AGRICULTURAL SITUATION

IN

INDIA

MAY, 2013

Agricultural Situation
in India

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 :

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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.

NOTE TO CONTRIBUTORS

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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

(i) Trends in Foodgrain Prices:

During the month of April, 2013 the All India Index Number of Wholesale Price (2004-05=100) of Foodgrains declined by 0.09 per cent from 216.7 in March, 2013 to 216.5 in April 2013.

The Wholesale Price Index Number of Cereals declined by 0.14 percent from 213.4 to 213.1 whereas the WPI of Pulses showed no change.

The Wholesale Price Index Number of Wheat declined by 1.02 per cent from 206.3 to 204.2 while that of Rice increased by of 0.39 per cent from 206.6 to 207.6 during the same period.

(ii) Weather. Rainfall and Reservoir situation during May, 2013.

India Meteorological Department has declared onset of monsoon over Kerala on 1st June, 2013.

Cumulative Pre-Monsoon (March to May) Rainfall for the country as a whole during the period 01st March to 29th May, 2013 is 27% less than LPA. Rainfall in the four broad geographical divisions of the country during the above period was (-)47% in North West India, (-)24% in Central India, (-)26% in South Peninsula and (-) 17% in East & North East India.

Out of a total of 36 meteorological sub-divisions, 14 sub-divisions constituting 38% of the total area of the country received excess/normal rainfall, 22 sub-divisions constituting 62% of the total area of the country received deficient/scanty rainfall.

Central Water Commission monitors 85 major reservoirs in the country which have a total live capacity of 154.88 BCM at Full Reservoir Level (FRL). Current live storage in these reservoirs as on 30th May, 2013 was 32.19 BCM as against 31.00 BCM on 30-05-2012(1ast year) and 26.39 BCM of normal storage (average storage of the last 10 years). Current year's storage is 104% of the last year's and 122% of the normal storage.

Sowing of Sugarcane and Jute & Mesta for Kharif 2013-14 is in progress. As per latest information 41.24 lakh ha. under Sugarcane as compared to 45.98 lakh ha. in the corresponding year 2012-13 and 7.83 lakh ha. under Jute and Mesta as compared to 7.891akh ha. in the corresponding year 2012-13.

Agriculture :—

Procurement: Procurement of rice as on 1st April, 2013 was 29.31 million tonnes of Kharif Marketing Season as against 28.98 million tonnes procured last year in the corresponding period respectively. This represents an increase of 1.14 per cent. Wheat procurement during Rabi Marketing Season 2013-14 is 0.57 million (tonnes as compared to 0.78 million tonnes during the corresponding period last year.

TABLE 1— Procurement in Million Tonnes

	2010-11	2011-12	2012-13	2013-14
Rice	34.20	35.04	30.94*	-
Wheat	22.51	28.34	38.15	21.64*
Total	**56.71**	**63.38**	**69.09**	**21.64**

* Position as on 3.5-2013

Off-take : Off-take of rice during the month of March, 2013 was 30.42 lakh tonnes. This comprises 19.42 lakh tonnes under TPDS and 11.00 lakh tonnes under other schemes during February 2013. In respect of wheat, the total off take' was 34.21 lakh tonnes comprising of 13.09 lakh tonnes under TPDS and 21.12 lakh tonnes under other schemes.

Stocks : Stocks of food-grains (rice and wheat) held by FCI as on May I, 2013 were 77.46 million tonnes, which is higher by 8.91 per cent over the level of 71.12 million tonnes as on May 1, 2012.

TABLE 2—Off-take and Stocks of Foodgrains (Million Tonnes)

	Off-take			Stocks	
	2010-11	2011-12	2012-13(P)	May 1, 2012	May 1, 2013
Rice	29.76	32.10	32.54	32.92	34.73
Wheat	21.92	22.98	23.27	38.20	42.73
Total	**51.68**	**55.08**	**55.81**	**71.12**	**77.46**

P=Provisional.

Growth of Economy :—

As per the Provisional Estimates of the Central Statistics Office (CSO), growth in Gross Domestic Product (GDP) at factor cost at constant (2004-05 prices) is estimated at 5.0 per cent in 2012-13 with agriculture, industry and services registering growth rates of 1.9 per cent, 2.1 per cent and 7.1 per cent respectively. As per the First Revised Estimates, the growth in GDP at factor cost at constant (2004-05) prices is estimated at 6.2 per cent in 2011-12. At disaggregated level, this (First Revised 2011-12) comprises growth of 3.6 per cent in agriculture and allied activities, 3.5 per cent in industry and 8.2 per cent in services. The growth in GDP is placed at 4.8 per cent in the fourth quarter of 2012-13.

TABLE 3— Growth of GDP at Factor Cost by Economic Activity

(at 2004-05 Prices)

Industry	Growth			Percentage Share in GDP		
	2010-11	2011-12 1R	2012-13 (PE)	2010-11	2011-12 1R	2012-13 (PE)
1. Agriculture, forestry and fishing	7.9	3.6	1.9	14.5	14.1	13.7
2. Industry	**9.2**	**3.5**	**2.1**	**28.2**	**27.5**	**26.7**
a. Mining and quarrying	4.9	-0.6	-0.6	2.2	2.1	2.0
b. Manufacturing	9.7	2.7	1.0	16.2	15.7	15.1
c. Electricity, gas and water supply	5.2	6.5	4.2	1.9	1.9	1.9
d. Construction	10.2	5.6	4.3	7.9	7.9	7.8
3. Services	**9.8**	**8.2**	**7.1**	**57.3**	**58.4**	**59.6**
a. Trade, hotels, transport and communication	12.3	7.0	6.4	27.3	27.5	27.8
b. Financing, insurance, real estate and business services	10.1	11.7	8.6	17.2	18.1	18.7
c. Community, social and personal services	4.3	6.0	6.6	12.8	12.8	13.0
4. GDP at factor cost	**9.3**	**6.2**	**5.0**	**100.0**	**100.0**	**100.0**

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

TABLE 4—Quarterly Growth Estimate of GDP (Year-on-year in per cent)

	Sector	2011-12				2012-13			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Agriculture, forestry & fishing	5.4	3.2	4.1	2.0	2.9	1.7	1.8	1.4
2	Industry	5.7	3.8	2.6	2.1	1.8	1.3	2.5	2.7
a	Mining & quarrying	-0.4	-5.3	-2.6	5.2	0.4	1.7	-0.7	-3.1
b	Manufacturing	7.4	3.1	0.7	0.1	-1.0	0.1	2.5	2.6
c	Electricity, gas & water supply	6.6	8.4	7.7	3.5	6.2	3.2	4.5	2.8
d	Construction	3.8	6.5	6.9	5.1	7.0	3.1	2.9	4.4
3	Services	8.9	8.5	8.3	7.3	7.7	7.6	6.7	6.6
a	Trade, hotels, transport & communication	9.5	7.0	6.9	5.1	6.1	6.8	6.4	6.2
b	Financing, insurance, real estate & business services	11.6	12.3	11.41	11.3	9.3	8.3	7.8	9.1
c	Community, social & personal services	3.5	6.5	6.8	6.8	8.9	8.4	5.6	4.0
4	**GDP at factor cost**	**7.5**	**6.5**	**6.0**	**5.1**	**5.4**	**5.2**	**4.7**	**4.8**

Source: CSO.

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Change and Instability in Area and Production of Groundnut Crop in Andhra Pradesh

K. Solmon Raju Paul*

Abstract: The study measured the change and instability in area, production and yield of ground nut crop in Andhra Pradesh based on secondary data during 1995-96 to 2010-2011The study analyzed that area, production and productivity had decreased during the study period i.e. 1995-96 to 2010-2011. The compound growth rates of area production and productivity of groundnut over the period shows negatively non significant. The study also confirms the magnitude of variability in production of groundnut. The synchronized movements in area and productivity both was responsible for low instability / variability in groundnut of Andhra Pradesh. Further, the study conducted a decomposition analysis to determine the contribution of different components to the growth rate. The decomposition analysis revealed that in the total production of groundnut was completely due to the change in area under the crop as the yield and interaction effects were very small.

Key words: Groundnut, change and instability, Compound Growth Rate, Decomposition Analysis.

Oil seed production has fallen short of the requirement as a result of increasing per capita consumption in the recent past. This necessitated a heavy impact at the cost of huge foreign exchange.

Ground nut ranks first in India among oil seed crops. It covers 45% of area and accounts for 55% of production of the total oil seeds. India is rated as the third largest producer of groundnut in the world with annual production of over 5-6 million tons. Gujarat, Andhra Pradesh, Tamil Nadu and Karnataka are the leading producers in the country and accounts for nearly 75% of the total output. Groundnut contributes to nearly 25% of total oil seed production in the country. Nearly 75% output occurs in June-September and the rest during November-March known as Kharif and Rabi seasons respectively.

The studies undertaken by research workers at various times mostly related to cereal crops like paddy and wheat very limited work has been done on groundnut which is the major oil seed crop of the Andhra Pradesh. Thus, considering the importance and need, the present study has been taken. This is with the above consideration in view, that the present study has been taken up to analyze the trends in the production of groundnut in A.P.

The specific objectives of the study are as follows :

1. To study the trend and growth of area, production and productivity of Groundnut in A. P.

2. To examine the contribution of area productivity towards increasing the production; the magnitude and instability for the groundnut crop.

Materials and method :

The time series data on area, production and productivity of groundnut from 1995-96 to 2010-2011 were collected from various publications and websites of Directorate of Economics and Statistics Government of India, Agricultural Statistics at a glance and Bureau of Economics and Statistics of Andhra Pradesh State.

Analytical Procedures

In order to examine the nature of change, instability and degree of relationship in area, production and yield of groundnut crop in Andhra Pradesh, various statistical measures, such as mean, correlation coefficient and coefficient of variation were worked out.

The production of groundnut is likely to be influenced by the area in order to estimate the parameter, simple linear regression models were fitted to examine the change of production by the change of area.

The model can be expressed as:

$$Y = a + Bx - e \qquad (1)$$

Where, Y= Production in Ton

A = Intercept, b= Regression Coefficient

x= Area in ha

The exponential function $Y = A B^t$ was fitted to the data to compute the compound growth rates.

$$\text{Compound growth rate (r)} = (\text{antilog } b - 1) * 100 \qquad (2)$$

The compound growth rates were tested for their significance by the student's 't' test.

An index of instability was computed for examining the nature and degree of instability in area, production and

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yield in Andhra Pradesh. The Coefficient of Variation (CV) was worked out for area, production and yield to measure of variability. However, simple CV does not explain properly the trend component inherent in the time series data. Alternatively, the coefficient of variation around the trend line (CV t) rather than co- efficient of variation around the mean (CV) was suggested by Cuddy-Della Valle (1978) as a better measure of variability.

The instability index (IX), is given by the expression:

$$IX = CV \ (1-R^2)1/2 \qquad (4)$$

Where, CV = coefficient of variation (in per cent)

R^2 = Coefficient of determination from a time trend regression adjusted by the number of degrees of freedom.

To measure the contribution of area and productivity towards increasing production of groundnut decomposition analysis was used.

$$P = A0 \ (Y_n - Y_0) + Y0 \ (A_n - A_0) + \Delta A \Delta Y \qquad (5)$$

Where, P = change in production Y0 = Area in base year

Y_0 = yield in the base year Y_n = yield in the current year

A_n = area in the current year ΔA = change in area $(A_n A_0)$

ΔY = change in the yield $(Y_n - Y_0)$

Where, the first term is the productivity contribution, second term is the area contribution and the last term is the interaction effect.

Results and discussion:

In order to overcome the problem of different units of physical output while analyzing the growth pattern of groundnut crop. Index number were constructed. Table 1 shows the index numbers of area, production and productivity of groundnut of Andhra Pradesh during the period 1995-96 to 2010-2011 with the base year as the triennium 1995-96 to 1997-98.

These indices provide an idea about the growth in area, production and productivity of groundnut in Andhra Pradesh showed a decreasing trend over the study period i.e. 1995-96 to 2010-2011.The percentage change over the year during the study period for the area, production and productivity of groundnut in Andhra Pradesh had negative values except 7 years i.e. 1998-99, 2000-01,2003-04,2004-05,2005-06,2007-08 and 2010-2011.

TABLE 1—Area Production and Productivity of Groundnut of Andhra Pradesh Over the Period from 1995-96 to 2010-2011 Base Year Index Triennium 1995-96 to 1997-98

Year	Area	% change over the year	Production	% change over the year	Productivity	% change over the year
1995-1996	106.53		135.17		129.38	
1996-1997	105.47	-0.991	105.30	-22.095	101.71	-21.386
1997-1998	88.00	-16.561	59.53	-43.472	68.90	-32.258
1998-1999	95.59	8.615	110.97	86.419	118.34	71. 746
1999-2000	86.13	-9.890	56.08	-49.466	66.39	-43.900
2000-2001	89.92	4.401	110.35	96.786	125.23	88.633
2001-2002	81.14	-9.765	64.37	-41.671	80.82	-35.459
2002-2003	70.54	-13.069	42.22	-34.400	61.14	-24.357
2003-2004	71.64	1.565	50.77	20.244	72.18	18.068
2004-2005	88.34	23.309	84.40	66.227	97.45	35.000
2005-2006	90.02	1.901	70.34	-16.656	79.62	-18.294
2006-2007	64.01	-28.891	38.26	-45.608	60.92	-23.489
2007-2008	86.13	34.558	134.09	250.471	158.48	160.144
2008-2009	84.74	-1.616	50.10	-62.634	60.26	-61.974
2009-2010	62.43	-26.331	51.85	3.494	84.65	40.472
2010-2011	77.83	24.673	75.03	44.687	98.21	16.021

Correlation test: A commonly employed method for measuring the changing attitude of area and production of any crop is correlation. This procedure built on the rationale that if area influencing the production the numerical evidence of this relationship is in Table 2. The correlation Coefficient(r) of area and production of groundnut over the period i.e. 1995-96 to 2010-2011 is 0.742, which is highly significant at 1 % level implying that the increment of area strongly affect the production of groundnut to increase.

TABLE 2—Relationship between Area and Production of Groundnut

Criteria	Value of Correlation@	P(T<t) two- tail
Area V s Production.	0.742	0.001

Regression analysis :The simple linear regression function was fitted for estimating the response of production of groundnut due to the change of their respective area. it was observed from the Table 3 that the Production of Groundnut was significantly increase by 1.7574, by unit change in area.

TABLE 3—Testing Dependence of Production on Groundnut Area

Constant value	Regression Coefficient	t-value	P(T<t) two-tail
-15.83	1.7574	3.452	0.023

Compound growth rates and coefficients of Variation clarified the disquieting trend in the production. Table 4 shows that the area, production and productivity of groundnut in A.P have no significant negative trends of 0.019, 0.036 & 0.017 per cent per annum respectively over the study period.

TABLE 4—Compound Growth Rates of Area, Production and Productivity of Groundnut

	Area	Production	Productivity
CGR Value	-0.0194	-0.0361	-0.0171
	(0.150)	(0.235)	(0.322)

Figures in parenthesis indicate P values

Fluctuation in area and production of ground nut are interrelated as wider area gives greater production if the inputs remain constant. But variation in yield may be due to weather condition, technological changes, etc. The instability of groundnut in area, production and productivity are shown in Table 5.

