cent during 1990-91 to 1999-2000 and slightly lower at 1.36 per cent during 2000-01 to 2009-10.

1.3: Status of Rice Milling Industry in The State

Milling of paddy is an improvement of technology in the sector. During the milling of rice, husk and bran are obtained as by-products. The quality of husk produced depends upon the type of rice mill. In the single huller and the battery of hullers, the husk is obtained in a fine broken state and is always mixed with bran and broken rice. This husk- bran mix is used as a boiler feed.

Paddy husk is mainly used as fuel in most parts of Karnataka. In some places, it is left in the fields to decompose and enrich the soil. Karnataka, being one of the leading paddy producers in the country, has quite a large concentration of rice mills - about 1,755 modern rice mills as on 20008-09. Since the rice milling industry was is in the unorganised sector, proper and accurate information on traditional rice mills (hullers) was not available with the Government of Karnataka.

From the data available with the Department of Food and Civil Supplies, Government of Karnataka (2010), it can be seen that the district of Mandya has the largest concentration of modern rice mills. Mandya is historically a rice-growing district and has 283 rice mills (16.13 per cent of the mills in the state) followed by Mysore district with 165 (9.40 per cent) and Tumkur district with 144 (8.21 per cent). Though Raichur district registered highest in the area and production of paddy in the state, only 90 (5.13 per cent) paddy mills are operating in the district. It is comparatively lower than that of other major rice producing districts. The rice produced by these mills caters to both domestic and export markets or other states. The major product of these mills is raw rice (non-parboiled), although

*—Agricultural Development and Rural Transformation Centre, Institute for Social and Economic change Bangalore.

some rice mills produce parboiled rice as their principal product to supply to the neighbouring states.

1.4: Objectives of the Study

The present study is a modest attempt to analyse the hulling and milling ratios[1] of paddy through different processing methods and suggest appropriate policy measures to overcome the problems/constraints faced by the paddy processing sector in the state. However, the specific objectives of the study are given below:

1. To analyse the trends and patterns in the growth of modern rice mills.
2. To estimate conversion ratios of paddy to rice by different mills (modern and traditional) without parboiling in various paddy processing units.
3. To estimate the relative shares of different milling techniques in paddy processing units with various type of processing technologies.
4. To identify probable constraints and solutions of the paddy processing industry in the state.

1.5: Methodology

The present study is based on both primary and secondary data. While evaluating the hulling and milling ratios of paddy, more emphasis is given to primary data, and 2009-10 is considered as the year of reference. However, data pertaining to 2007-08 and 2008-09 have also been collected to validate yearly growth trends and fluctuations of paddy conversion ratios in the state.

The secondary data were collected mainly from the Ministry of Food Processing Industries, Government of India, and the Departments of Agriculture, Agricultural Marketing and Food and Civil Supplies, Government of Karnataka. Information on applied aspects of rice processing and by-product utilisation, like drying, storage, parboiling, milling, bran stabilisation, etc., were collected from official publications and research articles.

Primary data from ninety-two (92) rice mills (25 traditional mills and 67 modern mills) were collected from the three districts of Karnataka - Mandya, Davanagere and Tumkur. These districts were selected based on the concentration of rice mills and area under paddy cultivation. Mandya and Davanagere have relatively more number of modern rice mills as well as area of paddy production in the state. It was also found that these districts do not have hullers. In order to make a comparison between traditional and modern paddy conversion ratio, we chose Tumkur district where a large number of hullers (traditional) mills are being operated (based on informal sources) as well as area of paddy cultivation in the district is high.

From each selected mill or unit, detailed information was obtained through primary survey with pre-tested questionnaire. A questionnaire was prepared specifically indicating the quantity of paddy processed, hulled or milled in the mills. For further analysis, hulling ratio was considered as the ratio of *brown rice* to the total paddy processed, and milling ratio as the ratio of processed *rice to paddy.* Certain mills follow two stages of processing - the first step involves hulling of paddy to get brown rice, and the second process includes polishing the brown rice to the fine white rice (polished rice).

1.6: Organization of the Study

The first chapter focuses on the introduction of the report under which the basic perspective of hulling and milling in Karnataka and genesis of paddy cultivation and milling processes are included. In this chapter, area of paddy cultivation, production and productivity of paddy in the state as well as district-wise analysis of the same are also included. The objectives and methodology of the study are also included in this chapter.

In the Chapter Il, the important part of study like hulling and milling ratios with respect to different types of mills and different stages of rice production along with the status, trends in the milling industry and growth of rice milling industry in Karnataka state are discussed.

In the Chapter Ill, economic aspects of the milling industry in the state like, cost of processing of rice, market incidentals occurred in the rice processing, marketing of processed rice and standards maintained in the processed rice with respect to different types of mills are presented. This chapter contains the core issue of the report including the net return of the different mills.

In the Chapter IV, along with the constraints like under-utilisation of the mills, subsidy aspects and remedies for those constraints are included. Finally, Chapter V wraps up with some policy implications and recommendations.

[1] Hulling ratio is defined as the ratio of brown rice to total paddy processed and the milling ratio is considered as the ratio of processed rice (polished/fine rice) to total paddy. Details of it can also be found in the Methodology section (section 1.8).

2: Hulling and Milling Ratio for Paddy

2.1: Introduction

In India processing of paddy can be categorized into the following two broad methods - viz. Traditional Method and Mechanical Methods. In the traditional method, techniques like hand-pounding was in practices using implements like Dhenki, Chakki, etc, which have become obsolete at present. The conventional mechanical mills can be categorized into four main types - viz. Hullers, Shellers, Huller-cum-Shellers, and Modern Rice Mills. In Karnataka, a majority of the paddy processing units are hullers followed by modern rice mills, while shellers and huller-cum-shellers are hardly found in the state.

The conventional rice hullers are usually of very low capacity mills, where both shelling and polishing operations of rice are carried out simultaneously. Hence, there is no control on the polishing of rice by the hullers, resulting into production of bran admixed with husk with a high broken rice grains. In sharp contrast, the modern rice mills with much higher capacity have separate processing mechanism for de-husking and polishing of the paddy, which makes the by-products like broken-rice, bran, husk, etc. available separately.

2.2 : Growth of Rice Milling in the State from Traditional to Modern

The rice milling industry in Karnataka is one of the oldest and biggest agro-based industries in the state. The rice milling industry was developed because it had become necessary to convert the harvested paddy into rice for domestic consumption. As the population grew rapidly, demand for rice also increased in the state, especially with the growth of urban migrants. Since then, the need for efficient post-harvesting management of paddy was acknowledged by the policy makers and government. This is how the process of conversion from traditional rice milling to modern industrial milling to increase yield and reduce processing losses, was initiated. However, many rice mills are still operating with the traditional technology. The green revolution period saw an increase in production of paddy and necessitated the modernisation of the rice milling industry. It was also required to increase efficiency and meet the global quality standards apart from the changing needs of consumers. The traditional rice mills like hullers produced rice at the lesser cost and not very efficient in the production and maintenance of quality. Despite the disadvantages, a number (not estimated accurately) of traditional rice mills are still functioning in the state, especially in Tumkur district.

The modernisation of the rice milling industry in Karnataka started in the 1970s with the main objective of producing good quality rice coupled with efficient utilisation of the different by-products obtained during the processing of paddy such as bran and husk for edible and/or industrial purposes. During 2001-02, there were more than 14,370 rice mills including hullers, shellers, huller-cum-shellers and modern rice mills. Given the extant food habits of the people (rice as staple cereal); a large number of mills are in the command areas of the state. There are around 1,755 modern rice mills operating in the state at present.

2.3: Trends in Type of Rice Mills

While trying to analyse the trends and types of rice mills in Karnataka it was found that a complete list of rice mills and type of rice mills was not available with any organisation in the state. As per the information provided by the Department of Food and Civil Supplies, Government of Karnataka, we came to know that the state has 1,755 modern rice mills. However, no information was available on the exact number of hullers (traditional mills) in the state.

It was also learnt that in the last two decades, the hullers, huller-cum-shellers and sheller mills have lost their importance in the paddy processing industry not only in the state but also in the country. Presently, though the huller mills have the advantage of being cheap and simple to operate, the major players in the rice processing industry are the modern rice mills. It is probably because the hullers are very inefficient in converting paddy to rice. On the other hand, the modern mills give the highest yield of rice with least quantity of broken grains and better quality by-products like, bran, husk, etc. Normally the huller mills yield bran with the lowest oil content because it contains an appreciable amount of husk and broken rice. The oil content in the bran from the modern mills is far superior in this respect. As per the Karnataka Food and Civil Supplies Corporation Ltd., the overall out-turn ratio of modern rice mills in Karnataka in 2004 was 67 per cent of fine and super fine varieties of rice.

2.4: Basic Characteristics of the Selected Sample Units

The sample paddy processing units were situated in Mandya, Davanagere and Tumkur districts. The total sample, comprising 92 rice mills (both modern and traditional), produced only non-parboiled rice. As many as 67 of the sample were modern mills operating as owner-cum-trader units and 25 were huller mills (traditional) operating as custom hiring units.

The average investment for the sample huller units was Rs 0.76 lakh. However, the average investment for the modern rice mills was Rs 93.23 lakh. The average capacity of the modern rice mills was 6.8 tons per hour (TPH), and for the traditional huller it was 1.2 tph. It was much lower than the modern one. In the case of labour involvement per day, the requirement was relatively higher for modern of rice mills at an average of 6.06 persons. However, for the traditional mills, it was 0.90 employee/persons per day.

An average of 6.15 and 0.08 daily wage labourers were engaged in the modern mills and traditional huller mills respectively. The traditional mills being small and run primarily on custom hiring basis [2]required fewer number of labourers. Some of the traditional hullers were being run by daily wage labourers and self labour. Often, these mills could not even engage one full-time labourer because almost all the units were run on custom hiring basis where machines are operates when customers comes for processing/hulling paddy and pay custom charges. It thus turned out that the modern rice mills create better employment opportunities In the agro-processing industry than the traditional ones. Nevertheless, as was observed during the study, with the advancement of milling technology fully automated milling machines have replaced human labours to some extent.

2.5: Hulling and Milling Ratios in Modern and Traditional Rice Mills

In general, it was observed that there were considerable differences in the milling ratio among the different types of mills and different grades of rice produced. It was obvious that the milling ratio observed in the modern type of rice mills was considerably higher than that of traditional rice mills.

The out-turn ratio (paddy to rice conversion ratio) of non-parboiled rice by Phase I modern mills was at the constant rate of 61.2 per cent from 2007-08 to 2009-10. If we break the out-turn ratio in terms of grade of rice (as per the survey result provided), Grade A rice has the advantage of 2 per cent over Common rice. The total paddy processed (both Common and Grade A together) under Phase I mills was 5, 49,733 quintals in 2007-08,5,57,899 quintals in 2008-09 and 5, 74,715 quintals in 2009-10. On an average, 5, 60,782 quintals of paddy was processed in three years' time. The total quantity of rice (output) produced was 3, 36,494 quintals; 3, 41,287 quintals; and 3, 51,569 quintals in 2007-08; 2008-09 and 2009-10, respectively. On an average, a total of 3, 43,117 quintal of rice was produced in the three years' time. The conversion ratios were constant at 62 per cent for Grade A and 60 per cent for Common rice for the same period, and the overall conversion ratio (irrespective of grades) was 61.2 per cent for the same period.

The conversion ratio of Phase II type of mills was higher than Phase 1. On an average, this phase had better conversion ratio in Karnataka with 63.4 per cent over Phase I from 2007-08 to 2009-10. In 2007-08, altogether, 8, 89,563 quintals of paddy were processed and 564743 quintals rice produced. In terms of conversion ratio, it was 63.5 per cent, and if we break the conversion ratio into, Grade A and Common rice, the former performed well with 63.8 per cent and for the latter it was 61.6 per cent. In 2008-09, the performance was slightly lower and the conversion ratio was 63 per cent. However, in 2009-10, the conversion ratio rose to 63.7 per cent. On an average, the conversion ratio of Grade A rice was 63.6 per cent, an increase of 2 per cent over Common rice (61.7%), in the three years' time (2007-08 to 2009-10).

In the case of Phase III of modern rice mills, it was observed that the performance in terms of conversion ratio from paddy to rice was better than other previous two phases. On an average, the conversion ratio was 63.5 per cent over the three years 'study period. From the study, it is evident that the conversion ratio increased constantly at a very slow pace from 2007-08 to 2009-10. For instance, the conversion ratio increased from 63.4 per cent in 2007-08 to 63.5 per cent in 2008-09, and further increased to 64.6 per cent in 2009-10. Like other two phases, the performance of Grade A rice was slightly better than the Common rice, e.g. 63.6 per cent for Grade A rice and 63.4 per cent for Common rice.

Of all the phases of modern mills, Phase III became the most efficient one. It is also clear that the performance levels improved as the machines were upgraded in the respective phases. The highest conversion ratio in the last three years (2007-08 to 2009-10), irrespective of phases, was 63.7 per cent in 2009-10 by the Phase Il type of mills and the lowest was 61.2 per cent by Phase 1.

Under the traditional type of rice mills, only huller mills are included in the present study. The conversion ratio was found to be far behind that of the modern mills in all the three phases. It was 58.6 per cent; 58.9 and 58.5 per cent for 2007-08; 2008-09 and 2009-10 respectively. The overall conversion ratio turned out to be 58.7 per cent for the same period. Similar to modern mills, the huller's conversion ratio of Grade A rice was slightly better than Common rice. It was 59.5 per cent and 57.9 per cent respectively for three years.

2.6 : Difference in Rice Milling Ratio Among Different Phases of Modern Rice Mills

It is obvious that there are considerable differences in the milling ratios with respect to the different phases. The milling ratio of modern type of mills especially in Phase III was comparatively higher than other types of mills. It has certain advantages over the other mills because primarily it involves many more stages in paddy processing.

Phase III mills were superior to the Phase II mills. Similarly, Phase II was superior to Phase 1. This was primarily due to the different milling techniques and stages used in different mills. Traditional rice mills (hullers) used only single steel hullers. While modern rice mills used some specialised machineries like pre-cleaners, de-stoners, rubber roll sheller, paddy separators, rice polishers and graders. Similarly, the milling ratio of parboiled rice was better than non-parboiled rice. As we do not incorporate parboiled rice in this present study, the performance level

[2]Custom Hiring mill refers to the entire by-product obtained in the production process belongs to the farmers, while the owners of the hullers get a fixed custom charge for every unit of paddy processed through the huller unit.

of non-parboiled rice will be analysed for traditional and modern rice mills from 2007-08 to 2009-10. Parboiled rice is processed in the modern rice mills to get more milling ratio and nutritious properties. In short, rice undergoes partial boiling or cooking prior to milling which imparts extra strength to the rice kernel to withstand the milling stress and result in higher head yield.

3: Economics of Paddy Processing

3.1: Introduction

The basic economics of paddy processing remains with out-turn ratios and quality of output of the mills. In this modern age, modern technology has shaped the fortunes of many rice-growing countries In the world. The rapid changes in the cultivation, marketing and consumption of rice require improved productivity of rice. This improvement of technology saves post-harvesting losses to some extent. The rice milling industry is improving the socio-economic standards of many entrepreneurs in India, particularly in Karnataka. The study of the economic aspects of the rice milling industry may help in understanding the economic viability and profitability of this industry in the state. This is the core chapter of this study and gives a broad idea of economic aspects of the rice milling industry including market incidentals, cost of processing rice in the different types of mills and the different types of the rice produced. By treating the paddy processing units as strict business units, we will arrive at a conclusion on the economics of paddy processing in the huller units and in the modern rice mills in the different phases of development.

3.2: Market Incidentals in Procuring Raw Materials by Modern and Traditional Rice Mills

It is obvious that the market incidentals in the modern rice mills under the owner-cum- trader category were considerably higher than that of traditional rice mills. However, in case of custom hiring category of huller units, there was no market incidental because, the farmers hulled their paddy by paying custom charges and the mill owners got only custom charges. Even the customers of the huller units, viz. the farmers who bring the paddy to convert it into rice, often help in the tasks of loading/unloading and feeding of paddy/rice in huller machines. Hence, costs like transportation, handling, storage, drying costs, packing, weight-loss, etc., do not arise for huller units. Therefore, we do not compare traditional and modern mill in this regard. However, a comparison is made between the different phases (phase I; Phase II and phase III) of modern mills.

The three years' average market incidental of modern mills was Rs. 8.75 per quintal of paddy processed. In 2009-10 the highest market incidentals of Rs. 9.58 per quintal paddy processed were incurred and the lowest at Rs. 7.78 per quintal was recorded in 2007-08. Of the different components of market incidentals, transport charges were highest at Rs. 2.08 per quintal of paddy processed. At the bottom, average storage charge incurred in the three years average was Rs. 0.78 per quintal of paddy processed. However, the drying cost was not recorded as the present study concentrates only with the non-parboiled rice.

3.3: Processing Costs Among Modern and Traditional Rice Mills

The present study found out that the three years' average cost (2007-08 to 2009-10) of paddy processing by modern mills (phase I, II and II) was Rs 68.49 per quintal (excluding seed capital). Of which, Rs 45.09 was attributed to variable costs and the remaining Rs 23.41 for fixed cost. The average total cost of paddy processed (combine three phases) was Rs 65.05 per quintal in 2007-08 and rose to Rs 67. 66 in 2008-09, and further increased to Rs 72.76 per quintal of paddy processed in 2009-10.