TABLE 5—Instability in Area, Production and Productivity of Groundnut

Statistical tools	Area	Production	Productivity
AM	17.56	15.03	0.836
SD	2.670	6.235	0.2651
CV	15.2	41.4	31.69
Instability Index(IX)	11.06	39.02	31.33

The level of variability in Groundnut crop production is very important for sustainable production. Therefore we have estimated the relative variability in Groundnut crop in Table-5 using equation (4). It may be observed from the table that the production (39.02) of groundnut recorded the highest degree of instability. It concluded that the fluctuations in production are the compound result of fluctuation in productivity and acreage.

In order to find out the contribution of area, production and productivity and the interaction of the two in increasing the production, decomposition analysis was carried out. The results are presented in Table 6. It is clearly observed from the table that, during the overall period, the total production of groundnut was completely due to the change in area under the crop as the yield and interaction effects were very small. Therefore, it is concluded that production growth in groundnut over the past 16 years has been slow & unstable with substantial temporal variation in the state.

TABLE 6—Decomposition Analysis of Area, Production and Productivity of Groundnut of Andhra Pradesh over the Period from 1995-2011

Area effect(ΔA)	Production effect(ΔP)	Yield effect(ΔY)	Interaction effect
7.693	0.60	-5.484	-1.606

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Economics of Tapioca Cultivation in Jaggampeta Mandal of East Godavari District of Andhra Pradesh

S Hyma Jyothi* and K Suhasini**

Introduction:

Tapioca (<u>Manihot</u> <u>utilissima</u>) is also called as cassava. It is an important tuber crop cultivated as rainfed crop in Andhra Pradesh (A.P), with acreage of 25,000 hectares contributing to 9 per cent of its total area in India (2005-06). In Andhra Pradesh, East Godavari district occupies first place in both area and production of tapioca (contributing more than 90% of area and production) followed by agency areas of Srikakulum, Vizianagaram and Visakhaptnam districts.

In East Godavari District of A.P, the major tapioca cultivating mandals are Peddapuram, Jaggampeta, Gandepalli, Sankhavarm, Kirlampudi and Rajanagram in plains and Rajavommangi, Maredumilli and Addateegala in agency. Majority of the farmers are cultivating it as sole crop and only few farmers are cultivating it as an intercrop with ridge gourd and cucumber.

As the tapioca is the major crop in Jaggampeta mandaI with cultivated area of 4,312 hectares (2005-06) surpassing even paddy, it was selected for the present study.

Objectives of the study:

1. To study the cost of cultivation of tapioca in the study area

2. To identify the marketing channels involved in marketing of raw tapioca tubers in the study area

3. To identify the constraints in production and marketing of tapioca in the study area.

Methodology :

To study the framed objectives in Jaggampeta mandaI, two villages Viz., Rajapudi (2079 ha) and Jaggampeta (1623ha) having maximum area under tapioca cultivation during 2005-06 were selected purposively. From these two villages 30 tapioca-cultivating farmers (15 from each) at random were selected for the study. The period of study was the agricultural year 2006-07.

Cost of cultivation according to cost concepts: cost A_1, cost A_2, cost.B and cost C were considered.

Cost A_1 : Value of the hired labour + attached labour + value of owned and hired bullock labour + charges on owned and hired machinery + value of seed material + value of manures + value of fertilisers + value of plant protection chemicals + depreciation, repairs and maintenance of farm machinery, farm implements and farm buildings + land revenue + cess + interest on working capital.

Cost A_2: Cost A_1 + rent paid on leased in land.

Cost B: Cost A_2 + imputed rental value on owned land + imputed interest paid on owned fixed capital excluding land. Cost C: Cost B + imputed value of family labour. This gives the commercial cost of production. For all the practical purposes cost 'C' is the relevant cost and the prices received should cover the cost of production based on cost 'C'.

Returns: In the present study the concepts of gross income and net income were used. The gross income was computed by multiplying the physical quantity of output and the price Per Kg of tapioca tubers. Net returns were worked out by deducting cost 'C' from gross income.

Farm Efficiency Measures: farm business income, family labour income, farm investment income were calculated.

Farm Business Income: This is the return to the tapioca cultivator for himself and his family labour and investment on owned land and owned fixed capital. It is worked out by deducting the cost 'A_2' from gross income.

Farm business income = Gross income - Cost 'A_2'

Family Labour Income: It is the measure of returns from tapioca to family labour. This was obtained by deducting cost 'B' from gross income.

Family labour income = Gross income - Cost 'B'

Farm Investment Income: It is a measure of return from tapioca to the fixed capital investment of it.

Farm investment income = Farm business Income— Imputed value of family labour

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Results and Discussion :

Nursery Preparation: The local practice is to raise a nursery of setts and after sprouting, the setts are planted in the main field for their efficient establishment. Setts of 6" to 7" length are prepared from healthy selected planting material. A nursery area of 20' X10' is sufficient to transplant one hectare of tapioca. Optimally setts are transplanted in the main field 8-12 days after raising the nursery. Gap filling is also practiced if necessary.

Preparation of land: Land preparation is by ploughing with tractors or bullocks two to four times to attain fine tilth. Application of farmyard manure (FYM) varies with the availability from 15 to 20 cartloads per hectare. Most of the farmers apply this FYM at the base of each plant.

Varieties adopted: H-165 is the ruling variety popularly called as Kerala in the study area, followed by H-226 (Gulabi) and local variety from Peddapuram area is also used to some extent.

Transplanting: Normally 8-12 days rooted setts from nursery are transplanted in the main field with a spacing of 1l0cm Xllocm at a depth of 1.5" 2.0" in the soil. Farmers of this area use an intercultivating implement called "Gorru" and the adopted spacing facilitates its easy operation in between the rows. The number of labourers required for transplanting one hectare area may range from 12-18. With an adopted spacing, on an average 8300-8500 plants are accommodated in one hectare of area.

Application of fertilizers: Tapioca farmers in the study area use fertilizers indiscriminately, particularly the nitrogenous fertilizers than recommendation. Apart from basal application top dressing of fertilizers is done at 20,40,90 and 115-120 days after transplanting. Farmers are using excessive dose of nitrogenous fertilizers especially urea. Apart from using straight fertilizers like urea, DAP and MOP, complex fertilizers like14:35:14, 17:17:17, 28:28:0 etc", are increasingly used leading to increased cost of cultivation. Majority of the farmers are applying phosphatic fertilizers as top dressing rather than basal application paving to its wastage.

Weeding and Intercultural operations: Based on the growth of weeds, intercultural operations by running gorru in between the rows are carried 20, 40 and 60-65 days after transplanting. By using the hand hoes also soil around the plant is loosened.

Plant Protection: Under severe conditions of mite infestation farmers resorted for spraying of Rogor. Some times when the infestation of termites is acute the farmers sprayed Chloropyriphos to control them.

Harvesting: Crop is normally harvested 7 to 8 months after planting i.e. from December ending to January-February, but positively before the month of March. Usually manual labour is used to uproot the plants and subsequently tubers are removed and placed in gunny bags for transporting to sago factories. On an average for harvesting of one hectare of tapioca nearly 40-42 labourers are employed.

Table 1 indicates that in the total labor cost per hectare of tapioca cultivation, the major share was taken by intercultural operations (31.82%) followed by harvesting (25.12%) as the two operations were labour intensive.

In the material cost component the major share i.e.49.46% was taken by fertilizers cost followed by manures cost with 29.15%.

The average yield per hectare of tapioca was found to be 16.87 tonnes of raw tubers and gross returns were turned out to be Rs. 33740/-(@ Rs. 450/- per putti of 225 Kg i.e. 2 Rs/- per Kg). Net returns per hectare of tapioca cultivation were Rs. 6830/-. Benefit- Cost ratio was 1.25, indicating that for every rupee spent on cultivation of tapioca resulted in returns of 1.25 rupees.

TABLE 1—Per Hectare Cost of Cultivation of Tapioca in Jaggampeta Mandal of East Godavari District

S.No.	Particulars	Cost Incurred (Rs./ha)	Percentage to Total Cost
(a) Labour Cost:			
1.	Land preparation	2,150.00 (18.00)	7.98
2.	Nursery Raising	625.00 (5.23)	2.32
3.	Transplanting	900.00 (7.53)	3.34
4.	Application of Manures	325.00 (2.72)	1.20
5.	Application of Fertilizers	450.00 (3.76)	1.67
6.	Application of Plant Protection Chemicals	90.00 (0.75)	0.33

S. No.	Particulars	Cost Incurred (Rs./ha)	Percentage to Total Cost
7.	Intercultural Operations	3800.00 (31.82)	14.12
8.	Harvesting	3000.00 (25.12)	11.14
9.	Other Miscellaneous expenses	600.00 (5.02)	2.22
Sub Total		**11940.00 (100)**	
Hired labour cost		11008.00	
Family labour cost		932.00	
(b) Material cost			
1.	Planting Material	650.00 (11.48)	2.41
2.	Manures	1650 (29.15)	6.13
3.	Fertilizers	2800 (49.46)	10.40
4.	Plant Protection Chemicals\	560 (9.89)	2.08
Sub Total		**5660 (100)**	
(c)	Land revenue	80.00	0.29
(d)	Depreciation	580.00	2.15
(e)	Interest on Working Capital	1136.00	4.22
Cost A$_1$		**18464.00**	
(f)	Rent paid for leased in land	1146.00	4.25
Cost A$_2$		**19610.00**	
(g)	Imputed value of owned land	5750.00	21.13
(h)	Interest on owned fixed capital	625.00	2.32
Cost B		**25985.00**	—
(i)	Imputed value of family labour	932	—
Cost C (Total Cost of Cultivation)		**26910.00**	**100.00**
Yield (Tonnes)		16.87	—
Price per Kg (in Rs.)		2.00	—
Gross Returns		33740.00	—
Net Returns		6830.00	—
B: C Ratio		1.25	—

TABLE 2—Farm Income Measures per Hectare of Tapioca Cultivation

Particulars	Rs./ha
Farm Business income	14,130.00
Family Labour income	7,755.00
Farm Investment Income	13,198.00

As per the table 2, the farm business income, family labour income and farm investment income per hectare of tapioca cultivation were found to be Rs. 14,130, Rs. 7,755.00 and Rs. 13,198.00 respectively.

Marketing channels for raw tapioca tubers:

Marketing channels are nothing but the routes through which any product moves from point of

production to point of consumption. In the marketing of raw tapioca tubers in the study area 2 channels were identified

    (i) Farmers themselves directly selling them to the sago, starch and chip manufacturers.

(ii) Procuring of raw tubers by village agents and they in turn supplying to the sago, starch and chip manufacturers

Flow chart showing the marketing channels for raw tapioca tubers
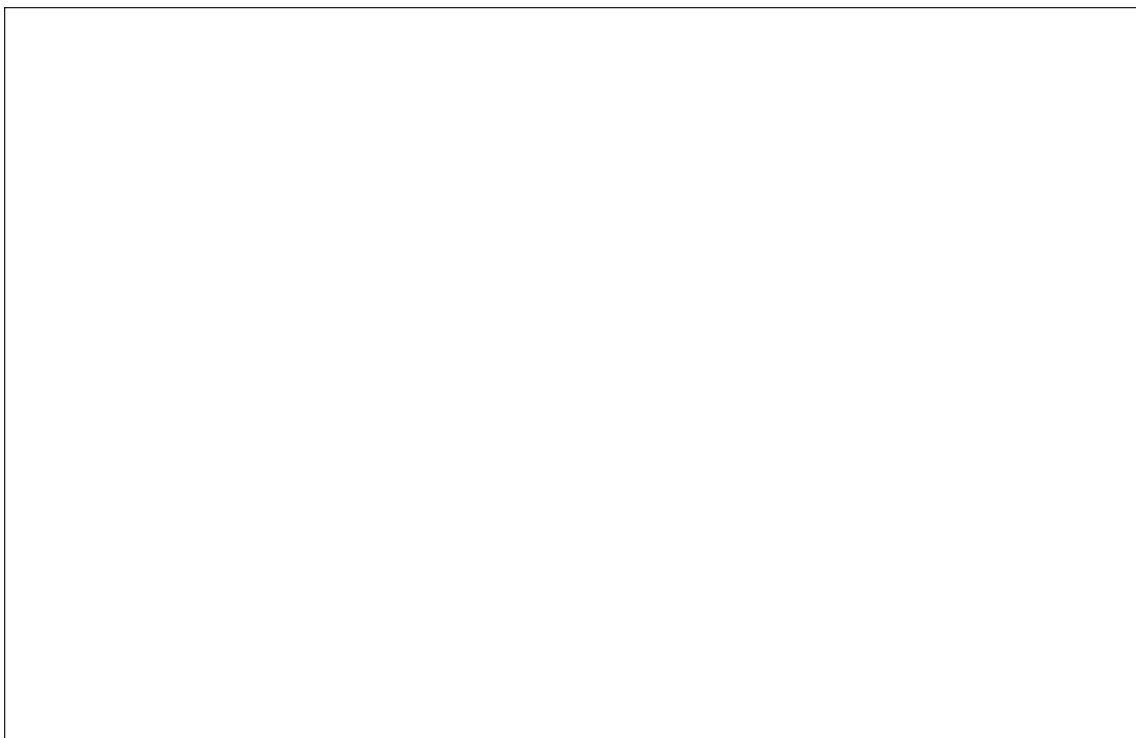
Problems faced by the farmers in production and marketing of tapioca tubers:

- First and foremost problem is that, unlike cereals, pulses and other cash crops tapioca has no minimum support price from the Government of India.

- Non-existence of regulated markets for tapioca paving the way for commission agents/village agents to take undue advantage in its marketing.

- Rapid deterioration and spoilage of tubers is a major post-harvest problem

Conclusions:

- For assured net returns from tapioca cultivation, like other cereals and commercial crops extending the minimum support price to it is envisaged.

- Establishment of regulated markets for tapioca is necessary, so as to reduce the role of commission gents in its marketing to minimum.

- Following the recommended dose of fertilizer application, farmers can reduce the cost of cultivation of tapioca. To achieve this effective extension network is required.

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Summary

Tapioca (<u>Manihot</u> <u>utilissima</u>) is also called as cassava. It is an important tuber crop cultivated as rainfed crop in Andhra Pradesh. In Andhra Pradesh, East Godavari district occupies first place in both area and production of tapioca (contributing more than 90% of area and production).

In East Godavari District of A.P the Jaggampeta mandaI was selected for the study as Tapioca is cultivated in an area of 4312 hectares (2005-06) surpassing paddy. To study the cost of cultivation, marketing channels involved and problems in production and marketing of Tapioca in Jaggampeta mandaI from two villages of Rajapudi and Jaggampeta 30 tapioca-cultivating farmers (15 from each) were selected for the study. The period of study was agricultural year 2006-07.

In labor cost component per hectare of tapioca cultivation major share was taken by Intercultural operations (31.82%) followed by harvesting (25.12%). In the material cost component the major share i.e.49.46% was taken by fertilizers cost followed by manures cost with 29.15. The average yield per hectare of tapioca was found to be 16.87 tonnes of raw tubers and gross returns were turned out to be Rs. 33740/-(@ Rs. 450/- per putti of 225 Kg i.e. 2 Rs/- per Kg). Net returns per hectare of tapioca cultivation were Rs. 6830/-. Benefit- Cost ratio was 1.25, indicating that for every rupee spent on cultivation of tapioca resulted in returns of 1.25 rupees.

In the marketing of raw tapioca tubers in the study area, 2 channels were identified

1. Farmers themselves directly selling them to the sago, starch and chip manufacturers

2. Procuring of raw tubers by village agents and they in turn supplying to the sago, starch and chip manufacturers.

Some of the constraints faced by the sample farmers in cultivation of tapioca were

- Tapioca has no minimum support price from the Government of India.