The cost of paddy processing in traditional mills was lesser than in modern mills. The cost of machines was also much lesser compared to the modern mills. As a result, the depreciation charges and insurance cost reduced drastically compared to modern mills. The three years average cost turned out to be Rs 15.12 per quintal of paddy processed. We also witnessed that the cost of paddy processing in this mills was increasing year after year from Rs 12.66 per quintal in 2007-08 to Rs 15.08 per quintal in 2008-09, and further rose to Rs 17.61 per quintal. As these mills were run under the custom hiring basis and mostly run by self-labour, the labour cost dramatically dropped to Rs 4.02 per quintal of paddy processed, and the electricity charge became the highest cost component in this mill type at Rs 5.48 per quintal. When we break the total cost of paddy processed into two parts, only Rs 2.58 per quintal was attributed to fixed cost and Rs 12.64 to variable cost. Similarly, these two sub-costs (fixed and variable) were also increasing year after year from 2007-08 to 2009-10.

3.4: Economics of Modern Rice Mills Running on Owner-cum-Trader Basis

The basic tenet of the economics of rice mills centres on the benefits or profit on the investment made by the mills. For the purpose, prior understanding of the detail cost, investment and valuation of the output and by-products in both modern and traditional mills is required.

The economics of modern rice mills, it is expected to result higher yield of rice as well make the by-products like broken-rice, bran, husk, etc., available separately and in smaller quantities. It is mandatory for the rice mills irrespective of the quantity of paddy milled because the economics of modernisation is essentially based on better rate of recovery and not on the quantum of production. The sample mills were running under the owner-cum-trader and produced only non-parboiled rice in this study. For the entire sample modern rice mills (92 units of three phases), the net return per quintal of paddy processed turned out to be Rs 17.1 on an average from 2007-08 to 2009-10. The

share of by-products (broken-rice, bran and husk) in value terms was 5.5 per cent of gross returns from milling operations and for the main product, viz. fine rice, it was 94.5 per cent of gross returns. The share of total costs (including market incidentals, processing costs) stood at 6.8 per cent of gross investment (i.e., total costs and value of paddy purchased for processing, given in Table 3.4a:), while the net return was only 2.1 per cent of the gross-investment.

Our interest is in the net return per quintal of paddy processed. The overall net return per quintal of paddy processed was Rs. 16.3 in 2007-08 and rose to Rs. 17.9 in 2008-09. However, there was slight downfall in 2009-10 as the net return of the modern mills turned out to be Rs. 17.0 per quintal of paddy processed in the study period.

3.5 : Economics of Hullers Running on Custom Hiring Basis

Under the huller mills, the milling ratio was 58.7 kg per quintal of paddy processed. As mentioned above, the value of rice was not given for these mills as they are run on the custom hiring bases. The net return was realised at Rs 25.0 per quintal of paddy processed.

Unlike modern mills, the share of by-products (broken-rice, bran and husk) of gross return does not arise in case of traditional mills because the by-products were being taken away by the customers and the same applies to the main product, viz., fine rice, as well. When we look at the year-wise performance, the average net return in 2007-08 was Rs. 26 per quintal of paddy processed, and slightly fell down to Rs. 24 per quintal of paddy processed in both 2008-09 and 2009-10. The yearly average total cost of traditional mills (25 units) was Rs. 31 lakh in three years, and in terms of per unit, it was Rs. 124 lakh per mill in three years. However, though it is low technologically compared to the modern mills, the conversion ratio was not that much lower as we expected, and stood at 58.7 per cent per quintal of paddy processed. However, the conversion ratio of broken rice was quite high at 10.2 per cent per quintal of paddy processed when compared to 2.2 per cent per quintal of paddy processed in modern mills. The traditional mills had lesser capital investment compared to the modern mills and their annual paddy processing capacity was much lower than the modern mills. For instances, the annual paddy processing capacity of traditional mills in the last three years (2007-08 to 2009-10), was hardly 14 per cent for Phase I modern mills, 29.6 per cent for Phase II and 23.5 per cent for Phase III types of modern rice mills.

3.6 : Marketing of Processed Rice by Modern and Traditional Millers

As has been mentioned earlier, the traditional rice milling units under the purview of the present study turned out to be traditional hullers running on a custom hiring basis and producing non-parboiled rice. These huller units only process paddy for a fixed charge per quintal and do not have to market the final product. Hence, for traditional huller units running on a custom hiring basis, issues relating to marketing of rice do not arise at all.

On an average, only 27 per cent of the fine rice produced by the modern rice mills (Phase I, II and III together) served as levy to the Government and 29.4 per cent of the total processed rice was sold to retailers in the open market. However, 44 per cent of fine rice produced was sold to the wholesalers. It is also interesting to note that the 49 per cent of the total rice was sold to retailers in 2009-10 and hardly 22.5 per cent of rice was sold to wholesalers. In 2007-08 and 2008-09, the major share, 54 per cent, of rice was sold to wholesalers. The levy to Government was increasing uniformly year after year, from 25 per cent in 2007-08 to 27 per cent in 2008-09, and reached to 29 per cent in 2009-10.

3.7 : Processing of Paddy and its By-Products in Modern and Traditional Rice Mills

It is intuitive to note that the share of by-product decreases as technology of mills is upgraded through the different phases. Conversely, the out-turn ratio of rice increases as the technology improves.

Under modern mills, the ratio of paddy to fine rice (i.e. the milling ratio) was 62.73 per cent on an average, while the ratio for broken rice stood at 2.00 per cent. The proportion of husk per quintal of paddy turned out to be about 20.23 per cent while the ratio of bran was 4.40 percent on an average. The out-turn ratio was 61 kg of rice per quintal in 2007- 08, it increased to 63 kg of rice per quintal in 2008-09, and then rose to 64 kg of rice per quintal of paddy processed in 2009-10. However, the share of husk produced was same for all the phases.

In case of traditional mills, the rate of recovery of fine rice (the out-turn ratio) turned out to be 58.70 per cent - which is about 11 per cent less than that of modern rice mills. It should also be noted here that in traditional huller units, the recovery of broken-rice was much higher than the modern rice mills. On an average, the ratio of broken-rice turned out to be as much as 10.2 kg for every quintal of cleaned paddy processed. Unlike modern mills that recover bran, husk and broken rice separately, the huller units (traditional mills) recover a mixture of bran, husk (and fragments of broken-rice also), which made up 26.6 per cent per quintal of paddy processed. This mixture has a lower oil- content with high level of impurities and does not command a great demand from the solvent extraction industry when compared to pure bran produced by modern mills.

3.8 : Relative Shares of Different Milling Techniques

Modern mills dominate 92 per cent of the total paddy processed by the industry in the study area in the three years from 2007-08 to 2009-10 and the remaining 8 per cent was processed by traditional mills in the same period.

Among all phases of modern mills, almost 49 per cent of the paddy was processed by the modern rice mills

belonging to Phase III. The share increases as technology was upgraded. For instance, Phase I type of mills could process hardly 16 per cent of the total paddy processed. However, Phases II could process 26 per cent of the total paddy processed.

4. Constraints in Processing of Paddy

4.1 : Introduction

Understanding and resolving the basic constraints and difficulties of any industry will ensure sustainable development. This will help in building a better future for that industry through increased growth in output and profit. Paddy processing technology has been perfected over time by centuries of trial and error, which ultimately has resulted in the establishment of the highly sophisticated and technologically advanced modern rice mills we know today. In the present study, especially in this section, an attempt has been made to explore the problems/constraints of the rice milling industry in the study area based on the results of the sample respondents. Suggestions to overcome those specific constraints have been collected from the respondent millers and presented in this section.

4.2 : Capacity Utilization of the Modern Versus Traditional Rice Mills

The average installed capacity of modern mills was 6.8 TPH in the three years study period while the capacity utilisation of modern rice mills was 3.8 TPH. Of course, it was much higher than the traditional mills. The three years average capacity utilisation of modern mills was 54.9 per cent. It fell from 55.5 per cent in 2007-08 to 54.3 per cent of the total installed capacity in 2008-09 and again rose to 55 per cent in 2009-10. It was also observed that the modern mills could run at the most 16 hours per day (24 hr - 8hr =16 hr) and for 71 days there was no work (365 days - 294 days = 71 days) due to one reason or the other. Therefore, on an average, 294 days in a year were found to be operative and worked 4704 hours (16 x 294 hours) in a year.

In the case of traditional mills, on an average in the three years, the actual installed capacity was 1.2 TPH. It was almost 82 per cent less than the modern mills together. Similarly, the capacity of utilisation by the traditional mills was 47 per cent of the total installed capacity and it was 14.3 per cent lower than the modern mills together. From the data given, one can see that the capacity used was 0.5 TPH against the 1.2 installed capacity of TPH. Unlike modern mills, the traditional mills could run at the most 7 hours per day and did not work for 43 days in a year - much less compared to modern mills.

This is because the mills were run on the custom hiring basis and the farmers needed regular processing (though it is small quantity) of their paddy for their own consumption. Hence, based on the above observations, it turns out that the modern mills outweigh the traditional rice mills both in terms of capacity installed and capacity utilised to a great extent.

4.3 : Reason for Under-Utilization of Capacity

The labour problem was one of the most important issues for modern rice mills, which were under-run or could not be run to the extent of installed capacity. This factor accounted for 42 per cent of the total factors responsible for the under-utilisation of the modern mills. It was followed by shortage of raw paddy with 20 per cent of the total. Similarly, electricity problem was not an exception, and this factor accounted for 17 per cent. At the bottom, but not the least, technical problems like, break down of the machines, minor repairs and marketing problems also increased under-utilisation of the modern mills during the study period.

In the case of traditional mills as well, the problem of labour became an important factor for the under-utilisation of the mills. Approximately 40 per cent of the respondent said that the labour problem was responsible for under-utilisation of the mills, followed by technical problems (31 per cent) and irregular power supply (29 per cent). Unlike modern mills, the issue of raw materials and market fluctuation did not arise in the traditional mills because this type of mills was running on the custom hiring basis.

4.4 : Constraints in Processing of Paddy

For modern mills, trained and sufficient supply of labour became most important problem for rice millers in Karnataka. Altogether, 27 per cent of the respondents said that the labour problem was the major constraint in Karnataka's rice milling industry followed by electricity problem, including low power supply, irregularity in supply and high tariff (22 per cent). Insufficient supply of raw paddy (18 per cent) and financial assistance (16 per cent) are also responsible in a great extent. Other factors like weak rural infrastructure, limited quality/advanced machines and parts in the market, uncertainty of rice market, etc., can also be mentioned as constraints faced by the modern rice milling industry. Very often, weak road infrastructure was added as a problem (if not major) in the transportation of raw paddy by heavy trucks especially in the rainy season. Mention may be made of the factors like mandi fee, toll tax and delays in clearance of loaded trucks with the raw materials at the state boundaries as constraints faced by the milling industry.

In the case of traditional mills, some of the major problems like labour, finance and electricity are more or less same with the modern mills. Shortage of paddy for processing was ranked top as constraint by 36 per cent of the traditional huller mills. The labour problem was ranked in the second position with 24 per cent. At the bottom, power and inadequate finance were identified as major problem by 20 per cent of the respondents.

4.5 : Steps to Overcome the Constraints

Some of the most significant suggestions to overcome the constraints of modern rice millers are made through their opinion provided. Of the total, 39 per cent of respondent felt that the sufficient and uninterrupted power supply might help in developing this industry. Supply of adequate financial assistance was the second most important suggestion (28 per cent) made by the millers in the study area. The need for providing financial assistance at the lower interest rate was felt by 13 per cent of the respondents. The fourth important suggestion as shared by the respondents was to reduce government levy and stabilise the rice market (8 per cent each of the total respondent). Last, but not the least, to improve supply of raw paddy by increasing production and providing advanced seeds to the farmers.

In the case of traditional mills, almost the same suggestions were given by the millers (opinion given by the traditional mill owners), except for marketing, government levy and supply of raw materials. Uninterruptedly power supply to the mills at the subsidised rate (32 per cent) was the most preferred suggestion made by the traditional millers followed by adequate and low interest rate of finance and increase in paddy production because it is the bread and butter of millers.

5. Conclusions and Policy Implications

5.1 : Conclusions

The production and consumption of rice in the present era are very closely connected to the issue of poverty alleviation especially in the developing nations. They are becoming key factors for the economic development of several countries including India. The Asian region is a major consumer and producer of rice. There are several ways to Improve production with respect to the growing economies and feed their rapidly growing population. The rice-milling industry not only processes rice for consumption but also ensures development of entrepreneurship and generates employment at the grass root level especially at the village level economy in India and particularly in Karnataka.

It is the responsibility of the government to regulate this industry to ensure better milling practices to increase the rice production to the maximum level. Based on the above results and discussions, the following few important findings have been made.

1. In Karnataka, though traditional rice mills became obsolete due to the advancement of technology, a number of traditional rice mills still dominate the rice milling industry in the rural areas. Out of the traditional rice mills in Karnataka, like huller, sheller and huller-cum-sheller, hullers out-number the other two. At present, the shellers and huller-cum-shellers mills can hardly be seen in the rural areas, not only in Karnataka but also in other parts of the country.
2. Though the traditional mills are widely used, the out-turn ratio for the hullers (traditional) was an average of 58.7 per cent as compared to the modern rice mills with an average of 63.0 per cent during the three years study period. It was 4.3 per cent lower than that in the modern rice mills on an average. We can conclude from the finding of the present study and that of other studies in the past that the traditional mills are quite inefficient in terms of out-turn ratio and capacity of processing TPH when compared to modern rice mills. In the modern rice mills the out-turn ratio increases by about 3.7 per cent points as we move from Phase I to II to III with improvement in milling techniques.
3. While considering the economics of paddy processing by the traditional rice mills (hullers) and the modern rice mills, it was found that market incidental cost for the hullers was non-existent because it was run on a custom-hiring basis, while that of the modern rice mills was Rs. 8.75 per quintal of paddy processed.
4. In case of processing costs of paddy, the modern rice mills belonging to Phase III were the most cost-inefficient when it processes in large scale: Otherwise, it is a capital intensive and extremely mechanized mill, which in turn made the costs of electricity, maintenance, depreciation, etc., much higher to the tune of Rs. 68.49 per quintal of paddy processed. In contrast, the processing costs of paddy in the traditional rice mills (hullers) running on a custom hiring basis was Rs. 15.12 per quintal. These processing costs are excluding the seed cost.
5. The net returns per quintal of paddy processed by the modern rice mills turned out to be Rs. 17.1 per quintal on an average, varying from a low of Rs. 14.0 for Phase I to as much as Rs. 15.0 for Phase II and Rs. 19.0 for Phase III. In sharp contrast to this, the net return per quintal of paddy processed by the tradition rice mills (hullers) was Rs. 25.0 per quintal on an average, much higher than that of the modern rice mills. However, the net return of modern mills was lower than the traditional ones and higher cost of processing per unit, modern mills are superior to the traditional mills when it processes in a large scale.
6. The average investment for the sample huller units stood at Rs. 0.76 lakhs. However, the average investment for the modern rice mills stood at Rs. 93.23 lakhs. The average paddy processing capacity of modern rice mills stood at the most 6.8 tons per hour (TPH), and in case of traditional huller, the average capacity was 1.2 tons per hour - much

lower than the modern one. The labour involvement per day was also relatively higher in modern rice mills and was an average of 6.06 persons. However, for the traditional mills, it is 0.90 employee/persons per day.

7. Of the constraints faced by the mills, labour shortage was one of the most important factors for under-utilisation of installed capacity of modern mills 42 per cent. It was followed by shortage of raw paddy 20 per cent. Similarly, the electricity problem was not an exception, and it accounted for 17 per cent of the total. At the bottom but not the least, technical problems like, break down of the machines, minor repairs and marketing problems also led to under-utilisation of capacity in modern mills during the study period. In the case of traditional mills, like modern mills, the labour problem became an important factor for the under- utilisation of the mills - 40 per cent. It was followed by technical problem with 31 per cent and irregularity of power supply accounted for 29 per cent. Unlike modern mills, the issue of raw materials and market fluctuation did not arise in the traditional mills because they were run on custom hiring basis.

8. The share of by-products in modern rice mills like broken-rice, bran and husk in value terms was 6.1 per cent and the main product, viz. fine rice, was 93.9 per cent of gross return. Again, while the share of total costs was 6.1 per cent and the net return was only 1.7 per cent of gross investment. In sharp contrast to this, the huller units did not have the by-products because it was taken away by the farmers/customers.

9. Similarly, for the traditional huller units, the issues relating to the marketing of rice did not arise. However, for the modern rice mills, 26.9 per cent of the fine rice produced served as levy to the government and 29.4 per cent of the total processed rice was sold to retailers in the open market. However, 43.7 per cent of fine rice produced was sold to the wholesalers.

10. In case of the relative share of paddy processed in modern and traditional units, the share of traditional mills during the study period to total paddy processed turned out to be 8 per cent only. Modern mills dominated with 92 per cent of the total paddy processing industry in the study area. Among all phases of modern units, almost about half (49 per cent) of the paddy was processed by the modern rice mills in Phase III. The share of paddy processed increased as technology improved from Phases I to II to III.

5.2: Policy Recommendations

The policy recommendations suggested to achieve better status in the milling industry in the study area are as follows:

1. A strong extension service has to be developed to increase the area under paddy cultivation by creating awareness among the different group of farmers regarding the importance of rice in the country's economy with respect to employment, consumption habits, export value and other benefits at the grass root level. More importantly, this could eliminate the shortage of raw paddy for processing in the mills.