- Non-existence of regulated markets for tapioca.

- Rapid deterioration and spoilage of tubers is a major post- harvest problem

For assured net returns from tapioca cultivation, minimum support price should be provided along with establishment of regulated markets for its efficient marketing.

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Profitability of Cut Roses Grown Under Hi-Tech Cultivation

M. N. Waghmare and P.N. Shendage*

1. Background information

Greenhouse technology in India is a recent potential phenomenon. Greenhouses in India are being used to grow vegetables and flowers all the year round. In Maharashtra, high-tech floriculture is increasing rapidly particularly in Western Maharashtra. The most conspicuous development around Pune city is the increasing entries of major players using capital-intensive techniques and bringing techno-revolution in the floriculture trade. The polyhouse technology now a day has become very popular in and around Pune city. More than 60 per cent polyhouses in the State are concentrated around Pune city. The utility of Pune city has been very thoroughly recognized by the farmers, traders and the policy makers as well. Also, there is a specialized flower market at Gultekadi Market Yard in Pune. The Maharashtra Floriculture Development Board (MFDB) is operating with its head quarter at Pune. Economic analysis of such capital intensive technique is an immense important. Therefore, present study attempts to bring out the economic analysis of production and marketing of cut roses grown under polyhouse.

Methodology

As per recent statistics available with the Directorate of Horticulture, Govt. of Maharashtra, Pune, the total area under the polyhouse cultivation in the state is 190 ha. Of this area, 120 ha (63.16 %) is in Pune district; which is concentrated in Maval, Haveli, Shirur, Mulashi Rajgurunagar and Ambegaon tahsils of the district. The cut flower selected for the study was roses. The relevant data pertaining to the year 2011-12 were obtained with the help of designed questionnaires by personal interview method. A sample of 30 polyhouse owners growing of cut roses will be drawn through systematic—random sampling, 10 each from small (up to 0.10 ha.), medium (0.11 to 0.20 ha.) and large (0.21 ha. & above). Tabular method of analysis was employed for analysis of data besides the use of standard concepts. The efficiency of marketing channels was estimated by using Acharya's marketing efficiency formula as below.

$$ME = \frac{Pc}{(Mc + Nm)} - 1$$

Where,

ME = Marketing efficiency

Pc = Price paid by consumer per flower

Mc = Total marketing cost per flower

Nm = Net marketing margin

Results

General information about the polyhouses and the produce

Two types of polyhouses were observed i.e. GH -1 naturally ventilated (67 per cent) and GH-2 partially controlled (33 per cent). Not a single GH-3 fully controlled polyhouse was seen. The growers opined the life period of the planting material for roses as 4 - 5 years. Almost all the polyhouses were constructed between 2008-2011 . The cut rose flowers had the keeping quality up to 8-9 days. The produce was grown on raised beds with drip irrigation system. Nearly 94 per cent harvesting was made with regular cuttings and 6 per cent on need basis.

Establishment cost of polyhouses

The cost of construction of polyhouse depends upon the area, quality and quantity of material such as steel, shedding net, basic infrastructure, fertigation unit, etc. Since most of the polyhouses were naturally ventilated type, the estimated cost of erection of these polyhouses were estimated and depicted in Table 1.

The average costs of construction of polyhouses were more than 23.13 Lakhs. It is more than Rs. 9.84 Lakhs, Rs. 18.85 Lakhs and Rs. 40.61 Lakhs, respectively for small (0.10 ha.) medium (0.19 ha.) and large (0.43 ha.) size groups. It can be inferred that the per unit average cost of erection of polyhouses do not very greatly with the size of polyhouses. Most of the polyhouses were erected by specialized agencies meant for erection. The G.I. material was used as a framework and, therefore, the framework cost shared about 50 - 53 per cent in the total cost. The other items of cost included cost towards polyfilm, shed net, systems for irrigation, spraying, fertigation, labour and other related costs. The average expected life of all the erected structures considered to be 20 years. The Government has provided 25 per cent subsidy on total cost of erection of polyhouses. Thus,

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TABLE 1—Average Cost of Polyhouse Erection

(Rs.)

Sr. No.	Particulars		Size Group of polyhouse			Overall (N=30)
			Small (N=10)	Medium (N=10)	Large (N=10)	
	Average area (ha.)		0.10	0.19	0.43	0.24
1.	Framework		512350	1013100	2027100	1184183
		%	52.05	53.73	49.91	51.25
2.	Polyfilm		147820	317300	780050	415056.7
		%	15.02	16.83	19.21	17.96
3.	Shed net		34360	96110	228570	119680
		%	3.49	5.10	5.63	5.18
4.	Facility unit		9240	22050	72180	34490
		%	0.94	1.17	1.78	1.49
5.	Labour cost		118380	216414	462900	265898
		%	12.03	11.48	11.40	11.51
6.	Other cost		162190	220724	490505	291139.7
		%	16.48	11.71	12.08	12.60
	Total cost		984340	1885698	4061305	2310448
			100	100	100	100
	Subsidy 25%		246085	471424.5	1015326.25	577611.9
	Net cost		738255	1414274	3045979	1732836

average cost of erection of polyhouse was worked to Rs. 17.32 lakhs. The figures for the small, medium and large size polyhouse were Rs.7.38, 14.14 and 30.45 lakhs, respectively.

Cost of cultivation

As could be seen from Table 2 that the average cost of cultivation of cut roses were worked to Rs. 5.97 lakh. It was Rs. 2.70 lakh for small sized polyhouse, Rs. 4.55 Lakh for medium sized polyhouse and Rs. 10.66 lakh for large sized polyhouse. The Cost 'A' shared 58 to 62 per cent to the total cost of cultivation for cut roses. The major items of cost involved hired human labour, planting material, fertilizers, plant protection chemicals, bed preparation, depreciation and interest on working capital. In the Cost B, both the items i.e. rental value of owned land and interest on fixed capital together shared 25 to 36 per cent of the total cost. The family labour shared 4 to 16 per, it was more in small sized groups while less in large sized groups.

The cost of cultivation of small size group in relation to others was higher. Small size group involved intensive input use in terms of fertilizer, planting material irrigation and plant protection chemicals. The imputed cost in the case of large sized group increased due to more use of shed net and high quality polyfilm.

TABLE 2—Share of Individual Cost Item in the Total Cost of Cultivation of Roses (%)

Sr. No.	Particulars	Size Group of polyhouse			Overall
		Small	Medium	Large	
1.	Hired H. L.	8.49	9.83	9.43	9.39
2.	Machinery	1.19	0.94	1.07	1.06

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Sr. No.	Particulars	Small	Medium	Large	Overall
			Size Group of polyhouse		
3.	Bed (APP)	4.05	4.45	3.90	4.06
4.	Fumigation	0.35	0.31	0.36	0.35
5.	Plant Material(App)	3.33	3.67	3.81	3.70
6.	Fertilizer	17.94	20.29	19.73	19.60
7.	Irrigation	2.04	2.07	1.83	1.92
8.	Pl. Protection	9.98	9.18	8.66	8.99
9.	Land revenue	0.15	0.17	0.11	0.13
10.	Depreciation	6.86	7.72	7.02	7.17
11.	Interest on W C	3.26	3.52	3.36	3.38
12.	Cost A	57.64	62.13	59.28	59.76
13.	Rental value	22.15	24.34	33.08	29.21
14.	Interest onFC	3.66	4.14	3.40	3.63
	Cost B	83.45	90.61	95.76	92.59
	Family labour	16.55	9.39	4.24	7.41
	Cost C	100.00	100.00	100.00	100.00
	Cost C	270636	455963	1066255	597618

Profitability of polyhouses

The per unit price realized for all the size groups of polyhouses of cut roses was more than their respective per unit cost of production. The production cost per unit was less in large sized group while more in small size group of polyhouses. The B:C ratio since workout to more than unity for all the size group, it could be inferred that there is economy of scale in cost of production of cut roses. The magnitude of B:C ratio was the highest for large size group of polyhouses (2.08). The cut roses produced in large size polyhouses were more of grade- I quality, as greater than 60 per cent produce was exported and fetched higher prices as compared to other groups. The profitability could be enhanced by producing still higher quality produce. (Table 3).

TABLE 3—Profitability of Cut Roses in Polyhouse Cultivation

(Rs.)

S. No.	Particulars	Small	Medium	Large	Overall
			Size Group of polyhouse		
1.	Output (No)	157561	277971	647655	361062
2.	Cost of cultivation	270636	455963	1066255	597618
3.	Cost of marketing	80820	131241	290638	167566
4.	Cost of production	351456	587204	1356893	765184
5.	Production cost /unit	2.23	2.11	2.10	2.00
6.	Gross returns	392327	725504	2214980	1025417
7.	Net returns	40871	138300	858087	345753
8.	Average Price/unit	2.49	2.61	3.42	3.00
9.	Profitability/ unit	0.26	0.50	1.32	1.00
10.	B.C. ratio	1.45	1.59	2.08	1.72

Marketing of cut roses

The grading is more important for high-tech produce because it directly reflects on the price. It was observed that all the growers follow the grading as per the grade specifications. For all types of produce, the corrugated rolling paper type of packaging was followed. A tempo was a common vehicle for transportation of the produce from producing point to the market at an average distance in between 60-165 kms. As the rose growers are the business houses, they individually owned or commonly shared refrigerated vans for transportation. Loss in transportation was 1-3 per cent. More than 50 per cent growers sold their produces in Mumbai market, seventy per cent produce was sold through commission agents, 25 per cent through retailers and remaining 5 per cent through local sale. The intermediates charged 10 per cent commission. About 60 per cent produce was sold at pre-determined price and 40 per cent through auction sale.

Marketing Channels in the study area

There are three main marketing channels existed in the area for cut roses.

Channel-I Cut roses producer - Commission Agent-Wholesaler- Retailer-Consumer .

Channel- II Cut roses producer - Exporter- Wholesaler-Retailer- Consumer.

Channel-III Cut roses producer - Importer- Wholesaler-Retailer- Consumer.

The disposal pattern through these channels is depicted in Table 4.

TABLE 4—Disposal of Cut Roses through Different Channels

Channel	Quantity disposed	
	Qty (No.)	%
Channel -I	546468	50.45
Channel -II	439375	39.64
Channel -III	107344	9.91
Total	1083187	100

Channel- I is the preferred for the Mumbai and Pune market in the study area. Nearly 50 per cent of the produce is disposed through Channel-I.

Channel-II is preferred channel by the cut roses producers for export of their produce through agencies dealing in the export of cut roses. The exporter collects the cut roses from the producer's field and they export it in bulk quantity. Nearly 40 per cent of the produce is disposed through Channel-II. Channel-II is found to be the prominent channel for export of cut roses in the area.

Channel-III is a direct export channel where the grower sells his produce to different countries. Nearly 10 per cent of the produce is disposed through Channel-III.

Cost of marketing

As depicted in Table 5, among the various components of marketing cost, the commission of the intermediaries was the major one sharing 36- 41 per cent in the total cost of marketing for all the cut roses. The cost of grading and packaging in a single unit shared 27 per cent and the cost of transportation shared 30- 32 per cent. The other items of expenditure by the producer had a very negligible share. On an average, the marketing cost for bundle cut roses (containing 40 flowers) in the size class of polyhouses ranged in between Rs.18.60. The cost of marketing decrease across the size class of polyhouse.

TABLE 5—Average Cost of Marketing. (Rs./bundle of flower)

Sr. No.	Particulars	Size Group of polyhouse			Overall
		Small	Medium	Large	
1.	Grading and packaging	5.60 (27.38)	5.10 (27.16)	4.90 (27.03)	5.00 (27.10)
2.	Transportation	6.50 (31.74)	6.20 (32.60)	5.30 (29.42)	5.70 (30.60)
3.	Commission	7.60 (37.03)	6.80 (36.26)	7.40 (40.95)	7.30 (39.10)
4.	Other expenditure	0.80 (3.86)	0.80 (3.98)	0.50 (2.60)	0.60 (3.20)
5.	Total	20.50 (100.0)	18.90 (100.0)	18.00 (100.0)	18.60 (100.00)

(Figures in the parentheses indicate the percentage to the total)

Efficiency of marketing channel

Efficiency of the existing marketing channels was studied in order to analyze the most effective channel for marketing of cut roses in the study area. Table 6 shows the efficiency of the market channels. The marketing efficiency of Channel-I was found to be 0.27, while that of Channel-II was 0.36 and Channel-III was 0.38. The Channel-III was most efficient as compared to other two channels. Channel-I was mainly used for disposal of produce to Pune and Mumbai market; while Channel-II and Channel-III were used for export of produce. In export, Channel-III proved to be more efficient, but the producers commonly using Channel-II due to simplicity.

TABLE 6—EFFICIENCY OF MARKETING CHANNELS FOR CUT ROSES

(Per flower)

Sr.No.	Particulars	Channel- I	Channel- II	Channel-III
1.	Price received by grower	2.47	5.85	6.25
2.	Marketing cost	1.52	2.85	2.85
3.	Price paid by consumer	4.35	11.25	12.25
4.	Net market margin	1.88	5.40	6.00
5.	Marketing efficiency	0.27	0.36	0.38

Price variation in cut roses

The average price received for cut roses was the lowest in monsoon season. The winter season had influenced the higher prices for the produce. The producer realizes maximum prices when cut roses was ready for marketing during the period of 25th January to 1oth February to catch the demand for valentine day. The export market paid the higher prices for the produce followed

TABLE 7—PRICE VARIATIONS IN ROSES

(Rs./ No.)

Sr. No.	Particulars	Size Group of polyhouse						Overall	
		Small		Medium		Large			
		Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
1.	**Season**								
	(i) Winter	63200	3.15	125645	3.36	263335	3.85	150727	3.30
	%	40.111		45.20		40.66		41.75	
	(ii) Summer	34650	2.95	56780	3.14	175580	3.22	89003	3.00
	%	21.99		20.43		27.11		24.65	
	(iii) Monsoon	59711	2.61	95545	2.81	208740	2.82	121332	2.73
	%	37.90		34.37		32.23		33.60	
	Total	157561	2.9	277971	3.13	647655	3.35	361062	3.02
2.	**Market**								
	(i) Mumbai	55365	3.25	148136	3.4	121415	3.2	108305	3.30
	%	35.14		53.29		18.75		29.99	
	(ii) Pune	76346	2.77	78830	2.88	104700	2.92	86625.3	2.86
	%	48.45		28.36		16.17		23.99	

TABLE 7—Price Variations in Roses—*Contd.*

(Rs./ No.)

Sr. No.	Particulars	Size Group of polyhouse						Overall	
		Small		Medium		Large			
		Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
	(iii) Export	25850	4.12	51005	4.25	421540	4.85	166132	4.75
	%	16.41		18.35		65.09		46.01	
	Total	157561	3.16	277971	3.41	647655	4.23	361062	3.86
3.	**Grade**								
	(i) G-l	34663	3.25	76720	3.85	421650	4.45	177678	4.29
	%	23.02		27.60		65.10		49.21	
	(ii) G- II	60150	3.07	103405	3.45	204050	3.65	122535	3.50
	%	39.95		37.20		31.51		33.94	
	iii) G-III	62748	2.15	97846	2.35	21955	2.32	60850	2.28
	%	41.68		35.20		03.39		16.85	
	Average	—	2.76		3.17		4.12	361062	3.36

by Mumbai market and Pune market, As a logic, the Grade-I produce had positive influence on the price received (Table 7).