2. While discussing the various studies we observed that the milling ratio was higher for producing parboiled rice compared to that of non-parboiled rice. To convert all the mills into producers of parboiled rice, the extension agencies and agricultural universities should take steps to ensure appropriate technology transfer to produce parboiled rice and financial institutions and government should extend financial support to the poor/needy millers to produce parboiled rice. This may ultimately help in achieving better milling ratio and further increase the profits of millers.

3. It has been proved by the present study that the milling ratio is higher in modern rice mills as compared to hullers. Hence, it is suggested that millers who are still operating hullers to process paddy adopt modern technology. The required technical expertise should be provided to the millers by the extension agencies like food processing industries and agricultural Universities.

4. As discussed in the previous chapters, the observed capacity utilisation in traditional and modern rice mills was a very low. Maximum utilisation of the capacity of mill will ensure more rice production. Hence, permanent solutions must be put in place to tackle problems like poor power supply. As stated above, there is need to increase paddy production because inadequate supply of paddy was one of the reasons for under utilisation of the mill capacity.

5. Since the millers are not happy with the present levy policy of the government, it may be revamped in accordance with the interest of the millers.

6. A single window system may be created to give licenses to start new rice mills by liberalising the requirements. This can help in expanding the rice milling industry on a large scale in the state.

7. Last but not the least the labour problem should be solved by introducing proper training programmes to select unemployed youth, especially in the rural areas of the state. We should not look for labour from outside the state because they are not stable in their profession.

AGRICULTURAL PRICES IN INDIA

It is an old adage that Agricultural prices mirror the economy of a country. It is more true in the case of an agricultural country like India. Viewed from this angle, it is quite an important publication. It gives information on index numbers, farm (Harvest) prices, wholesale and retail prices of various agricultural commodities, etc.

D. Commodity Reviews

(i) Foodgrains

During the month of April,2014 the Wholesale Price Index (Base 2004-05=100) of pulses increased by 0.56%, Cereals and foodgrains declined by 0.30% and 0.17% respectively over the previous month.

ALL INDIA INDEX NUMBER OF WHOLESALE PRICES

(Base: 2004-2005=100)

Commodity	Weight	WPI for the Month of April 2014	WPI for the Month of March 2014	WPI	Percentage change during	
	(%)			A year ago	A month	A year
(1)	(2)	(3)	(4))	(5)	(6)	(7)
Rice	1.793	234.1	232.1	207.2	0.86	12.98
Wheat	1.116	212.9	218.2	203.6	-2.43	4.57
Jowar	0.096	284.5	281.4	253.2	1.10	12.36
Bajra	0.115	258.7	257.1	263.7	0.62	-1.90
Maize	0.217	245.7	248.2	249.9	-1.01	-1.68
Barley	0.017	214.6	222.9	209.6	-3.72	2.39
Ragi	0.019	334.8	331.1	334.3	1.12	0.15
Cereals	3.373	230.6	231.3	212.9	-0.30	8.31
Pulses	0.717	231.4	230.1	233.2	0.56	-0.77
Foodgrains	4.09	230.7	231.1	216.5	-0.17	6.56

Source: Office of the Economic Adviser, M/O Commerce and Industry.

Behaviour of Wholesale Prices

The following Table indicates the State wise trend of Wholesale Prices of Cereals during the month of April, 2014.

Commodity	Main Trend	Rising	Falling	Mixed	Steady
Rice	Rising & Steady	A.P. Haryana Jharkhand		U.P.	Assam Gujarat Kerala
Wheat	Falling & Mixed	Karnataka	Jharkhand M.P. U.P.	Gujarat Haryana Rajasthan	
Jowar	Rising & Steady	Maharashtra Rajasthan			A.P. Karnataka
Bajra	Rising & Falling	Karnataka Tamilnadu	Gujarat Haryana	Maharashtra	A.P. Rajasthan
Maize	Falling	U.P.	A.P. Gujarat Haryana		Jharkhand Rajasthan

Procurement of Rice

1.47 million tones of Rice (including paddy converted into rice) was procured during April, 2014 as against 1.34 million tones of rice (including paddy converted into rice) procured during April, 2013. The total procurement of Rice in the current marketing season i.e. 2013-2014, up to 30.04.2014 stood at 27.60 million tones, as against 30.68 million tones of rice procured, during the corresponding period of last year. The details are given in the following table :

PROCUREMENT OF RICE

(in thousand tonnes)

State	Marketing Season 2013-14		Corresponding Period of last Year		Marketing Year (October-September)			
	(upto 30-04-2014)		2012-13		2012-13		2011-12	
	Procure-ment	Percentage to Total	Procure-ment	Percentage to Total	Procure-ment	Percentage to Total	Procure-ment	Percentage to Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	4276	15.49	4720	15.38	6464	19.00	7548	21.53
Chhatisgarh	5337	19.33	4801	15.65	4804	14.12	4115	11.74
Haryana	2397	8.68	2603	8.48	2609	7.67	2007	5.72
Maharashtra	132	0.48	177	0.58	192	0.56	190	0.54
Punjab	8106	29.36	8558	27.89	8558	25.16	7731	22.05
Tamil Nadu	663	2.40	470	1.53	481	1.41	1596	4.55
Uttar Pradesh	1108	4.01	2211	7.21	2286	6.72	3357	9.58
Uttarakhand	386	1.40	457	1.49	497	1.46	378	1.08
Others	5204	18.85	6683	21.78	8129	23.89	8138	23.21
Total	27609	100.00	30680	100.00	34020	100.00	35060	100.00

Source : Department of Food & Public Distribution.

Procurement of Wheat

The total procurement of Wheat in the current Marketing season i.e. 2014-2015 upto April, 2014 is 18.18 Million tonnes as against a total of 2016 Million tonnes of wheat procured during last year. The details are given in the following table:

PROCUREMENT OF WHEAT

(in thousand tonnes)

State	Marketing Season 2014-15		Corresponding Period of last Year		Marketing Year (April-March)			
	(upto 30-04-2014)		(2013-14)		2013-14		2012-13	
	Procure-ment	Percentage to Total	Procure-ment	Percentage to Total	Procure-ment	Percentage to Total	Procure-ment	Percentage to Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Haryana	5424	29.83	5304	26.30	5873	23.41	8665	22.71
Madhya Pradesh	4521	24.86	4750	23.56	6355	25.33	8493	22.26
Punjab	7416	40.79	9297	46.10	10897	43.43	12834	33.64
Rajasthan	731	4.02	568	2.82	1268	5.06	1964	5.15
Uttar Pradesh	89	0.49	237	1.18	683	2.72	5063	13.27
Others	2	0.01	9	0.04	16	0.06	1129	2.96
Total	18183	100.00	20165	100.00	25092	100.00	38148	100.00

Source: Department of Food & Public Distribution.

(iii) Commercial Crops

OILSEEDS AND EDIBLE OILS: The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 211.3 in April, 2014 showing an increase of 1.8 percent and 0.4 percent over the previous month and over the previous year. The Wholesale Price Index (WPI) of all individual oilseeds showed a mixed trend. The WPI of Copra (14.0 percent), Niger seed (3.1 percent), Soyabean (2.3 percent) and Groundnut seed (1.4 percent) increased over the previous month. However, the WPI for Gingelly seed (0.1 percent), Sunflower Seed (0.9 percent), Cotton Seed (1.0 percent) and Rape & Mustard Seed (1.3 percent) decreased over the previous month. However, the WPI of Safflower Seed remained unchanged over the previous month.

The Wholesale Price Index (WPI) of Edible Oils as a group stood 146.3 in April, 2014 showing a fall of 0.3 percent and 0.5 percent over the previous month and over the previous year. The WPI of Gingelly oil (4.6 percent) and Sunflower Oil (0.2 percent) increased over the previous month. However, the WPI of Cottonseed oil (0.5 percent), Soyabean Oil (0.6 percent) Copra oil (1.0 percent), Mustard Oil (2.5 percent) and Groundnut Oil (3.2 percent) decreased over the previous month.

FRUITS & VEGETABLE: The Wholesale Price Index (WPI) of Fruits & Vegetable as a group stood at 225.6 in April, 2014 showing an increase of 7.3 percent and 9.3 percent over the previous month and over the previous year.

POTATO: The Wholesale Price Index (WPI) of Potato stood at 227.2 in April, 2014 showing an increase of 21.2 percent and 31.6 percent over the previous month and over the previous year.

ONION: The Wholesale Price Index (WPI) of Onion stood 240.4 in April, 2014 showing a fall of 17.7 percent and 9.8 percent over the previous month and over the previous year.

CONDIMENTS & SPICES: The Wholesale Price Index (WPI) of Condiments & Spices(Group) stood at 266.0 in April, 2014 showing an increase of 0.5 percent and 15.7 percent over the previous month and over the previous year. The WPI of Black Pepper increased by 7.1 percent over the previous month. However, the WPI of Chillies (Dry) and Turmeric declined by 5.3 percent and 0.6 percent over the previous month.

RAW COTTON: The Wholesale Price Index (WPI) of Raw Cotton stood at 228.8 in April, 2014 showing a fall of 2.1 percent over the previous month. However, it increased by 7.5 percent over the previous year.

RAW JUTE: The Wholesale Price Index (WPI) of Raw Jute stood at 276.9 in April, 2014 showing an increase of 2.6 percent and 1.7 percent over the previous month and over the previous year.

WHOLESALE PRICE INDEX OF COMMERCIAL CROPS FOR THE MONTH OF APRIL, 2014

Commodity	LATEST	MONTH	YEAR	%VARIATION OVER	
	APR,14	MAR,14	APR,13	MONTH	YEAR
OIL SEEDS	211.3	207.5	210.4	1.8	0.4
Groundnut Seed	199.8	197.0	269.8	1.4	-25.9
Rape & Mustard Seed	186.4	188.8	188.2	-1.3	-1.0
Cotton Seed	175.9	177.7	169.5	-1.0	3.8
Copra (Coconut)	172.9	151.7	92.8	14.0	86.3
Gingelly Seed (Sesamum)	477.1	477.6	380.8	-0.1	25.3
Niger Seed	177.1	171.7	182.4	3.1	-2.9
Safflower (Kardi Seed)	150.4	150.4	166.4	0.0	-9.6
Sunflower	186.3	188.0	189.2	-0.9	-1.5
Soyabean	243.7	238.2	240.8	2.3	1.2
EDIBLE OILS	146.3	146.8	147.1	. -0.3	-0.5
Groundnut Oil	165.1	170.5	205.8	-3.2	-19.8
Cotton Seed Oil	181.1	182.1	163.8	. -0.5	10.6
Mustard & Rapeseed Oil	154.0	158.0	150.0	-2.5	2.7
Soyabean Oil	157.5	158.5	158.2	-0.6	-0.4
Copra Oil	122.2	123.4	115.4	-1.0	5.9
Sunflower Oil	127.9	127.7	132.8	0.2	-3.7
Gingelly Oil	193.9	185.3	195.6	4.6	-0.9
FRUITS & VEGETABLES	225.6	210.3	206.4	7.3	9.3
Potato	227.2	187.4	172.7	21.2	31.6
Onion	240.4	292.1	266.4	-17.7	-9.8
CONDIMENTS & SPICES	266.0	264.7	230.0	0.5	15.7
Black Pepper	661.9	618.3	498.4	7.1	32.8
Chillies(Dry)	266.4	281.4	261.2	-5.3	2.0
Turmeric	214.6	215.9	213.6	-0.6	0.5
Raw Cotton	228.8	233.7	212.9	-2.1	7.5
Raw Jute	276.9	270.0	272.2	2.6	1.7

PART - II—Statistical Tables

A. Wages

1. Daily Agricultural Wages in Some States (Category-wise)

(In Rs.)

State/Distt.	Centre	Month & Year	Daily Normal Working Hours	Field Labour		Other Agri. Labour		Herdsman		Skilled Labour		
				M	W	M	W	M	W	Carpenter	Blacksmith	Cobbler
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Andhra Pradesh												
Krishna	Ghantasala	Oct., 13	8	200	150	300	NA	150	NA	NA	NA	NA
Guntur	Tadikonda	Oct., 13	8	283	200	300	NA	180	NA	NA	NA	NA
Rangareddy	Arutla	Oct., 13	8	231	175	225	NA	NA	NA	275	250	NA
Karnataka												
Bangalore	Harisandra	Sep., 13	8	250	200	200	175	200	180	300	250	NA
Tumkur	Gidlahali	Nov & Dec., 13	8	175	165	180	170	180	170	200	180	NA
Maharashtra												
Nagpur	Mauda	Feb., 12	8	100	100	NA	NA	NA	NA	NA	NA	NA
Ahmednagar	Akole	Feb., 12	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jharkhand												
Ranchi	Gaitalsood	April, 12	8	100	100	NA	90	90	NA	58	58	NA

1.1 Daily Agricultural Wages in Some States (Operation-wise)

(In Rs.)

State/Distt.	Centre	Month and Year	Type of Labour	Normal Daily Working hours	Ploughing	Sowing	Weeding	Harvesting	Other Agri. Labour	Herdsman	Skilled Labour		
											Carpenter	Blacksmith	Cobbler
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Assam													
Barpeta	Loharapara	March, 12	M	8	180	180	180	180	180	NA	180	180	180
			W	8	NA	NA	160	160	160	NA	NA	NA	NA
Bihar													
Muzaffarpur	Bhalui Rasul	April to June, 12	M	8	130	120	80	130	150	120	200	180	250
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shekhpura	Kutaut	May & June, 12	M	8	NA	NA	185	NA	185	NA	245	NA	NA
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chhattisgarh													
Dhamtari	Sihaba	Jan., 14	M	8	400	100	NA	NA	80	80	250	100	80
			W	8	NA	80	NA	NA	70	80	150	100	NA
Gujarat													
Rajkot	Rajkot	Jan., 13	M	8	209	225	150	170	147	150	360	360	240
			W	8	NA	169	150	179	145	142	NA	NA	NA
Dahod	Dahod	Jan., 13	M	8	100	100	100	100	100	NA	200	144	150
			W	8	NA	100	100	100	100	NA	NA	NA	NA
Haryana													
Panipat	Ugarakheri	Dec., 13	M	8	300	300	300	300	300	NA	NA	NA	NA
			W	8	NA	250	200	250	250	NA	NA	NA	NA

1.1 DAILY AGRICULTURAL WAGES IN SOME STATES (OPERATION-WISE)—*Contd.*

(in Rs.)

State/Distt.	Centre	Month & Year	Type of Labour	Normal Daily Working Hours	Ploughing	Sowing	Weeding	Harvesting	Other Agri. Labour	Herdsman	Skilled Labour		
											Carpenter	Blacksmith	Cobbler
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Himachal Pradesh													
Mandi	Mandi	Sep., 13	M	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kerala													
Kozhikode	Koduvally	Jan., 14	M	4-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
			W	4-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Palakkad	Elappally	Jan., 14	M	4-8	400	350	NA	450	433	NA	550	NA	NA
			W	4-8	NA	NA	300	450	250	NA	NA	NA	NA
Madhya Pradesh													
Hoshangabad	Sangarkhera	Jan., 14	M	8	150	130	150	150	125	100	NA	NA	NA
			W	8	NA	130	150	150	125	100	NA	NA	NA
Satna	Kotar	Jan., 14	M	8	250	NA	150	150	250	150	350	350	350
			W	8	NA	NA	150	150	250	150	NA	NA	NA
Shyopurkala	Vijaypur	Jan., 14	M	8	NA	200	200	NA	NA	NA	250	250	NA
			W	8	NA	200	200	NA	NA	NA	NA	NA	NA
Odisha													
Bhadrak	Chandbali	Jan., 14	M	8	180	130	130	250	216.66	150	350	200	200
			W	8	NA	120	120	200	180	140	NA	NA	NA
Ganjam	Aska	Jan., 14	M	8	250	200	200	200	225	200	350	350	200
			W	8	NA	150	150	100	1400	100	NA	NA	NA
Punjab													
Ludhiyana	Pakhowal	June, 08	M	8	NA	NA	90	95	NA	99.44	NA	NA	NA
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rajasthan													
Barmer	Vishala	Dec., 13	M	8	310	310	NA	NA	NA	100	400	230	300
			W	8	310	310	NA	NA	NA	NA	NA	230	NA
Jalore	Panwa	Dec., 13	M	8	NA	NA	200	NA	NA	200	350	300	NA
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
*Tamil Nadu**													
Thanjavur	Pulvarnatham	Sep., 13	M	8	257	294	NA	300	297.93	NA	NA	NA	NA
			W	8	NA	NA	119.29	112.5	126.43	NA	NA	NA	NA
Tirunelveli	Malayakulam	Sep., 13	M	8	NA	NA	NA	300	388.71	NA	NA	NA	NA
			W	8	NA	NA	140	132	NA	NA	NA	NA	NA
Tripura													
State average		March, 12	M	8	238	201	203	209	207	199	253	235	240
			W	8	NA	154	152	154	154	149	NA	NA	NA
*Uttar Pradesh**													
Meerut	Ganeshpur	Jan., 13	M	8	205	207	206	204	206	NA	320	NA	NA
			W	8	NA	180	180	180	180	NA	NA	NA	NA
Aurraiya	Aurraiya	Jan., 13	M	8	150	193	192	150	193	NA	300	NA	NA
			W	8	NA	160	167	120	167	NA	NA	NA	NA
Chandauli	Chandauli	Jan., 13	M	8	150	150	125	125	125	NA	271	NA	NA
			W	8	NA	150	125	125	125	NA	NA	NA	NA