Constraints in production and marketing

The constraints in both the production and marketing of cut roses are depicted in Table 8. As regards the production format, the higher cost of planting material and its timely unavailability was the major constraint. Low price paid by the commission agents than the actual market price is the serious constraint relating to marketing aspect of cut roses. The other constraints of consideration included delay and follow-up for payment and lack of storage facilities. In summing up, the financial constraints were the major obstacles for most of the sample growers.   .

TABLE 8—Constraints in Production and Marketing of Cut Roses

Sl. No.	Constraints opinioned	Number	Percentage
(1)	(2)	(3)	(4)
	Production		
1.	Cost of planting material	20	66.67
2.	Technical know-how	07	23.33

(1)	(2)	(3)	(4)
	Marketing		
1.	Remunerative price	30	100.00
2.	Delay & follow up for payment	23	76.67
3.	Malpractices by intermediaries	08	26.67
4.	Packaging material	16	53.33
5.	Storage facilities	20	66.67
6.	Transportation	12	40.00

Conclusions

The average size of polyhouse was 0.24 ha. The average costs of erection of polyhouse was 23.13 Lakhs. It is Rs. 9.84 Lakhs, Rs. 18.85 Lakhs and Rs. 40.61 Lakhs, respectively for small (0.10 ha.) medium (0.1 9 ha.) and large (0.43 ha.) size groups of polyhouses. The average cost of cultivation of cut roses was Rs. 5.97 lakhs and it decreased across the size group of polyhouse. The major items of cost were hired human labour, planting material, fertilizers, plant protection chemicals, rental value and interest on fixed capital due to heavy investment. The average cost of marketing was estimated to Rs. 18.60/bundle. Commission of the intermediaries was the major component of marketing cost. All the size group of polyhouses were in profit.The season, market place and grade influenced the market price

of cut roses. The winter season had influenced the higher prices for the produce, exported produce fetched more price. In export, Channel-III proved to be more efficient. The higher cost of planting material and its timely unavailability from production front and financial constraints were the major obstacles in production and marketing of cut roses.

Suggestions

1. Since the growers are commercial, they should produce more quantities of Grade-1 produce and export more quantity and sale in winter season in order to catch the higher price benefit.

2. Farmer should adopt the production technology in such a way that maximum produce should be available for marketing during 25th January to 10th February in order to reap the benefit of maximum prices.

AGRICULTURAL PRICES IN INDIA

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Status of Oilseed in India

Sharad Bhatnagar* and Shekhar Bhatnagar**

Yield and area are effectively contributed to increase the production of Oilseed and Rapeseed and mustard crops in India, Highly significant growth rates have been found for the variables area, production and yield of both the crops except area of Rapeseed & mustard.

In India, the yellow revolution in the production of oilseed crops has been achieved after the implementation of Technology Mission on Oilseed in 1986. Now, India is one of the largest producers of oilseed in the World. The production of oilseed in India have tremendously increased from 11.27 to 24.75 million tones from 1986-87 to 1998 -99, further it has spectacular increased to 30.01million tones in 2011-12.Rapeseed & mustard is one of the important oilseed crops wliich belongs to the wheat belt of North and central India. In case of Rapeseed & mustard almost the entire output 97(%) is used in oil production with only 3(%) used for seed and feed purpose. Kathuria & Rao (l983)and Verma(1984) studied the trends in growth of some oilseed crops in India. Bhatnagar & Bhatnagar (2008) have observed highly significant growth rates for soybean and mustard crops during 1970-71 to 2003-04. The present study was undertaken to examine the contribution of area and yield to increase the production of oilseed (nine crops viz. groundnut, castor seed, sesamum, rapeseed & mustard, linseed, soyabean, sunflower, nigerseed and saflower) and Rapeseed & mustard in India and further about their growth during 1998-99 to 2011-12. An estimate of area, production and yield of oilseed crops in India is also worked out for the period 2012-2015.

Methodology

The secondary data of area, production and yield of oilseed crops in India for 14years from 1998-99 to 2011-12 were utilized for this study. The data were collected from Agricultural Statistics at a glance 2012, Directorate of Economics and Statistics, Department of Agriculture and Co-operation. Basically any change in production of crop depends on the change in its area and yield. If the production, yield and area are denoted by Q_n, Y_n and A_n for the current period and Q_o, Y_o and A_o for base period, the increase in production $Q = (Q_n - Q_o)$ in n years over base period is a function of change in area $A = (A_n - A_o)$ and yield $Y = (Y_n - Y_o)$. Sharma (1977) defined the change in production function of a crop as

$$Q = A_o Y + Y_o A + AY \qquad \ldots 1$$

where

$A_o Y =$ Yield effect, $Y_o A =$ Area effect and

$AY =$ Interaction between area and yield.

To analyze the time series data following two functions were fitted.

The linear function is

$$Y_t = a + b\, t \qquad ..2$$

where

$Y_t =$ area/production/average yield of oilseed crops in t^{th} year,

a = Constant,

b = Regression coefficient and

t = Time variable in years (t= 1, 2, ..., 14),

The exponential function

$$Y_t = AB^t \qquad ..3$$

where

A = Constant and

B = (1+r) with r as compound growth rate.

It is in log form as

$$\log Y_t = \log A + t \log B$$

which is similar to linear equation (2).

Compound growth rate (C.G.R) has been calculated as

$$\text{C.G.R. (\%)} = (\text{Anti. log B- 1}) \times 100. \qquad \ldots 4$$

The projections of area, production and yield of Oilseed crops have been worked out by using the exponential function.

Results and Discussion

According to data in Table 1, average area of Oilseed crops in India has increased 8.73 per cent from 24.41 to 26.54 million hectares by taking the triennium 1998 - 2001 as base period and 2009-2012 as current period. Average production of Oilseed crops has increased 36.71 per cent from 21.3 to 29.12 million tones whereas average yield of oilseed has increased 25.66 per cent from 873 to 1097 kg / hectare. Similarly, average area of Rapeseed & mustard has also increased 8.29 per cent from 5.67 to 6.14 million tones hectare in this period. Average production of Rapeseed and mustard has shown a

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TABLE 1—Average Area, Production and Yield of Oilseed Crops in Base and Current Periods

	Variables	Base period (1998-2001)	Current period (2009-2012)	Change (%
Oil Seed	Area (million hectare)	24.41	26.54	8.73 (2.13mh)
	Production (million tonnes)	21.3	29.12	36.71 (7.82mT)
	Yield (Kg/hectare)	873	1097	25.66 (224kg)
Rapeseed and mustard	Area (million hectare)	5.67	6.14	8.29 (0.47)
	Production (million tonnes)	5.21	7.19	38.00 (1.98)
	Yield Kg/hectare)	919	1171	27.42 (252)

TABLE 2—Contribution of Area, Yield and their Interaction to Change the Production of Oilseed Crops

Variable effects	Oil Seed	Rapeseed & mustard
Yield	70	72
Area	24	22
Interaction between area and yield	6	6

TABLE 3—Growth rates of Area, Production and Yield of Oilseed from 1998-99 to 2011-12

India	Variables	Linear regression coefficient	R^2 (%)	Compound growth rate (%)	R^2 (%)
Oil Seed	Area (million hectare)	0.29* *	34.17	1.19* *	33.81
	Production (million tonnes)	0.84**	52.51	3.51**	46.78
	Yield (Kg/hectare)	21.93 **	45.63	2.29* *	42.66
Rapeseed and mustard	Area (million hectare)	0.07	9.59	1.26	10.84
	Production (million tonnes)	0.20**	38.64	3.42**	37.36
	Yield (Kg/hectare)	21.72**	63.56	2.14**	62.56

India	Variables	Exponential function $Yt= AB t$	Period		
			2012-2013	2013-2014	2014-2015
Oil Seeds	Area (million hectare)	$Yt = 23.25(1.0119)^t$	27.76	28.09	28.43
	Production (million tonnes)	$Yt = 18.71(1.03515)^t$	31.41	32.52	33.66
	Yield (Kg/hectare)	$Yt = 805.07(1.0229^t$	1131	1156	1183
Rapeseed and mustard	Area (million hectare)	$Yt = 5.40(1.0126)^t$	6.52	6.60	6.68
	Production (million tonnes)	$Yt = 4.81(1.0342)^t$	7.97	8.24	8.52
	Yield (Kg/hectare)	$Yt =890.26(1.0214)^t$	1223	1249	1275

good rise of38.00 per cent from 5.21 to 7.19 million tones. Average yield of Rapeseed and mustard has shot up 27.42 per cent from 919 to 1171 kg / hectare. So, the rise in area, production and yield of Oil seeds as well as Rapeseed & mustard are almost same in triennium period under study.

The contribution of yield, area and their interaction to increase the production has been studied and given in Table 2. Increase in production of Oilseed and Rapeseed & mustard have been decomposed into three components, viz. yield, area and effect of their interaction. The production of Oilseed has increased 70 per cent due to yield effect whereas area and its interaction with yield have 24 and 6 per cent positive effects, respectively. For Rapeseed & mustard, the contribution of yield has been found to be 72 per cent whereas area and its interaction with yield have 22 and 6 per cent effect,respectively. For both the crops, yield plays key role to increase the production.

The growth rates of area, production and yield of Oilseed crops and Rapeseed and mustard in India have been presented in Table3.Area of Oilseed has increased with Highly significant rate of 1.19 per cent giving an increase of 0.29 million hectares area every year. Production of Oilseed has shown a highly significant growth rate of 3.51 per cent giving an increase of 0.84 million tones per year. Yield of Oilseed has also increased with highly significant rate of 2.29 per cent i.e. an annual

increase of 21.93 kg. per hectare. It depicts that production of oilseed has increased more rapidly than area due to adoption of modem production technology at farmer's field.

In case of Rapeseed and mustard, area has increased with growth rate of 1.26 per cent i.e. 0.07 million hectares more area has been adopted by this crop every year. The production has shown a highly significant growth rate of 3.42 per cent giving an increase of 0.02million tones per year. Yield has also increased with highly significant rate of 2.14 per cent i.e. an annual increase of 21.72 kg per hectare. It depicts that production and yield have increased more rapidly than area. Both linear and exponential functions are found equally good fitted for production and yield variables for Oilseed and Rapeseed & mustard crops except area of Rapeseed and mustard.

An estimate of area, production and yield of oilseed crops in India is depicted in Table 4 for next three years. Area of Oilseed crops is estimated to be 27.76, 28.09 and 28.43 million hectares where as its production is to be 31.41,32.52 and 33.66 million tones during 2012-13, 2013-14 and 2014-15, respectively. Average yield of Oilseed is expected to be 1131, 1156 and 1183 kg per hectare in this period. Similarly, the area of Rapeseed & mustard is to be 6.52, 6.60 and 6.68 million hectares where as the production is likely to be 7.97, 8.24 and 8.52 million tones during this period. Average yield of

Rapeseed & mustard is estimated to be 1223, 1249 and 1275 kg per hectare in this period.

Keeping in view the consumption of oilseed there is a need of another yellow revaluationin Oilseed in India.

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C. Agro. Economic Research

Impact of NREGA on Wage Rates, Food Security and Rural Urban Migration in Madhya Pradesh*

The NREGA is an Indian job guarantee scheme for rural household. The scheme provides a legal guarantee for one hundred days of employment in every financial year to adult members (above the age of 1.8 years) of any rural household willing to do public work-related unskilled manual work at the statutory minimum wage of Rs. 100 per day. It has been renamed as Mahatma Gandhi National Rural Employment Guarantee Act on 2nd October 2009.

The Act was notified in 200 districts in the first phase with effect from February 2, 2006 and then extended second phase to 130 districts in the financial year 2007-2008 (113 districts were notified with effect from April 1,2007 and 17 districts in UP were notified with effect from May 15,2007). The remaining districts have been notified in phase three under the NREGA with effect from April 1, 2008. Thus, NREGA covers all the 593 districts in India.

The outlay had been raised from Rs. 11,000 to Rs. 39,100 crores during the year 2006-2007 to 2009-2010. About 4,49,40,870 rural households were provided jobs under NREGA during 2008-09 with a national average of 48 working days per household.

Box 1.1 Goals of the NREGA

(l) Strong social safety net for the vulnerable groups by providing a fall-back employment-source, when other employment alternatives are scarce or inadequate

(2) Growth engine for sustainable development of an agricultural economy. Through the process of providing employments on works that address causes of chronic poverty such as drought, deforestation and soil erosion, the act seeks to strengthen the natural resource base of rural livelihood and create durable assets in rural areas. Effectively implemented, NREGA has the potential to transform the geography of poverty.

(3) Empowerment of rural poor through the processes of a rights-based law.

(4) New ways of doing business, as a model of a governance reform anchored the principles of transparency and grass root democracy.

1.1 Salient features of the Act

The Salient features of the Act are as follows:

(1) Adult members of a rural household, willing to do unskilled manual work, may apply for registration in writing or orally to the local Gram Panchayat.

(2) The Gram Panchayat after due verification issue a job card. The job card will bear the photograph of all adult members of the household willing to work under NREGA and is free of cost.

(3) The job card should be issued within 15 days of application.

(4) A job card holder may submit a written application for employment to the Gram Panchayat, stating the time and duration for which work is sought. The minimum days of employment have to be at least fourteen.

(5) The Gram Panchayat will issue a dated receipt of the written application for employment, against which the guarantee of providing employment within 15 days operator.

(6) Employment will be given 15 days of application for work, if it is not then daily unemployment allowance as per the act, has to be paid liability of payment of unemployment allowance is of the States.

(7) Work should ordinarily be provided within 5 Km radius of the village. In case work is provided beyond 5 Km, extra wages of 10% are payable to meet additional transportation and living expenses.

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(8) Wages are to be paid according to the minimum wages act 1948 for agricultural laborers in the State, unless the centre notifies a wage rate which will not be less than Rs 60/per day. Equal wages will be provided to both men and women.

(9) Wages are to be paid according to piece rate or daily rate. Disbursement of wages has to be done a weekly basis and not beyond a fortnight in any case.

(10) At least one-third beneficiaries shall be women who have registered and requested work under the scheme.

(11) Work site facilities such as creche, drinking water, shade have to be provided.

(12) The shelf of projects for a village will be recommended by the Gram Sabha and approved by Zila Panchayat.

(13) At least 50% of work will be allotted to Gram Panchayats for execution.

(14) Permissible works predominantly include water and soil conservation, forestation and land development works.

(15) A 60:40 wage and material ratio has to be maintained. No contractors and machinery is allowed.

(16) The Central Government bears the 100 percent wage cost of unskilled manual labour and 75 percent of material cost including the wages of skilled and semiskilled workers.

(17) Social Audit has to be done by Gram Sabha.

(18) Grievance redressal mechanisms have to be put in place for ensuring a responsive implementation process.

(19) All accounts and records relating to the scheme should be available for public scrutiny.

1.2 Historical Background

India is a country of villages and about 50 per cent of the villages have very poor socio-economic conditions. Since the dawn of independence, concerted efforts have been made to ameliorate the living standard of rural masses. The Ministry of Rural Development runs a number of schemes and programmes with the principal objective of enabling rural people to improve the quality of lives. It was realized that a sustainable strategy of poverty alleviation has to be based on increasing the productive employment opportunities in the process of growth itself and the NREGA a land mark legislation in the history of social security legislation in India after independence had taken place. Coupled with the right to information out, this legislation is looked upon as one bringing about a silent revolution in rural areas of the country. The figure given below gives a glimpse of how NREGA, which could be seen to render rural transformation for the welfare of the country as a whole.
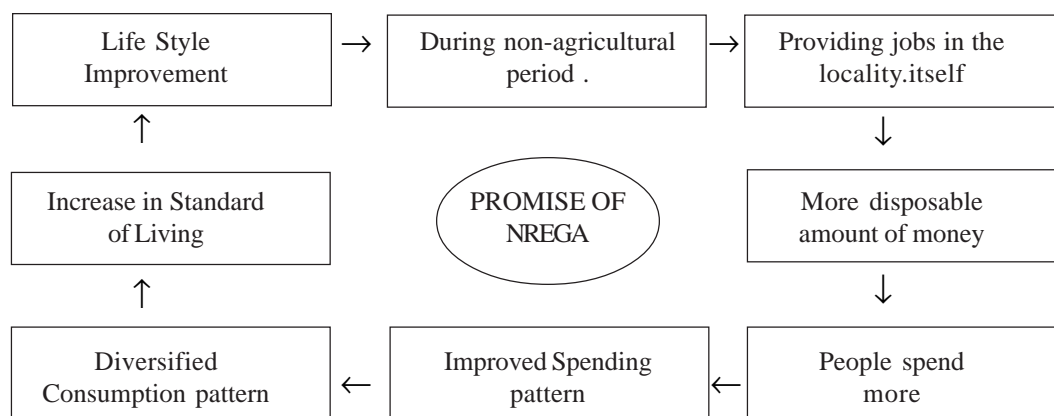
Fig. 1.1: The Promise of NREGA

1.3 Main Objectives of the Study

The study covers the following objectives:

(1) To measure the extent of manpower employment generated under NREGA, their various socio-economic characteristics and gender variability in all the districts implementing NREGA since its inception.

(2) To compare wage differentials between NREGA activities and other wage employment activities.

(3) To evaluate the effect of NREGA on pattern of migration from rural to urban areas.

(4) To find out the nature of assets created under NREGA and their durability.

(5) To identify the factors determining the participation of people in NREGA and find out it's impact in ensuring better food security to the beneficiaries.

(6) To assess the implementation of NREGA, it's functioning and to suggest, suitable policy measures to further strengthen the programme.

1.4 Data Base and Methodology

The study was based on both primary and secondary data. The primary data was collected from five districts viz; Morena, Chhindwara, Sidhi, Dhar and Sagar one each from the North, South, East, West and Central direction of the State. From each district two villages were selected keeping into account their distance from the location of the district or the main city/town. One village was selected from the nearby periphery of around 5 kilometers of the district/city head-quarters and the second village was selected from the farthest location of 20 kilometers and more than that. From each selected village, primary survey was carried out on 20 participants in NREGA and 5 non-participants working as wage employed. Thus, from Chhattisgarh State 250 numbers of household.5 (HHs) were surveyed from 10 selected villages (Table 1.1). From Madhya Pradesh State 200 participants and 50 non participants were surveyed in detail to construct baseline for comparison. A Stratified Random Sampling method was adopted for selection of the participant households giving proportionate representation to the caste, i.e. (1) Scheduled Caste (2) Scheduled Tribe (3) Other Backward Caste (4) Forward Castes (others). A due representation was given to the gender factor. Phase and district wise implementation of NREGA has given utmost care for the proper representation across the State.

TABLE 1.1—SAMPLING SCHEME FOR THE STUDY

Sl. No.	District	Block	Village	Near/ Far	NREGA HHs					Non NREGA HHs				
					SC	ST	OBC	GEN	Total	SC	ST	OBC	GEN	Total
1.	Sagar	Rahatgarh	Bhaisa	Near	14	6	0	0	20	5	0	0	0	5
2.	Sagar	Sagar	Fatepura Ghat	Far	7	1	9	3	20	2	0	2	1	5
3.	Chhindwara	Mohkhed	parasiya	Near	12	6	2	0	20	3	0	2	0	5
4.	Chhindwara	Chhindwara	Lahegdua	Far	3	0	17	0	20	0	0	5	0	5
5.	Dhar	Tirla	Musapura	Near	0	20	0	0	20	0	5	0	0	5
6.	Dhar	Tirla	Anjania	Far	1	19	0	0	20	0	2	3	0	5
7.	Morena	Kailarus	Jouri	Near	3	0	17	0	20	1	0	3	1	5
8.	Morena	Morena	Aantri	Far	17	2	1	0	20	4	0	0	1	5
9.	Sidhi	Sidhi	Naugawn Dhirsingh	Near	4	10	4	2	20	1	0	2	2	5
10.	Sidh.	Sihaual	Gajarha	Far	9	5	6	0	20	2	0	2	1	5
		Total			70 (35)	69 (34.5)	56 (28)	5 (2.5)	200 (100)	18 (36)	7 (14)	19 (38)	6 (12)	50 (100)

1.5 Major Findings

The NREGA was implemented in Madhya Pradesh from Feb.2, 2006. In the I phase 18 districts were covered, II phase started from April 1, 2007 and 13 district were covered and the last III phase was started in April 1, 2008 and 19 district were covered under this phase.

Out of total man days generated employment, increasing trend of getting job cards were noticed to other caste i.e. 53.28, 53.74 and 56.17 per cent in 2008-09, 2009-10 and 2010-11 respectively, however, decreasing trend was found in case of weaker section (scheduled tribes and scheduled castes) te. 46.72, 45.86 and 43.83 per cent in 2008-09, 2009-10 and 2010-11 respectively..

Out of total man days generated employment, increasing trend were observed to other castes i.e. 35.37, 36.17 and 37.21 per cent in the year 2008-09, 2009-10 and 2010-11 respectively whereas decreasing trend was noticed in case of scheduled tribes & scheduled castes

i.e. 64.63, 63.82 and 62.79 per cent in the year 2008-09, 2009-10 and 2010-11 respectively.

Out of total person days generated employment for women during last three years i.e. from 2008-09 to 2010-11 were found to be increasing and reported as 43.28, 44.23 and 44.40 respectively Decreasing trend was noticed in case of house hold completed 100 days employment and recorded as 8.72, 6.01 and 4.10 per cent in the years 2008-09, 2009-10 and 2010-11 respectively. This might be due to the fact that the difficulty faced by bottom level planners in generating employment opportunities at gross root level. Hence there is need to involve agricultural scientist, thinkers, planners in the policy implication from top to bottom for effective implementation of the programme. This programme should be tuned up with comprehensive District Agricultural Plan (C-DAP). Rural households should be encouraged for cottage industry and value added products.

It was observed that irrigation facilities along with land development and drought proofing are developing in a fast rate which is most important factor for the development of agricultural sector in particular and industry as a whole in Madhya Pradesh.

The amount spent on the works undertaken shown decreasing trend in provision of irrigation facility, drought proofing and renovation of traditional water bodies and flood control and protection while increasing trends were found in rural connectivity & water conservation and water harvesting during the financial years from 2008-09 to 2010-11.

Muster roll used in Madhya Pradesh were 2329190,1881125 and 1675573 out of which 83.47, 88.13 and 85.94 per cent were verified in the year 2008-09,2009-10 and 2010-11 respectively. Out of total Gram Panchayats i.e. 27798, 23039 and 23755, the social audit were held in 64.42, 96.47 aad 98.22 per cent gram panchayats in the year 2008-09, 2009-10 and 2010-11 respectively. Out of total Gram Panchayat in Madhya Pradesh, total Gram Sabha held in the proportion of 1:2.66,1:2.62 and 1:2.51 in the year 2008-09,2009-10 and 2010-11 respectively. Vigilance Monitoring Committee (V.M.C.) meeting held in the Gram Panchayat showed increasing trend in the proportion of I: 1.62, 1: 1 .65 and 1: 1.73 81.56 in the year 2008-09,2009-10 and 2010-11 respectively.

Among the total accounts opened, 71.62 per cent accounts were opened as individual account while 28.38 per cent accounts were opened as joint account in the financial year 2010-11 NREGA not only provided employment to the weaker section of the society but also strengthening the health of post office and commercial banks in the rural area. Although the total amount disbursed by the commercial banks and post office is found to be

Rs.4729.10, Rs. 4463.50 and Rs. 1752.60 per account in the year 2010-11, 2009-10 and 2008-09 respectively. It was found that estimated cost for the projected work will be used on unskilled wages (67.27%) and material cost (32.73%) for the activities

The remarkable difference was noticed that the wage earners were found to be more in case of beneficiaries (68.5%) as compared to non beneficiaries (42%) which is showing that the most of the beneficiaries dependent on the employment provided to them under NREGA. None of the HHs reported to be migrated from the village. The majority of the HHs were male belonged to age group of 16 to 60 year and 85.6 per cent of them were identified as head of the family, The majority of the HHs were educated up to secondary level, belonged to SC and ST cast group, BPL card holders, male decision maker and wage earners.

Almost 50 per cent of the non beneficiaries were dependent on the self employment in non farming and regular/salaried job while more than 50 per cent of beneficiaries were dependent on agricultural and non agricultural casual labour, self employed in agriculture and employment generated under NREGA. It means beneficiaries are the most deprived persons of the area selected under study who were solely dependent on their labour. At aggregate level also similar findings were obtained.

A household received an average total income of Rs. 56817.65/year with fluctuation of 65.24 per cent in the study area. Although the average income of non beneficiaries Rs.62832.56/year (74.77%) showed more fluctuation as compared to beneficiaries Rs.55547.62 (61.58%) household among different sources of income like NREGA, agriculture, public work programme, non farming of livestock, salary/pension etc.

At aggregate level the maximum (1091.28%) and minimum (32.61%) fluctuation in income was found in sale of assets/rent/transfer and wages from agriculture respectively. The consumption pattern of the beneficiary and non beneficiary household was found to be almost same. The beneficiary household consumes more quantity rice and other cereals as compared to other items consumed by non beneficiary households.

The variation of monthly expenditure of households in food items varies from 173.04 (pulses) to 833.38 (poultry meat), 151.50 (pulses) to 880.25 (poultry meat) and 171.66 (pulses) to 873.85 (poultry meat) per cent and in non food items from 119.76 (others) to 668.68 (footwear), 113.52 (others) to 529.28 (fuel) and 119.32 (others) to 632.27 (footwear) per cent in case of beneficiary, non beneficiary and at aggregatte level, respectively.

The variability in income is higher as compared to the consumption expenditure for both the categories and

it was also noticed that the variability in case of non beneficiaries is greater than that in case of beneficiaries. Values of gini coefficient shows greater inequalities in case of consumption expenditure and equal distribution was recorded in income earned in both the categories.

The variables such as HH income and employment other than NREGA and value of HH assets were found to be negative and significant showing that with the increase in above variables, the possibility of the participation of the HH in NREGA decreased. The increase in HH size found to be positive and highly significant showing that with the increase in HH size, HH participation in NREGA will also increase. Value of HH assets was also found positive and significant. The variables on social characteristics like HH belonging to SC, ST or OBC and HH owned an AAY, BPL or card holding had positive and insignificant relation showing possibility of entering into NREGA.

The variables, HH income other than NREGA, dummy of SC, ST & OBC were found positive and highly significant association with number of days per HH worked in NREGA. Dummy of AAY card holding was found negative and significant indicating that AAF card holder did not prefer to work in NREGA. Variables such as employment other than the NREGA, HH size, dummy BPL card holding, value of land owned were found negative and insignificant. Wage rate in NREGA was found positive and insignificant.

It was found that on an average 1.8 persons per household were working under NREGA at the State aggregate level. Only Dhar (2.5 person) and Morena (1.85 person) districts were found to be above the State average. The number of member per HHs employed related to SCs, STs and OBCs were found to be 2.11,1.78 and 1.34 persons respectively. As regards to woman number of member per HHs it is clear from the data that on an average 0.65 members per HHs engaged in NREGA during the year 2009 in Madhya Pradesh. The 100 days of employment per HHs in year 2009 was found be varies in all the districts related to all the categories it was found below 100. The average rate obtained by the members employed in NREGA was found to be Rs. 91.71/day in Madhya Pradesh. An Average member covered a distance of 1.1 Km. to reach in the place where work conducted under NREGA in Madhya Pradesh. This was found to be maximum in Chhindwara (1.36 Km.) followed by Morena (1.18 Km), Dhar and Sidhi (1.02 Km.) and Sagar (1.0 Km.)

The Major attention has been given for employment in rural connectivity (48.89%) followed by HHs in water conservation and water harvesting (30%), land development (4.63%), flood control and protection (4.07%), renovation of traditional water bodies (3.52%), micro irrigation (1.11 %) and drought proofing (0.56%) activities. These activities were found to be almost similar in all the districts except Sidhi and Chhindawara where drought proofing, minor Irrigation work and renovation of traditional bodies were not taken in the reference period of the study. The work related to drought proofing and land development was also not found to be conducted in Sagar district. The 51.37 per cent and 48.63 per cent of NREGA HHs respectively reported that the quality of assets created through NREGA activities were of very good and good quality.

It is also observed that the wage rate between beneficiaries and non beneficiaries was found to be higher for non agricultural casual labour male (Rs.97.12/day) and female (Rs.65.83/day) as compared to wage rate in agricultural casual labour for male (Rs.62.97/day) and for female (Rs.51.73/day) and with the fluctuation of 41.69% (male), 30% (female) in case of non agricultural casual labour and 30.61 % (male) and 28.93% (female) in case of agricultural casual labour. Hence, it is clear that wage rate and fluctuation in wage rate were found to be more in non agricultural casual labour as compared to agricultural casual labour.

Very few number of members were found to be migrated from the village (0.31 person) and returns back (0.14 person) in the village in the year 2009 in Madhya Pradesh. The data are almost same for all the locations of the study with minor variations. Out of the members returned to the village to work under NREGA, the majority of them of nearby town (14.48%) followed by same district (14.29%) and same state (14.29%). Amongst the different location the return backed of members was found only in Morena and Dhar district of Madhya Pradesh.

The majority of single families were found in the study area, very few in number joint families were found to exist. It was found during the investigation that this programme is very useful for single family because norms of the programme are 100 days employment will be given to per household family in a financial year either single family or joint family. Some of the joint families were broken-up to single family in the study area after the implementation of NREGA.

The total value of assets of non beneficiaries was found to be 2.73 times higher than that of beneficiaries. Value of agricultural implements of non beneficiaries was found 14.37 times higher than the beneficiaries showing remarkable investment, while in other items it ranged from 1.37 to 4.00. Both the groups did not possess any business asset. At the aggregate level the total value of household assets was found to be worth Rs. 296651.40. In per cent term, value of land and house property covers 90 per cent value out of total value of assets across both the categories and at aggregate level.

The rate of interest is to be paid by non beneficiary (36.40%) was found almost one and half times the rate of interest paid by beneficiary (25.30%). The low asset

base and poor socio-economic condition of majority of the HHs compelled them to live in vulnerable areas with poor access of good quality food, institutional credit hygienic environment which lead to health related problems.

Tendency of opening an account in a bank/post office/ other institution was found noticeably higher in NREGA HHs (88%) as compared to non NREGA HHs (50%). None of the HHs found to have stocks/bond/shares/other similar assets. HHs having LIC policy were found to be more in case of non NREGA (14%) against the NREGA (5.5%) HHs.

Beneficiaries on the basis of their experiences with NREGA reported that only 95.5 per cent were employed in response to an application for work while 4.5 per cent did not get the employment. Only 37 per cent of the beneficiaries got the dated receipt for the application and 63 per cent didn't get it.