M-Man, W-Woman

N. A. —Not Available, N. R. —Not Reported

*States reported district average daily wages

B. PRICES

2. Wholesale Prices of Certain Agricultural Commodities and Animal Husbandry Products at Selected Centres in India

(Month-end Prices in Rupees)

Commodity	Variety	Unit	State	Centre	Apr.-14	Mar.-14	Apr.-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Wheat	PBW 343	Quintal	Punjab	Amritsar	NA	1600	1350
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	1420	1650	1355
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	1519	1470	1555
Jowar	—	Quintal	Maharashtra	Mumbai	2600	2600	2400
Gram	No III	Quintal	Madhya Pradesh	Sehore	2560	2731	—
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1315	1380	1260
Gram Split	—	Quintal	Bihar	Patna	4480	4480	5200
Gram Split	—	Quintal	Maharashtra	Mumbai	4500	4600	6300
Arhar Split	—	Quintal	Bihar	Patna	6800	6700	5800
Arhar Split	—	Quintal	Maharashtra	Mumbai	7400	7200	6800
Arhar Split	—	Quintal	NCT of Delhi	Delhi	6340	6340	6500
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	6400	6400	6400
Gur	—	Quintal	Maharashtra	Mumbai	3400	3300	3450
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	—	4200	3400
Gur	Balti	Quintal	Uttar Pradesh	Hapur	2475	2425	2650
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	3215	3215	3250
Mustard Seed	Black	Quintal	West Bengal	Raniganj	3450	3800	4300
Mustard Seed	—	Quintal	West Bengal	Kolkata	3500	3600	3750
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	4115	4115	4125
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	—	3730	3380
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	1500	1500	1600
Cotton Seed	MCU 5	Quintal	Tamil Nadu	Coimbatore	—	1550	1550
Castor Seed	—	Quintal	Andhra Pradesh	Hyderabad	3550	3600	3200
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	6250	5800	6325
Copra	FAQ	Quintal	Kerala	Alleppey	10550	8850	4225
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	—	3800	4000
Groundnut	—	Quintal	Maharashtra	Mumbai	6000	6000	7800
Mustard Oil	—	15 Kg.	Uttar Pradesh	Kanpur	1230	1208	1249
Mustard Oil	Ordinary	15 Kg.	West Bengal	Kolkata	1200	1260	1155
Groundnut Oil	—	15 Kg.	Maharashtra	Mumbai	1095	1155	1800
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	1275	1298	1800
Linseed Oil	—	15 Kg.	Uttar Pradesh	Kanpur	1455	1380	1298
Castor Oil	—	15 Kg.	Andhra Pradesh	Hyderabad	1223	1238	1110
Sesamum Oil	—	15 Kg.	NCT of Delhi	Delhi	2245	2250	1700
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	2730	2775	3150
Coconut Oil	—	15 Kg.	Kerala	Cochin	2310	1920	938
Mustard Cake	—	Quintal	Uttar Pradesh	Kanpur	1825	1815	1710
Groundnut Cake	—	Quintal	Andhra Pradesh	Hyderabad	3143	2750	3214
Cotton/Kapas	NH44	Quintal	Andhra Pradesh	Nandyal	4600	4450	4000
Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	4016	3826	4200
Jute Raw	TD 5	Quintal	West Bengal	Kolkata	2985	2900	2809
Jute Raw	W5	Quintal	West Bengal	Kolkata	2955	2850	2805

2. WHOLESALE PRICES OF CERTAIN AGRICULTURAL COMMODITIES AND ANIMAL HUSBANDRY PRODUCTS AT SELECTED CENTRES IN INDIA —*Contd.*

(Month-end Prices in Rupees)

Commodity	Variety	Unit	State	Centre	April-14	Mar.-14	Apr.-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oranges	—	100 No.	NCT of Delhi	Delhi	542	542	625
Oranges	Big	100 No.	Tamil Nadu	Chennai	650	580	550
Oranges	Nagpuri	100 No.	West Bengal	Kolkata	NA	600	NA
Banana	—	100 No.	NCT of Delhi	Delhi	375	333	200
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	455	454	380
Cashewnuts	Raw	Quintal	Maharashtra	Mumbai	58000	56000	46000
Almonds	—	Quintal	Maharashtra	Mumbai	63000	63000	45800
Walnuts	—	Quintal	Maharashtra	Mumbai	65000	65000	58000
Kishmish	—	Quintal	Maharashtra	Mumbai	14000	13000	12300
Peas Green	—	Quintal	Maharashtra	Mumbai	4600	4600	3300
Tomatoes	Ripe	Quintal	Uttar Pradesh	Kanpur	1400	1115	785
Ladyfinger	—	Quintal	Tamil Nadu	Chennai	1800	2000	3000
Cauliflower	—	100 No.	Tamil Nadu	Chennai	1500	1350	1100
Potatoes	Red	Quintal	Bihar	Patna	1400	985	685
Potatoes	Desi	Quintal	West Bengal	Kolkata	1280	1000	920
Potatoes	Sort I	Quintal	Tamil Nadu	Mettuppalayam	—	—	2018
Onions	Pole	Quintal	Maharashtra	Nashik	850	800	700
Turmeric	Nadan	Quintal	Kerala	Cochin	10000	11000	10500
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	9800	9600	9500
Chillies	—	Quintal	Bihar	Patna	8500	8800	7600
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	66500	50000	32500
Ginger	Dry	Quintal	Kerala	Cochin	35000	24000	17500
Cardamom	Major	Quintal	NCT of Delhi	Delhi	126000	126000	90000
Cardamom	Small	Quintal	West Bengal	Kolkata	98000	98000	110000
Milk	Cow	100 Liters	NCT of Delhi	Delhi	NA	NA	3600
Milk	Buffalo	100 Liters	West Bengal	Kolkata	3600	3600	3200
Ghee Deshi	Deshi No. 1	Quintal	NCT of Delhi	Delhi	28681	28681	27347
Ghee Deshi	—	Quintal	Maharashtra	Mumbai	34500	34000	25500
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	31250	30650	27650
Fish	Rohu	Quintal	NCT of Delhi	Delhi	10000	10000	9500
Fish	Pomphrets	Quintal	Tamil Nadu	Chennai	32500	32000	29000
Eggs	Madras	1000 No.	West Bengal	Kolkata	3500	4500	3500
Tea	—	Quintal	Bihar	Patna	20100	20100	19900
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	—	13000	9000
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	—	26000	26000
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	—	14000	14000
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	4400	2950	2700
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	3600	2825	2600
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	3900	3800	3450
Rubber	—	Quintal	Kerala	Kottayam	13100	14300	15000
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	29700	29700	28000

3. Month-end Wholesale Prices of Some Important Agricultural Commodities in International Markets During Year, 2014

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	Apr.
Cardamom	Guatmala Bold Green	U.K.	—	Dollar/M.T.	9000.00	9000.00	9000.00	9000.00
				Rs./Qtl.	56079.00	55818.00	54216.00	55008.00
Cashew Kernels	Spot U.K. 320s	U.K.	—	Dollar/1bs	3.46	3.44	3.46	3.40
				Rs./Qtl.	47516.61	47022.08	45938.06	45800.88
	Spot U.K. 320s	U.K.	—	Dollar/M.T.	7648.65	7614.88	7623.07	7497.06
				Rs./Qtl.	47658.74	47227.49	45921.37	45822.03
Castor Oil	Any Origin ex tank Rotterdam	Nether-lands	—	Dollar/M.T.	1600.00		1700.00	1675.00
				Rs./Qtl.	9969.60	—	10240.80	10237.60
Celery Seed	ASTA cif	India	—	Dollar/M.T.	1500.00	1500.00	1500.00	1500.00
				Rs./Qtl.	9346.50	9303.00	9036.00	9168.00
Chillies	Birds eye 2005 crop	Africa	—	Dollar/M.T.	4100.00	4100.00	4100.00	4100.00
				Rs./Qtl.	25547.10	25428.20	24698.40	25059.20
Cinnamon Bark		Mada-gascar	—	Dollar/M.T.	1100.00	1100.00	1100.00	1276.00
				Rs./Qtl.	6854.10	6822.20	6626.40	7798.91
Cloves	Singapore	Mada-gascar	—	Dollar/M.T.	13250.00	13250.00	12600.00	12600.00
				Rs./Qtl.	82560.75	82176.50	75902.40	77011.20
Coconut Oil	Crude Phillipine/ Indonesia	Nether-lands	—	Dollar/M.T.	1280.00	1420.00	1355.00	1375.00
				Rs./Qtl.	7975.68	8806.84	8162.52	8404.00
Copra	Phillipines cif Rotterdam	Philli-pine	—	Dollar/M.T.	806.50	895.50	851.00	867.00
				Rs./Qtl.	5025.30	5553.89	5126.42	5299.10
Corriander		India	—	Dollar/M.T.	1500.00	1500.00	1500.00	1500.00
				Rs./Qtl.	9346.50	9303.00	9036.00	9168.00
Cummin Seed		India	—	Dollar./M.T.	2250.00	2250.00	2250.00	2250.00
				Rs./Qtl.	14019.75	13954.50	13554.00	13752.00
Fennel Seed		India	—	Dollar/M.T.	2600.00	2600.00	2600.00	2600.00
				Rs./Qtl.	16200.60	16125.20	15662.40	15891.20
Ginger	Split	Nigeria	—	Dollar/M.T.	1800.00	1800.00	2300.00	2300.00
				Rs./Qtl.	11215.80	11163.60	13855.20	14057.60
Groundnut Kernels	US 2005, 40/50	European Ports	—	Dollar/M.T	1250.00	1250.00	1220.00	1200.00
				Rs./Qtl.	7788.75	7752.50	7349.28	7334.40
Groundnut Oil	Crude Any Origin cif Rotterdam	U.K.	—	Dollar/M.T	1500.00	1500.00	1500.00	1180.00
				Rs./Qtl.	9346.50	9303.00	9036.00	7212.16
Lentils	Turkish Red Split Crop 1+1 water	U.K.	—	Pound/M.T	606.12	599.09	602.12	594.90
				Rs./Qtl.	6230.91	6201.78	6023.61	6112.00
Maize		U.S.A	Chic-ago	C/56 lbs.	427.50	455.50	484.50	503.50
				Rs./Qtl	1046.85	1110.23	1147.02	1209.42
Oats		Canada	Winni-peg	Dollar/M.T.	465.48	569.22	445.04	446.35
				Rs./Qtl.	2900.41	3530.30	2680.92	2728.09
Palm Kernal Oil	Crude Malaysia/ Indonesia	Nether-lands	— —	Dollar/M.T.	1170.00	1375.00	1350.00	1300.00
				Rs./Qtl.	7290.27	8527.75	8132.40	7945.60

3. Month-end Wholesale Prices of Some Important Agricultural Commodities in International Markets During Year, 2014—*Contd.*

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	Apr.
Palm Oil	Crude Malaysian/ Sumatra	Nether-lands	— —	Dollar/M.T. Rs./Qtl.	855.00 5327.51	950.00 5891.90	923.00 5560.15	903.00 5519.14
Rapeseed	Canola	Canada	Winni-peg	Can Dollar/M.T	423.80 2366.92	415.50 2316.83	458.20 2502.23	445.80 2472.41
	UK delivered rapeseed delivered	U.K.	—	Pound/M.T. Rs/Qtl.	278.00 2857.84	304.00 3147.01	325.00 3251.30	330.00 3390.42
Rapeseed Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T. Rs/Qtl.	668.00 6867.04	681.00 7049.71	706.00 7062.82	711.00 7304.81
Soyabean Meal	U.K. produced 49% Oil & protein	U.K.	—	Pound/M.T. Rs./Qtl.	366.00 3762.48	410.00 4244.32	412.00 4121.65	384.00 3945.22
Soyabean Oil		U.S.A.	—	C/lbs Rs./Qtl.	37.10 5094.99	41.20 5631.71	40.73 5407.68	42.50 5725.11
	Refined bleached and deodorised	U.K.	—	Pound/M.T. Rs/Qtl.	652.00 6702.56	695.00 7194.64	683.00 6832.73	686.00 7047.96
Soyabeans	US No. 2 yellow	Nether-lands	Chi-cago	Dollar/M.T. Rs./Qtl	563.90 3513.66	492.20 3052.62	504.70 3040.31	517.30 3161.74
		U.S.A.	—	C/60 lbs Rs./Qtl	1269.25 2902.49	1407.25 3209.09	1440.00 3183.56	1468.50 3294.00
Sunflower Seed Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T. Rs./Qtl	710.00 7298.80	732.00 7577.66	696.00 6962.78	720.00 7397.28
Tallow	High grade delivered	U.K.	Lon-don	Pound/M.T. Rs./Qtl	465.00 4780.20	445.00 4606.64	445.00 4451.78	445.00 4571.93
Turmeric	Madras finger spot/cif	India	—	Dollar/M.T. Rs./Qtl	850.00 5296.35	850.00 5271.70	850.00 5120.40	850.00 5195.20
Walnuts	Indian light halves	U.K.	—	Pound/M.T. Rs./Qtl	8130.00 83576.40	8130.00 84161.76	8130.00 81332.52	8130.00 83527.62
Wheat		U.S.A.	Chic-ago	C/60 lbs Rs../Qtl	551.50 1261.16	600.00 1365.68	696.75 1540.38	676.50 1517.46

Source : Public Ledger

Exchange Rate

	Jan.	Feb.	Mar.	Apri.
US Dollar	62.31	62.02	60.24	61.12
CAN Dollar	55.85	55.76	54.61	55.46
UK Pound	102.80	103.52	100.04	102.74

C. CROP PRODUCTION

4. Sowing and Harvesting Operations Normally in Progress During June, 2014

State	Sowing	Harvesting
(1)	(2)	(3)
Andhra Pradesh	Winter Rice, Jowar (K), Bajra, Maize (K), Ragi (K), Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Groundnut, Sesamum, Cotton, Turmeric,	Autumn Rice.
Assam	Winter Rice, Castorseed.	Autumn Rice, Summer Potato (Hills).
Bihar	Autumn Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Sesamum, Cotton, Jute, Mesta. Sannhemp.	Summer rice.
Gujarat	Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Chillies (Dry), Groundnut, Sesamum, Cotton, Turmeric, Sannhemp.	—
Himachal Pradesh	Summer Rice, Maize, Ragi, Small Millets (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Chillies (Dry), Tobacco, Groundnut, Sesamum, Turmeric.	Wheat, Winter Potato (Hills), Onion
Jammu & Kashmir	Autumn Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Urad (K), Mung (K), Other Kharif Pulses, Potato, Chillies (Dry), Tobacco, Groundnut, Sesamum, (Late) Jute, Sannhemp.	Whear, Barely, Small Millet (R), Tobacco, Rapeseed and Mustard, Onion.
Karnataka	Autumn Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Groundnut, Castorseed, Sesamum, Cotton Mesta, Sweet Potato, Turmeric, Sannhemp, Nigerseed, Onion, Tapioca.	—
Kerala	Autumn Rice, Ragi, Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Sweet Potato.	Tapioca.
Madhya Pradesh	Autumn Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Mung (K), Other Kharif Pulses, Summer Potato, Ginger, Chillies (Dry), Tobacco, Groundnut, Castorseed, Sesamum, Cotton, Jute, Mesta, Sweet Potato, Turmeric, Sannhemp.	Onion
Maharashtra	Winter Rice, Jowar (K), Bajra, Maize, Ragi Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Groundnut, Castorseed, Sesamum, Cotton, Mesta, Turmeric, Sannhemp, Nigerseed.	—
Manipur	Autumn Rice, Winter Rice, Tur (K), Groundnut Castorseed, Sesamum, Cotton.	—
Orissa	Autumn Rice, Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Chillies (Dry), Tobacco, Groundnut, Castorseed, Cotton, Jute, Mesta.	Summer Rice, Chillies (Dry)
Punjab and Haryana	Autumn Rice, Summer Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies Dry Groundnut, Castorseed, Cotton, Sweet Potato,Turmeric, Sannhemp.	Wheat, Potato (Hills), Summer Potato Tobacco, Onion.

4. SOWING AND HARVESTING OPERATIONS NORMALLY IN PROGRESS DURING JUNE, 2014—*Contd.*

State	Sowing	Harvesting
(1)	(2)	(3)
Rajasthan	Jowar (K), Bajra, Maize Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses, Chillies (Dry), Tobacco, Groundnut, Castorseed, Cotton, Sannhemp.	Small Millets (R)
Tamil Nadu	Autumn Rice, Jowar (K), Bajra, Ragi, Small Millets (K), Summer Potato (Hills) Sugarcane, Chillies (Dry), Castorseed, Seasamum, Cotton, Turmeric, Sannhemp, Onion, Tapioca.	Summer Rice, Jowar (R), Sugar, Chillies (Dry), Cotton, Sannhemp, Onion.
Tripura	Winter Rice, Urad (K), Mung (K), Sesamum Mesta.	—
Uttar Pradesh	Autumn Rice, Winter Rice, Jowar (K), Bajra, Maize, Ragi, Small Millets (K), Tur (K), Urad (K), Mung (K), Other Kharif Pulses (Moth), Ginger, Chillies (Dry), Groundnut, Castorseed, Cotton, Jute Mesta, Sweet Potato, Sannhemp, Nigerseed.	Sugarcane, Onion
West Bengal	Autumn Rice, Maize, Tur (K), Ginger, Chillies (Dry), Mesta.	Chillies (Dry), Sesamum.
Delhi	Jowar (K), Bajra, Cotton.	
Andaman & Nicobar	Autumn Rice, Winter Rice.	

(K)—Kharif. (R)—Rabi.

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