The 94 per cent of the beneficiaries revealed that the authority was present to monitor the functioning of NREGA administration. About 85.5, 13 and 1.5 per cent beneficiaries reported that the work was very useful, quite useful and not particularly useful to the villagers respectively. About 95.5 beneficiaries told that it is worth creating the structure and 82 per cent were in the favour of the structures created were adequate. No one reported that the structure needed more attention to be able to last long.

The 93.5 per cent of the beneficiaries opined that NREGA enhanced the food security, 85 per cent believes that it provided protection against extreme poverty, 39 per cent revealed that it helped to reduce distress migration, 31 per cent realized that it helped to reduce indebtedness, 51 per cent realized purchasing power at local economy generated due to NREGA. About 34 per cent felt that NREGA gave economic independence to women.

Timely payment, increase in wage rate, more employment and increase in number of working days under NREGA and children education are some of the amelioration suggested by the HHs. Functioning of NREGA can be improved by better arrangement/worksite facilities, stringent action against corruption affairs, proper measurement of piece work, transparencies and accountability in implementation, increasing number of working days, better monitoring of NREGA work as reported by majority of the HHs.

About 40 per cent villages have self help group centre, 30 per cent have primary health centre, 20 per cent have cooperative credit society and Higher Secondary School and 10 per cent have Regional Rural Banks. The average distance of railway connectivity was found to be 32.8 kms away from the village. Hospital, Agricultural Produce Market and Commercial Bank found to be about 8.7,6 and 5.6 kms away from the village while other infrastructures like, post office, Regional Rural bank, cooperative credit society, fair price shop and primary health centres were found to be within the average distance ranges from 2.6 to 4.6 kms. Thus, it can be concluded that NREGA has accelerated village economy by creating growth opportunities in agricultural laborers, trade, commerce and business, construction various sectors for the workers.

It is seen that wages of both male and female workers have increased over the concerned period. The data shows that the increase in wage rate was noticed in the range of 15 per cent (female) to 33 per cent (male). The labour charges almost became doubled during 2001-2009. During the two periods i.e. 2001-2005 and 2005-2009, the labour charges found to be increased in the range of 25-50 per cent. Little difficulty regarding availability of labour was noticed everywhere during peak period of agricultural operations.

No change in labour migration by NREGA activities were felt by the 80 per cent respondents while 70 per cent felt that there has been a shortage of agriculture labour after implementation of NREGA. Increase in household consumption in village, trend of people living in village and going to work outside daily and for longer period has increased, labour is migrating from the village as wage rate in the town was higher than wage rate under NREGA or other activities in the village and cost of production increased by 20 to 50 per cent were reported by 20 percent respondents.

Approximately 85 per cent change occurred in the wages of casual labour after the implementation of NREGA. The HHs also reported that their standard of living improved in their villages. They invested 16 to 35 per cent more in housing, food, education and health care. After the introduction of NREGA their household consumption also improved in their villages. They invested 35 to 40 per cent more in food and non food items. The children education also increased upto 35 per cent. The trends of attached labour in agriculture have not been impacted in the study area.

1.6 Policy Suggestions

From the above conclusion following recommendation are made to strengthen the ongoing NREGA programme for effective and efficient work.

- Since, implementation of NREGA, every rural household is familiar with the name of the scheme and basic guarantee of 100 days of employment. However, most of the workers or potential workers do not know that the payment of wages is based on the work done. Similarly,

there is a weak awareness around the issues of demand for work or provision of social audits.

- The communication strategy should focus on taking any specific messages which will enhance guarantee for employment and promote transparency and accountability. The efforts of wall writing, posters, hoardings and national level advertisement have not targeted the genuine NREGA workers or potential workers. Therefore, different communication strategy needs to be evolved.

- It is observed during the investigation that some of the households without job cards and many of them are willing to work under NREGA. Therefore it became essential to bring NREGA card preparation under service Guarantee Act so that within a fixed time anyone applying for job card is guaranteed to get it and all SC/ ST families who bave been benefitted under the Forest Rights Act or any other scheme meant for the poor tribals or Dalits should be automatically granted job cards. The PTGs and untouchable SC groups should be taken on priority basis.

- Working women face several problems. For instance, worksite facilities were almost non-existent. There was no medical or child care and in most cases mothers had to keep young infants in the open in the blistering heat, or leave them at home, often in the care of older children or other family members. Some mothers who were breast feeding their children had to keep going back to their homes in the middle of their work day to feed their children, causing them great hardship. Hence, there is need to develop creche facilities (required by the new law) so that mothers could able to feed them and they would not affect to malnutrition.

- There is a decrease in demand for NREGA work across all the districts as workers are finding it economically unviable to work under NREGA. There is a low measurement of work to adjust work of many dormant workers. Moreover, the average delay in payments is more than 3-4 weeks. Therefore, opportunity cost of working for NREGA is very high. The poorest of the poor have high cash crunch for daily living and high vulnerability due to insufficient food security. Therefore, it is imperative that NREGA workers get payments within 15 days to keep them engaged in NREGA. Hence, strong monitoring at the district level on the muster roll and payment gap analysis to identify villages having delayed payments and enhanced availability of

civil engineers for verification of muster rolls and work measurement. In certain districts where there is an acute shortage of civil engineers, a panel of professionals or retired civil engineers can be identified. These empanelled civil engineers can be hired for by the Panchayats for verification of records and measurements with support to village Panchayats in preparing participatory annual plans and effective labour budgeting so that the most deserving cardholders may get maximum number of day's employment. Similarly, the individual benefits may also be planned openly so that the priority list of the beneficiaries may be developed in a participatory environment.

- As, Gram Sabha is the most important institution for demanding accountability and transparency from the implementing agencies. Hence, there is need to consider following points to enhance engagement of gram sabha for effective accountability and transparency.

- The social audit is done in a ritualistic manner as the quality of information provided on social audit format is very rudimentary. In each block or district, a person should be appointed/ assigned to review the social audit reports and ask for feedback on the non-compliance.

- Gram Sabha actually is not held to conduct social audits. Therefore, a random check of the social audits by the civil society organization/ review agencies for identifying the quality of processes and participation of the workers in social audit.

- It should be mandatory to mention that the Panchayat Bhawan wall complaint register must be available with the Panchayat for the public to lodge any complaint. Greater transparency will encourage many workers to lodge complaint.

- It is essential to have mentors for facilitating the social audit process. The mentors can be active educated youth from the village. The State will have to ensure that these mentors are adequately oriented and capacitated so that they are able to facilitate the process effectively.

- Provisions for some honorarium (as for mate) should be thought of for the social audit committee members for conducting the audit. This will serve as a motivation for them to contribute to the process.

- The vigilance and monitoring committees need to be strengthened. There were detailed instructions from the State on the structure and

roles of the Vigilance and monitoring committees. Adequate capacity building of the committees must be ensured so that they are able to monitor the ongoing works in NREGA and adequate role of panch should be thought out for ensuring transparency and accountability in the implementation of the scheme.

- As, it was found .that there are households which are reporting that their wage payment are being realized in cash. A lot of this has to do with the inconveniences in accessing banking services by the workers. Banks are relatively away from the villages/workers. Moreover, banks have operational difficulties in dealing with large number of small accounts who are unlettered and unfamiliar with formal banking system. Hence, therefore, it is suggested that workers are oriented on the procedure of banking so that they feel comfortable to visit bank by themselves and understand their entries. This will reduce use of agents who mostly cheat the unlettered workers and there is a need to engage with the banks for the provision of A TM machines at a cluster of villages/ block headquarters. The workers thumb impression can be the basis of identification. The A TM supported bank payment will reduce the workload of the less staffed rural banks. Moreover, the A TM machines will also help reduce the difficulty of distances of the banks and fixed timings and fixed days for the payments of the NREGA wages.

- It was found that the level of engagement of the Gram Sabha is very low as far as planning for NREGA is concerned. Nevertheless plans are being prepared for the scheme in each Panchayat. Inadequate planning is leading to inability of the Panchayat to take up more activities resulting deficient response (in terms of number of days of work provided or delay in providing works) to the demand for work raised by the community. There is also a need to look at the plans from an integrated perspective where the works of NREGA can be converged with other line departments. As of now, convergence is driven only by the directives from the State government. There may be several opportunities for converging of different departments locally. Hence following may be considered

- NREGA should instruct all district level officials to derive the plan from the integrated plan document being prepared for the district. The plan also tuned with Comprehensive - District Agriculture Plan.

- At the beginning of each year, plans thus derived should be painted on the walls of the Panchayat so that people are aware of the works that will be done in the scheme with proposed months, budget etc. This would also fall in line with the provision of self disclosure under RTI Act.

- Any farmer in SC/ST/BPL category who demands NREGA work on their land (as per the minimum requirement of sub scheme) should be provided the work in a guaranteed manner. This will increase .the number of activities which can be taken up in the village and the Panchayat will be able to respond adequately to the demand.

- Plans should essentially focus on converging with activities of some key departments like Agriculture, Animal Husbandry, Horticulture, Agro-Forestry and Water Resources.

- Promote greater number of activities and convergence around strengthening agriculture. Most of the NREGA workers are directly or indirectly dependent on Agriculture. Focusing on agriculture would help in making sustainable opportunities of livelihood for the workers.

- As delay in wage realization and lack of transparency in measurement is resulting in a drop of enthusiasm of the people working in NREGA. Often wages are cut based on the measurement of work. Almost 84.5 per cent estimated households who have worked in NREGA have stated that they get delayed wages. The poorest of the poor who work in NREGA cannot practically afford this delay. The absolute wage realisation is also lower than what is guaranteed by the Act. The average wage per day realized in the State is estimated about Rs. 91.10/- which is 10% less than the prescribed norm. This results in the workers to look for other livelihood options available and also migrate in search of work. To cap this gap, the following may be considered to speeding up measurement of works.

- The huge gap of sub engineers needs to be filled on an urgent basis. In case, hiring of sub engineers is not feasible quickly, the government should adopt measures for hiring local educated youth as barefoot engineers. Proper orientation of these youth should be undertaken and they should. be given the task of measurement of simpler works like farm bunds, ponds and road. The sub engineers may be given the task of measuring more complicated tasks like well construction, large ponds etc. Stringent measures to remove

any element of misappropriation of funds should also be built in such a system.

- Simple learning material should be prepared by the State to understand measurements, This can be used as a ready tool by the barefoot engineers Panchayat representatives, vigilance and monitoring committee members and the social audit team members.

- Thus, there is need to take following action to implement these recommendation.

- The State should engage a professional communication agency to redesign the communication strategy, The cues from this report should be explored further to identity the areas in which communication needs to be strengthened and the strategy should be developed accordingly on a priority basis.

- Panel of retired civil engineers should be identified and be engaged for measurement of works.

- Private engineers and architects may be engaged to do the basic measurement and filling of formats for measurement which can then be verified by the appointed civil engineer. This will ease the load on the existing technical staff.

- Intensive capacity building should be organised through the SIRD/and Civil Society organisations for the Panahcyat representatives and Sachivs on preparation of labour budget.

- Provisions should be made for making payment to the Social Audit Committee members for conducting Social Audits. The payment can be a part of the budget of the work so that it can be booked as wages to workers.

- The Social Audit Committee should be strengthened by including non workers and mentors in the committee.

- A State level high powered committee should be made under the chairmanship of the Chief Secretary to monitor the convergence of various schemes. The committee should organise quarterly meetings to push forward the convergence of various departments with NREGA.

D. Commodity Reviews

(i) Foodgrains

During the month of April, 2013 the Wholesale Price Index (Base 2004-05=100) of pulses there are no change. Foodgrains and cereals declined by 0.09% and 0.14% respectively over the previous month.

ALL INDIA INDEX NUMBER OF WHOLESALE PRICES

(Base : 2004-2005=100)

| Commodity | Weight (%) | WPI for the Month of April, 2013 | WPI for the Month of March, 2013 | WPI A year ago | Percentage change during | |
					A month	A year
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rice	1.793	207.6	206.8	177.3	0.39	17.09
Wheat	1.116	204.2	206.3	179.3	1.02	13.89
Jowar	0.096	253.2	256.6	236.8	1.33	6.93
Bajra	0.115	261.1	261.0	209.5	0.04	24.63
Maize	0.217	251.0	249.9	225.4	0.44	11.36
Barley	0.017	209.1	212.0	210.8	-1.37	-0.81
Ragi	0.019	334.3	337.8	223.5	-1.04	49.57
Cereals	3.373	213.1	213.4	184.3	-0.14	15.63
Pulses	0.717	232.7	232.7	211.0	0.00	10.28
Foodgrains	4.09	216.5	216.7	188.9	-0.09	14.61

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, 2013.

Commodity	Main Trend	Rising	Falling	Mixed	Steady
Rice	Rising	Kamataka U.P.		Kerala West Bengal	Haryana
Wheat	Falling	Gujarat	Haryana U.P.	Rajasthan	Karnataka
Jowar	Rising, Falling & Steady	A.P. Gujarat	Maharashtra Rajasthan		Karnataka U.P.
Bajra	Rising	U.P. Gujarat Tamilnadu	Maharashtra Rajasthan	Gujarat	Karnataka
Maize	Rising & Falling	Haryana	Gujarat		

Procurement of Rice

1515 thousand tonnes of Rice (including paddy converted into rice) was procured during April, 2013, as against 2040 thousand tonnes of Rice (including paddy converted into rice) procured during April, 2012.The total procurement of Rice in the current marketing season i.e 2012-2013, upto 30.04.2013 stood at 30770 thousand tonnes,as against 30802 thousand tonnes 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 2012-13 (up to 30-04-2013)		Corresponding Period of last Year 2011-12		Marketing Year (October-September)			
					2011-12		2010 -11	
	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	4720	15.34	5463	17.74	7548	21.53	9609	28.10
Chhattisgarh	4803	15.61	4113	13.35	4115	11.74	3746	10.95
Haryana	2603	8.46	2005	6.51	2007	5.72	1687	4.93
Maharashtra	177	0.58	190	0.62	190	0.54	308	0.90
Punjab	8558	27.81	7731	25.09	7731	22.05	8635	25.25
Tamil Nadu	470	1.53	1538	4.99	1596	4.55	1543	4.51
Uttar Pradesh	2211	7.19	3267	10.61	3357	9.58	2554	7.47
Uttarakhand	457	1.49	332	1.08	378	1.08	422	1.23
Others	6771	22.01	6163	20.01	8138	23.21	5694	16.65
Total	**30770**	**100.00**	**30802**	**100.00**	**35060**	**100.00**	**34198**	**100.00**

Source: Department of Food & Public Distribution.

Procurement of Wheat

The total procurement of wheat in the current marketing season i.e 2013-2014 upto April, 2013 is 20066 thousand tonnes against, a total of 19705 thousand tonnes of wheat procured during last year. The details are given in the following table.

PROCUREMENT OF WHEAT

(in thousand tonnes)

State	Marketing Season 2013-14 (upto 30-04-2013)		Corresponding Period of last Year (2012-13)		Marketing Year (April-March)			
					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)
Haryana	5304	26.43	6559	33.29	8665	22.71	6928	24.45
Madhya Pradesh	4650	23.17	3854	19.56	8493	22.26	4965	17.52
Punjab	9297	46.33	8021	40.71	12834	33.64	10958	38.67
Rajasthan	568	2.83	596	3.02	1964	5.15	1303	4.60
Uttar Pradesh	237	1.18	633	3.21	5063	13.27	3461	12.21
Others	10	0.05	42	0.21	1129	2.96	720	2.54
Total	**20066**	**100.00**	**19705**	**100.00**	**38148**	**100.00**	**28335**	**100.00**

Source: Department of Food & Public Distribution.

(ii) Commercial Crops

OIL SEEDS AND EDIBLE OILS : The Wholesale Price Index (WPI) of nine major oilseeds as a group stood at 210.1 in April, 2013 showing an increase of 2.4 per cent ard 18.0 per cent 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 Soyabean (13.1 per cent), Groundnut seed (1.5 per cent), Sunflower (0.3 per cent) and Copra (0.1 per cent) increased over the previous month. However, the WPI of Safflower (3.7 per cent), Rape & Mustard (3.2 per cent), Gingelly seed (1.4 per cent) and Cottonseed (0.4 per cent) decreased over the previous month. The WPI of Niger seed remained unchanged over the previous month.

The Wholesale Price Index (WPI) of Edible Oils as a group stood 145.2 in April, 2013 showing a fall of 1.0 per cent over the previous month. However, it increased by 0.7 per cent over the previous year. The WPI of Sunflower Oil (3.6 per cent), Mustard Oil (2.5 per cent), Groundnut Oil (2.2 per cent), Cottonseed Oil (0.1 per cent) and Soyabean Oil (0.4 per cent) decreased over the previous month. However, the WPI of Gingelly Oil (0.4 per cent) and Copra oil (0.3 per cent) increased over the previous month.

FRUITS AND VEGETABLE : The Wholesale Price Index (WPI) of Fruits & Vegetable as a group stood at 206.4 in April, 2013 showing an increase of 10.6 per cent over the previous month. However, it decreased by 4.1 per cent over the previous year.

POTATO : The Wholesale Price Index (WPI) of Potato stood at 169.6 in April, 2013 showing an increase of 15.7 per cent over the previous month. However, it decreased by 2.4 per cent over the previous year.

ONION : The Wholesale Price Index (WPI) of Onion stood 267.6 in April, 2013 showing a fall of 6.6 per cent over the previous month. However, it increased by 91.7 per cent over the previous year.

CONDIMENTS AND SPICES : The Wholesale Price Index (WPI) of Condiments & Spices (Group) stood at 229.8 in April, 2013 showing an increase of 3.4 per cent and 10.8 per cent over the previous month and over the previous year.

The WPI of Black Pepper and Chillies (Dry) decreased by 1.5 per cent and 0.5 per cent over the previous month. However, the WPI of Turmeric increased by 8.3 per cent over the previous year.   .

RAW COTTON : The Wholesale Price Index (WPI) of Raw Cotton stood at 213.7 in April, 2013 showing a fall of 0.3 per cent over the previous month. However, it increased by 7.6 per cent over the previous year.

RAW JUTE : The Wholesale Price Index (WPI) of Raw Jute stood at 272.6 in April, 2013 showing a fall of 0.2 per cent over the previous month. However, it increased by 22.7 per cent over the previous year.

WHOLESALE PRICE INDEX OF COMMERCIAL CROPS FOR THE MONTH OF MAY, 2013

(Base Year : 2004-05=100)

Commodity	Latest	Month	Year	Percentage Variation over	
	May, 2013	April, 2013	May 2012	Month	Year
OIL SEEDS	207.6	210.1	183.8	-1.2	12.9
Groundnut Seed	260.8	269.8	234.9	-3.3	11.0
Rape & Mustard Seed	185.1	188.4	179.9	-1.8	2.9
Cotton Seed	168.1	166.5	146.8	1.0	14.5
Copra (Coconut)	90.5	92.8	90.2	-2.5	0.3
Gingelly Seed (Sesamum)	349.4	380.8	257.9	-8.2	35.5
Niger Seed	177.1	182.4	195.8	-2.9	-9.6
Safflower (Kardi Seed)	156.8	150.4	149.2	4.3	5.1
Sunflower	189.3	189.2	174.7	0.1	8.4
Soyabean	248.9	240.8	202.5	3.4	22.9
EDIBLE OILS	146.9	145.2	145.8	1.2	0.8
Groundnut Oil	201.9	192.5	192.5	4.9	4.9
Cotton Seed Oil	166.4	163.0	163.2	2.1	2.0
Mustard & Rapeseed Oil	151.7	147.4	151.4	2.9	0.2
Soyabean Oil	159.0	158.0	158.5	0.6	0.3
Copra Oil	114.8	115.7	115.8	-0.8	-0.9
Sunflower Oil	132.3	133.1	134.3	-0.6	-1.5
Gingelly Oil	187.0	196.3	155.9	-4.7	19.9
FRUITS AND VEGETABLES	214.4	206.4	208.5	3.9	2.8
Potato	196.5	169.6	203.5	15.9	-3.4
Onion	272.8	267.6	138.2	1.9	97.4
CONDIMENTS AND SPICES	232.0	229.8	198.9	1.0	16.6
Black Pepper	494.9	498.4	489.5	-0.7	1.1
Chillies(Dry)	247.5	261.2	225.1	-5.2	10.0
Turmeric	225.3	211.9	143.7	6.3	56.8
Raw Cotton	213.3	213.7	204.5	-0.2	4.3
Raw Jute	268.0	272.6	216.1	-1.7	24.0

Source : Dte. of Eco-and Statistics, Commercial Crops Division.

PART II—Statistical Tables

A. Wages

1. DAILY AGRICULTURAL WAGES IN SOME STATES (CATEGORY-WISE)

(in Rupees)

State/Distt.	Village	Month and Year	Normal Daily Working Hours	Field Labour			Other Agri. Labour			Herdsman			Skilled Labour		
				Man	Wo-man	Non Adult	Man	Wo-man	Non Adult	Man	Wo-man	Non Adult	Car-penter	Black-smith	Cob-bler
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Andhra Pradesh															
Krishna	Ghantasala	Sep., 2012	8	225.00	132.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Guntur	Tadikonda	Sep., 2012	8	350.00	300.00	NA	NA	NA	NA	250.00	NA	NA	NA	NA	NA
Rangareddy	Arutla	Sep., 2012	8	250.00	120.00	NA	150.00	NA	NA	NA	NA	NA	250.00	250.00	NA
Karnataka															
Bangalore	Harisandra	May to June, 2012	8	200.00	150.00	NA	200.00	150.00	NA	250.00	180.00	NA	300.00	300.00	NA
Tumkur	Gedlahali	May to June, 2012	8	160.00	160.00	NA	180.00	160.00	NA	180.00	160.00	NA	180.00	180.00	NA
Maharashtra															
Nagpur	Mauda	Feb., 2012	8	100.00	100.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ahmednagar	Akole	Feb, 2012	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jharkhand															
Ranchi	Gaintalsood	April, 2012	8	100.00	100.00	NA	90.00	90.00	NA	58.00	58.00	NA	170.00	150.00	NA

1.1 DAILY AGRICULTURAL WAGES IN SOME STATES (OPERATION-WISE)

(in Rupees)

State/Distt.	Centre	Month and Year	Type of Lab-our	Normal Daily Work-ing Hours	Plough-ing	Sow-ing	Weed-ing	Harvest-ing	Other Agri. Labour	Herds-man	Skilled Labour		
											Car-penter	Black-smith	Cob-bler
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Assam													
Barpeta	Loharapara	March, 12	M	8	180.00	180.00	180.00	180.00	180.00	180.00	180.00	180.00	180.00
			W	8	NA	NA	160.00	160.00	160.00	NA	NA	NA	NA
Bihar													
Muzaffarpur	Bhalui Rasul	April to, June, 2012	M	8	130.00	120.00	80.00	130.00	150.00	120.00	200.00	180.00	250.00
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shekhpura	Kutaut	May and June, 2012	M	8	NA	NA	185.00	NA	185.00	NA	245.00	NA	NA
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chhattisgarh													
Dhamtari	Sihaba	Feb., 2013	M	8	NA	100.00	120.00	NA	80.00	100.00	250.00	100.00	100.00
			W	8	NA	100.00	100.00	NA	80.00	80.00	150.00	100.00	80.00
Gujarat													
Rajkot	Rajkot	Sep., 2012	M	8	217.00	206.00	167.00	191.00	151.00	162.00	360.00	380.00	287.00
			W	8	NA	167.00	173.00	191.00	142.00	142.00	NA	NA	NA
Dahod	Dahod	Sep., 2012	M	8	100.00	100.00	100.00	100.00	71.00	NA	200.00	150.00	150.00
			W	8	NA	100.00	100.00	100.00	100.00	NA	NA	NA	NA
Haryana													
Panipat	Ugarakheri	Feb., 2013	M	8	180.00	180.00	180.00	200.00	180.00	NA	NA	NA	NA
			W	8	NA	150.00	150.00	180.00	150.00	NA	NA	NA	NA

(in Rupees)

State/Distt.	Centre	Month and Year	Type of Labour	Normal Daily Working Hours	Ploughing	Sowing	Weeding	Harvesting	Other Agri. Labour	Herdsman	Carpenter	Blacksmith	Cobbler
											Skilled Labour		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Himachal Pradesh													
Mandi	Mandi	Nov., to Dec. 2010	M	8	300.00	110.00	110.00	110.00	110.00	110.00	200.00	200.00	NA
			W	8	NA	110.00	110.00	110.00	110.00	110.00	NA	NA	NA
Kerala													
Kozhikode	Koduvally	Nov., 2012	M	4 to 8	820.00	450.00	NA	450.00	635.00	NA	550.00	NA	NA
			W	4 to 8	NA	NA	350.00	350.00	400.00	NA	NA	NA	NA
Palakkad	Elappally	Nov., 2012	M	4 to 8	400.00	300.00	NA	NA	366.66	NA	450.00	NA	NA
			W	4 to 8	NA	NA	200.00	NA	200.00	NA	NA	NA	NA
Madhya Pradesh													
Hoshangabad	Sangarkhera	Feb., 2013	M	8	150.00	100.00	100.00	160.00	100.00	100.00	350.00	350.00	150.00
			W	8	NA	100.00	100.00	160.00	100.00	100.00	NA	NA	NA
Satna	Kotar	Feb., 2013	M	8					—NA—				
			W	8					—NA—				
Shyopur Kala	Vijaypur	Feb., 2013	M	8	150.00	150.00	NA	150.00	NA	50.00	200.00	200.00	NA
			W	8	NA	150.00	NA	150.00	NA	NA	NA	NA	NA
Odisa													
Bhadrak	Chandbali	Jan., 2013	M	8	200.00	150.00	150.00	250.00	221.66	150.00	350.00	300.00	200.00
			W	8	NA	140.00	140.00	200.00	176.00	140.00	NA	NA	NA
Ganjam	Aska	Jan., 2013	M	8	250.00	180.00	120.00	140.00	214.28	120.00	350.00	250.00	200.00
			W	8	NA	150.00	100.00	120.00	142.85	100.00	NA	NA	NA
Punjab													
Ludhiana	Pakhowal	June, 2008	M	8	NA	NA	90.00	95.00	NA	99.44	NA	NA	NA
			W	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rajasthan													
Barmer	Vishala	Oct, 2012	M	8					—NA—				
			W	8									
Jalore	Panwa	Oct., 2012	M	8	N A	N A	200.00	N A	N A	200.00	300.00	250.00	N A
			W	8	NA	N A	NA	N A	N A	N A	N A	N A	N A
Tamil Nadu													
Thanjavur	Pulvarnatham	Feb., 2013	M	6					—NR—				
			W	5									
Tirunelveli	Malayakulam (Kurvikulam)	Feb., 2013	M	8	NA	N A	N A	N A	N A	N A	N A	N A	N A
			W	8	NA	N A	N A	NA	N A	N A	N A	N A	N A
Tripura													
Agartala	Govt. Agri. Farm		M	8					—NR—				
			W	8									
*Uttar Pradesh**													
Meerut	Ganeshpur	Jan., 2013	M	8	205.00	207.00	206.00	204.00	206.00	NA	320.00	NA	NA
			W	8	NA	180.00	180.00	180.00	180.00	NA	NA	NA	NA
Aurraiya	Aurraiya	Jan., 2013	M	8	150.00	193.00	192.00	150.00	193.00	NA	300.00	NA	NA
			W	8	NA	160.00	167.00	120.00	167.00	NA	NA	NA	NA
Chandauli	Chandauli	Jan., 2013	M	8	150.00	150.00	125.00	125.00	125.00	NA	271.00	NA	NA
			W	8	NA	150.00	125.00	125.00	125.00	NA	NA	NA	NA

M-Man   W-Woman

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

*- Uttar Pradesh reports its district-wise average rural wage data rather than from selected centre/village.

New district is opted to replace Chandbali.

Source : Dte. of Econ. and Statistics, Wages Division.

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.-13	Mar.-13	Apr.-12
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Wheat	PBW 343	Quintal	Punjab	Amritsar	1350	1500	1285
Wheat	Dara	Quintal	Uttar Pradesh	Chandausi	1355	1520	1150
Wheat	Lokvan	Quintal	Madhya Pradesh	Bhopal	1555	1501	1280
Jowar	—	Quintal	Maharashtra	Mumbai	2400	2350	2300
Gram	No III	Quintal	Madhya Pradesh	Sehore	—	2800	2000
Maize	Yellow	Quintal	Uttar Pradesh	Kanpur	1260	1350	1275
Gram Split	—	Quintal	Bihar	Patna	5200	5200	5000
Gram Split	—	Quintal	Maharashtra	Mumbai	6300	6300	4400
Arhar Split	—	Quintal	Bihar	Patna	5800	5750	6275
Arhar Split	—	Quintal	Maharashtra	Mumbai	6800	6650	5050
Arhar Split	—	Quintal	NCT of Delhi	Delhi	6500	6000	5700
Arhar Split	Sort II	Quintal	Tamil Nadu	Chennai	6400	6400	5600
Gur	—	Quintal	Maharashtra	Mumbai	3450	3380	3250
Gur	Sort II	Quintal	Tamil Nadu	Coimbatore	3400	3400	2950
Gur	Balti	Quintal	Uttar Pradesh	Hapur	2650	2520	2450
Mustard Seed	Black (S)	Quintal	Uttar Pradesh	Kanpur	3250	NA	3075
Mustard Seed	Black	Quintal	West Bengal	Raniganj	4300	4000	3700
Mustard Seed	—	Quintal	West Bengal	Kolkata	3750	3300	4000
Linseed	Bada Dana	Quintal	Uttar Pradesh	Kanpur	4125	NA	3275
Linseed	Small	Quintal	Uttar Pradesh	Varanasi	3500	3620	3050
Cotton Seed	Mixed	Quintal	Tamil Nadu	Virudhunagar	1600	1500	1300
Cotton Seed	MCU5	Quintal	Tamil Nadu	Coimbatore	1550	1550	1550
Castor Seed	—	Quintal	Andhra Pradesh	Hyderabad	3200	3250	3000
Sesamum Seed	White	Quintal	Uttar Pradesh	Varanasi	6325	6200	6100
Copra	FAQ	Quintal	Kerala	Alleppey	4225	4400	4375
Groundnut	Pods	Quintal	Tamil Nadu	Coimbatore	4000	4000	3850
Groundnut	—	Quintal	Maharashtra	Mumbai	7800	7900	5900
Mustard Oil	—	15 Kg.	Uttar Pradesh	Kanpur	1249	NA	1163
Mustard Oil	Ordinary	15 Kg.	West Benaal	Kolkata	1155	1230	1450
Groundnut Oil	—	15 Kg.	Maharashtra	Mumbai	1800	1815	1800
Groundnut Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	1800	1830	1875
Linseed Oil	—	15 Kg.	Uttar Pradesh	Kanpur	1298	1328	1320
Castor Oil	—	15 Kg.	Andhra Pradesh	Hyderabad	1110	1155	1080
Sesamum Oil	—	15 Kg.	NCT of Delhi	Delhi	1700	1700	1450
Sesamum Oil	Ordinary	15 Kg.	Tamil Nadu	Chennai	3150	3300	1875
Coconut Oil	—	15 Kg.	Kerala	Cochin	938	938	960
Mustard Cake	—	Quintal	Uttar Pradesh	Kanpur	1710	NA	1300
Groundnut Cake	—	Quintal	Andhra Pradesh	Hyderabad	3214	3286	2571
Cotton/Kapas	NH44	Quintal	Andhra Pradesh	Nandyal	4000	4300	3350
Cotton/Kapas	LRA	Quintal	Tamil Nadu	Virudhunagar	4200	4366	3856
Jute Raw	TD5	Quintal	West Bengal	Kolkata	2809	2900	2315
Jute Raw	W 5	Quintal	West Bengal	Kolkata	2805	2900	2315

(Month-end Prices in Rupees)

Commodity	Variety	Unit	State	Centre	Apr.-13	Mar.-13	Apr.-12
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Oranges	—	100 No.	NCT of Delhi	Delhi	625	583	NA
Oranges	Big	100 No.	Tamil Nadu	Chennai	550	490	550
Oranges	Nagpuri	100 No.	West Bengal	Kolkata	NA	—	480
Banana	—	100 No.	NCT of Delhi	Delhi	200	167	200
Banana	Medium	100 No.	Tamil Nadu	Kodaikkanal	380	365	31 4
Cashewnuts	—	Quintal	Maharashtra	Mumbai	46000	46000	40000
Almonds	—	Quintal	Maharashtra	Mumbai	45800	45000	40000
Walnuts	—	Quintal	Maharashtra	Mumbai	58000	59500	50625
Kishmish	—	Quintal	Maharashtra	Mumbai	12300	12500	11833
Peas Green	—	Quintal	Maharashtra	Mumbai	3300	3250	2550
Tomatoes	Ripe	Quintal	Uttar Pradesh	Kanpur	785	1050	850
Ladyfinger	—	Quintal	Tamil Nadu	Chennai	3000	2400	2200
Cauliflower	—	100 No.	Tamil Nadu	Chennai	1100	1200	1200
Potatoes	Red	Quintal	Bihar	Patna	685	580	750
Potatoes	Desi	Quintal	West Bengal	Kolkata	920	620	1040
Potatoes	Sort I	Quintal	Tamil Nadu	Mettuppalavam	2018	1563	—
Onions	Pole	Quintal	Maharashtra	Nashik	700	850	400
Turmeric	Nadan	Quintal	Kerala	Cochin	10500	10000	7200
Turmeric	Salam	Quintal	Tamil Nadu	Chennai	9500	8700	5700
Chillies	—	Quintal	Bihar	Patna	7600	7400	8400
Black Pepper	Nadan	Quintal	Kerala	Kozhikode	32500	32500	36500
Ginger	Dry	Quintal	Kerala	Cochin	17500	13500	8100
Cardamom	Major	Quintal	NCT of Delhi	Delhi	90000	78000	67000
Cardamom	Small	Quintal	West Bengal	Kolkata	110000	100000	70000
Milk	Cow	100 Liters	NCT of Delhi	Delhi	3600	3600	3400
Milk	Buffalo	100 Liters	West Bengal	Kolkata	3200	3200	3200
Ghee Deshi	Deshi No 1	Quintal	NCT of Delhi	Delhi	27347	26013	26013
Ghee Deshi	—	Quintal	Maharashtra	Mumbai	25500	25500	25500
Ghee Deshi	Desi	Quintal	Uttar Pradesh	Kanpur	27650	27750	28150
Fish	Rohu	Quintal	NCT of Delhi	Delhi	9500	9000	6500
Fish	Pompchrets	Quintal	Tamil Nadu	Chennai	29000	27500	25000
Eggs	Madras	1000 No,	West Bengal	Kolkata	3500	3200	3100
Tea	—	Quintal	Bihar	Patna	19900	19800	19650
Tea	Atti Kunna	Quintal	Tamil Nadu	Coimbatore	9000	9000	13000
Coffee	Plant-A	Quintal	Tamil Nadu	Coimbatore	26000	26000	28000
Coffee	Rubusta	Quintal	Tamil Nadu	Coimbatore	14000	14000	13200
Tobacco	Kampila	Quintal	Uttar Pradesh	Farukhabad	2700	2750	2225
Tobacco	Raisa	Quintal	Uttar Pradesh	Farukhabad	2600	2650	2150
Tobacco	Bidi Tobacco	Quintal	West Bengal	Kolkata	3450	3450	4000
Rubber	—	Quintal	Kerala	Kottayam	15000	16200	19000
Arecanut	Pheton	Quintal	Tamil Nadu	Chennai	28000	28000	27700

Source : Dte. of Eco. and Statistics, Prices and Market Division.

3. Month-end Wholesale Prices of Some Important Agricultural Commodities in International Markets During Year, 2013

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	April
Cardamom	Guatmala Bold Green	U.K.	—	Dollar/M.T.	16500.00	16500.00	16500.00	17000.00
				Rs./Qtl.	139788.00	137164.50	135762.00	142290
Cashew Kernels	Spot U.K. 320s	U.K.	—	Dollar/1bs	3.60	3.60	3.66	3.64
				Rs./Qtl.	67220.24	65958.67	66372.31	67148.83
Castor Oil	Any Origin ex tank Rotterdam	Netherlands	—	Dollar/M.T.	1690.00	1650.00	1650.00	1600.00
				Rs./Qtl.	9071.92	8987.55	8974.35	8675.20
Celery Seed	ASTA cif	India	—	Dollar/M.T.	1500.00	1500.00	1500.00	1500.00
				Rs./Qtl.	8052.00	8170.50	8158.50	8133.00
Chillies	Birds eye 2005 crop	Africa	—	Dollar/M.T.	5000.00	4250.00	4250.00	4100.00
				Rs./Qtl.	26840.00	23149.75	23115.75	22230.20
Cinnamon Bark		Madagascar	—	Dollar/M.T.	1100.00	1100.00	1100.00	1100.00
				Rs./Qtl.	5904.80	5991.70	5982.90	5964.20
Cloves	Singapore	Madagascar	—	Dollar/M.T.	9500.00	9500.00	9500.00	12000.00
				Rs./Qtl.	50996.00	51746.50	51670.50	65064.00
Coconut Oil	Crude Phillipine/ Indonesia	Netherlands	—	Dollar/M.T.	815.00	850.00	805.00	800.00
				Rs./Qtl.	4374.92	4629.95	4378.40	4337.60
Copra	Phillipines cif Rotterdam	Phillipine	—	Dollar/M.T.	538.00	530.00	505/.00	476.00
				Rs./Qtl.	2887.98	2886.91	2746.70	2580.87
Corriander		India	—	Dollar/M.T.	1150.00	1150.00	1150.00	1150.00
				Rs./Qtl.	6173.20	6264.05	6254.85	6235.30
Cummin Seed		India	—	Dollar./M.T.	2889.00	2889.00	2889.00	2889.00
				Rs./Qtl.	15508.15	15736.38	15713.27	15664.16
Fennel seed		India	—	Dollar/M.T.	2600.00	2600.00	2600.00	2600.00
				Rs./Qtl.	13956.80	14162.20	14141.40	14097.20
Ginger	Split	Nigeria	—	Dollar/M.T.	2400.00	2400.00	2400.00	2400.00
				Rs./Qtl.	12883.20	13072.80	13053.60	13012.80
Groundnut kernels	US 2005, 40/50	European Ports	—	Dollar/M.T	1275.00	1350.00	—	—
				Rs./Qtl.	6844.20	7353.45	—	—
Groundnut Oil	Crude Any Origin cif Rotterdam	U.K.	—	Dollar/M.T	2200.00	—	—	—
				Rs./Qtl.	18638.40	—	—	—
Lentils	Turkish Red Split Crop 1+1 water	U.K.	—	Pound/M.T	522.72	655.20	660.98	647.80
				Rs./Qtl.	4428.48	5446.68	5438.54	5422.09
Maize		U.S.A	Chicago	C/56 lbs.	720.75	299.95	735.25	278.00
				Rs./Qtl	1520.51	642.09	1571.62	592.38
Oats		Canada	Winnipeg	CanDollar/M.T.	359.83	384.62	406.44	401.94
				Rs./Qtl.	1926.89	2058.87	2175.67	2136.31
Palm Kernal Oil	Crude Malaysia/ Indonesia	Netherlands	— —	Dollar/M.T.	795.00	855.00	815.00	840.00
				Rs./Qtl.	4267.56	4657.19	4432.79	4554.48
Palm Oil	Crude Malaysian/ Sumatra	Netherlands	— —	Dollar/M.T.	855.00	860.00	850.00	830.00
				Rs./Qtl.	4589.64	4684.42	4623.15	4500.26

Commodity	Variety	Country	Centre	Unit	Jan.	Feb.	Mar.	April
Pepper (Black)	Sarawak Black lable	Malaysia	— —	Dollar/M.T. Rs./Qtl.	— —	7300.00 39763.10	— —	
Rapeseed	Canola	Canada	Winni-peg	Can Dollar/M.T	605.80 3244.06	644.20 3448.40	638.00 3415.21	637.60 3388.84
Rapeseed	UK Rapeseed Buyer Price DAP	U.K.	—	Pound/M.T. Rs/Qtl.	379.00 3210.89	389.00 3233.76	393.00 3233.60	394.00 9297.78
Rapeseed Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T. Rs/Qtl.	871.00 7379.11	908.00 7548.20	867.00 7133.68	819.00 6855.03
Soyabean Meal	U.K. produced 49% oil & protein	U.K.	—	Pound/M.T. Rs./Qtl.	351.00 2973.67	379.00 3150.63	376.00 3093.73	— —
Soyabean Oil		U.S.A.	—	C/lbs Rs./Qtl.	52.03 6155.71	52.07 6251.10	50.82 6092.08	49.18 5877.05
	Refined bleached and deodorised	U.K.	—	Pound/M.T. Rs/Qtl.	826.00 6997.87	849.00 7057.74	839.00 6903.29	768.00 6428.16
Soyabeans		U.S.A.	—	C/60 lbs Rs./Qtl	1437.00 2830.97	1482.75 2964.09	1453.75 2901.85	1345.25 2676.88
	US No. 2 yellow	Nether-lands	Chi-cago	Dollar/M.T. Rs./Qtl	596.70 3203.09	594.10 3236.06	580.10 3155.16	569.20 3086.20
Sunflower Seed Oil	Refined bleached and deodorised	U.K.	—	Pound/M.T. Rs./Qtl	983.00 8327.98	1018.00 8462.63	963.00 7923.56	934.00 7817.58
Tallow	High grade delivered	U.K.	Lon-don	Pound/M.T. Rs./Qtl	550.00 4659.60	460.00 3823.98	440.00 3620.32	440.00 3682.80
Turmeric	Madras finger spot/cif	India	—	Dollar/M.T. Rs./Qtl	850.00 4562.80	850.00 4629.95	850.00 4623.15	850.00 4608.70
Walnuts	Indian light halves	U.K.	—	Pound/M.T. Rs./Qtl	7500.00 63540.00	7500.00 62347.50	7950.00 65412.60	7750.00 64867.50
Wheat		U.S.A.	Chic-ago	C/60 lbs Rs../Qtl	774.75 1526.30	738.50 1476.30	736.75 1470.64	691.75 1376.50

Source : Public Ledger.

Exchange Rate

	Jan.	Feb.	Mar.	April
US Dollar	53.68	54.47	54.39	54.22
CAN Dollar	53.55	53.53	53.53	53.15
UK Pound	84.72	83.13	82.28	83.70

C. CROP PRODUCTION

4. Sowing and Harvesting Operations Normally in Progress During June, 2013

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, Seasmum, Cotton, Turmeric, Sannhemp.	—
Himachal Pradesh	Summer Rice, Maize, Ragi, Small Millets (K), Urad (K), Mung (K), Other Kharif Pulses, Ginger, Chillies (Dry), Tobacco, Groundnut, Seasmum, 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.	Wheat, Barley, Small Millets (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), Urad (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, 2013—*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.

METRIC WEIGHTS AND MEASURES

SIMPLE CONVERSION TABLES

I. WEIGHTS

Tons to metric Tonnes

Tons	..	..	1	2	3	4	5	6	7	8	9	10
Metric tonnes	..	..	1.02	2.03	3.05	4.07	5.08	6.10	7.11	8.13	9.14	10.16

Pounds (av.) to Kilograms

Pounds	..	..	1	2	3	4	5	6	7	8	9	10
Kilograms	..	..	0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08	4.54

Tolas to grams

Tolas	..	..	1	2	3	4	5	6	7	8	9	10
Grams	..	..	11.66	23.33	34.99	46.66	58.32	69.98	81.65	93.31	104.97	116.64

Seers to Kilograms

Seers	..	..	1	2	3	4	5	6	7	8	9	10
Kilograms	..	..	0.93	1.87	2.80	3.73	4.67	5.60	6.53	7.46	8.40	9.33

Maunds to Quintals

Maunds	..	..	1	2	3	4	5	6	7	8	9	10
Quintals	..	..	0.37	0.75	1.12	1.49	1.87	2.24	2.61	2.99	3.36	3.73

II. LENGTHS

Miles to Kilometres

Miles	..	..	1	2	3	4	5	6	7	8	9	10
Kilometres	..	..	1.61	3.22	4.83	6.44	8.05	9.66	11.27	12.87	14.47	16.09

Yards to Metres

Yards	..	..	1	2	3	4	5	6	7	8	9	10
Metres	..	..	0.91	1.83	2.74	3.66	4.57	5.49	6.40	7.32	8.23	9.14

Inches to Millimetres

Inches	..	..	1	2	3	4	5	6	7	8	9	10	11	12
Millimetres	..	..	25.40	50.80	76.20	101.60	127.00	152.40	177.80	203.20	228.60	254.00	279.40	304.80

III. AREA

Acres to Hectares

Acres	..	..	1	2	3	4	5	6	7	8	9	10
Hectares	..	..	0.40	0.81	1.21	1.61	2.02	2.43	2.83	3.24	3.64	4.04

Square Yards to Square Metres

Square Yards	..	..	1	2	3	4	5	6	7	8	9	10
Square Metres	..	..	0.84	1.67	2.51	3.34	4.18	5.02	5.85	6.69	7.53	8.36

IV. CAPACITY

Gallons (Imperial) to Litres

Gallons	..	..	1	2	3	4	5	6	7	8	9	10
Litres	..	..	4.55	9.09	13.64	15.14	22.73	27.28	31.82	36.37	40.91	45.44

LIST OF PUBLICATIONS

Journal

Agricultural Situation in India (Monthly)

Periodicals

Agricultural Prices in India

Agricultural Wages in India

Cost of Cultivation of Principal Crops

District-wise Area and Production of Principal Crops in India

Land Use Statistics at a Glance

Year Book of Agro-Economic Research Studies

Farm Harvest Prices in Principal Crops in India

Agricultural Statistics at a Glance

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