price policy for rabi crops

The Marketing Season 2015-16

सत्यमेव जयते

Commission for Agricultural Costs and Prices
Department of Agriculture and Cooperation
Ministry of Agriculture
Government of India
New Delhi
July 2014

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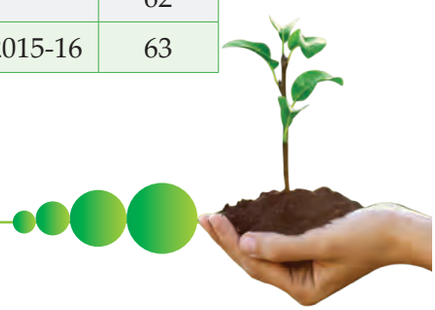

Acronyms

A_2+FL	Actual paid out cost plus imputed value of family labour
APEDA	Agricultural and Processed Food Products Export Development Authority
APMC	Agricultural Produce Market Committee
BE	Budget Estimates
C_2	Comprehensive cost including imputed rent and interest on owned land and capital respectively
CACP	Commission for Agricultural Costs and Prices
CAGR/CARG	Compound Annual Growth Rate/Compound Annual Rate of Growth
CAP	Cover and Plinth
C&F	Cost and Freight
CBOT	Chicago Board of Trade
CIF	Cost, Insurance and Freight
CIPI	Composite Input Price Index
CoP	Cost of Production
CS	Comprehensive Scheme for Studying Cost of Cultivation of Principal Crops in India
CSO	Central Statistics Office
CV	Coefficient of Variation
DAC	Department of Agriculture and Cooperation
DARE	Department of Agricultural Research and Education
DCP	Decentralized Procurement
DES	Directorate of Economics and Statistics

DFPD	Department of Food and Public Distribution
DGCIS	Directorate General of Commercial Intelligence and Statistics
DGFT	Directorate General of Foreign Trade
DIPP	Department of Industrial Policy and Promotion
DTA	Domestic Tariff Area
ECA	Essential Commodities Act
EDI	Electronic Data Interchange
EU	European Union
F&V	Fruits and Vegetables
FAI	Fertilizer Association of India
FAO	Food and Agriculture Organization
FAQ	Fair Average Quality
FCI	Food Corporation of India
FFPI	FAO Food Price Index
FOB	Free on Board
FY	Financial Year
FYP	Five Year Plan
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GR	Gross Returns
GVO	Gross Value of Output
HSDO	High Speed Diesel Oil
IMD	Indian Meteorology Department
IPGA	India Pulses and Grains Association
LCS	Land Customs Station
LPA	Long Period Average
LSDO	Low Speed Diesel Oil
MEP	Minimum Export Price
MSP	Minimum Support Price
MSR	Marketed Surplus Ratio
MT	Million Tonnes
NAFED	National Agricultural Cooperative Marketing Federation of India Limited
NCAER	National Council of Applied Economic Research
NPC	Nominal Protection Coefficient
NSS	National Sample Survey

NSC	National Seeds Corporation
NWR	Negotiable Warehouse Receipts
OEA	Office of Economic Adviser
OGL	Open General License
OWS	Other Welfare Schemes
p.a.	per annum
PDS	Public Distribution System
PSS	Price Support Scheme
R&M	Rapeseed and Mustard
RMS	Rabi Marketing Season
Q1, Q2, Q3, Q4	Quarters pertaining to Calendar Year (unless otherwise specified)
Qtl	Quintal
SEAI	Solvent Extractors' Association of India
SEZs	Special Economic Zones
SRW	Soft Red Winter
TE	Triennium Ending
TFP	Total Factor Productivity
ToT	Terms of Trade
TPDS	Targeted Public Distribution System
US	United States
USDA	United States Department of Agriculture
VVOF	Directorate of Vanaspati, Vegetable Oils and Fats
WDRA	Warehousing Development and Regulatory Authority
WPI	Wholesale Price Index
wrt	with respect to
WTO	World Trade Organization

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Summary of Recommendations

Summary of Recommendations

S.1 The Commission is mandated to take into account the cost of production, overall demand-supply, domestic and international prices, inter-crop price parity, terms of trade between agricultural and non-agricultural sectors, the likely effect of the price policy on the rest of the economy and rational utilization of production resources like land and water while recommending Minimum Support Prices (MSPs). Based on the analyses undertaken within its mandate, the Commission makes the following non-price and price policy recommendations for rabi crops for the marketing season 2015-16.

Non-price Policy Recommendations

Strengthening Procurement Machinery

S.2 While Haryana, Punjab and MP produce 43 percent of the total wheat production, they contribute 87 percent of the procurement. Other major wheat producing states, especially UP, contribute only 6 percent in the procurement whereas its share in the total production is 32 percent. This indicates an urgent need to strengthen the procurement machinery in all major wheat producing states.

S.3 Pulses and oilseeds require much less water than cereals. Given sub-normal performance of monsoon in 2014 (up to mid-July), vigorous emphasis needs to be laid on augmentation of production of these crops which will reduce the huge import of edible oils and pulses to the tune of Rs. 67 thousand crores. Also, these crops are in sync with the emerging demand patterns in the country. However, farmers are not diversifying wholeheartedly towards oilseeds/pulses. Based on the Commission's interaction with a wide cross section of farmers and also based on field visits, it emerged that the procurement of oilseeds and pulses in the states is not being carried out efficiently. Therefore, the procurement machinery including that of NAFED be strengthened so as to ensure smooth procurement of pulses and oilseeds when the market prices go below their respective MSPs.

Rationalization of Statutory Levies on Procurement

S.4 Punjab, Haryana and Madhya Pradesh are the major contributors to wheat procurement. High statutory levies in these states (especially Punjab and Haryana) add to the costs of procurement of FCI which adds to the food subsidy bill. The economic cost of FCI for acquiring, storing and distributing foodgrains is about 32-43 percent higher than the MSP. High taxes and levies also drive out the private players from the market, and distort the market. It may be noted that the Central Government has issued an order in June, 2014, restricting procurement from states which announce crop-specific bonuses. The Commission recommends that a similar dispensation be put in place in case of states levying statutory taxes in excess of 5 percent.

Adoption of Warehouse Receipts System

S.5 Negotiable warehouse receipts (NWRs), regulated by Warehousing Development and Regulatory Authority (WDRA), need to be increasingly encouraged as they allow transfer of ownership of a commodity stored in a warehouse without physical delivery. More importantly, farmers can seek loans from banks against these warehouse receipts and avoid distress sale. It would increase liquidity in the rural areas and encourage better price risk management of agriculture commodities. Pilot projects in certain states need to be taken up where negotiable warehouse receipts issued by WDRA can supplement procurement by FCI.

Rationalization of Tariff Rates

S.6 To promote resource use efficiency, generate surpluses and augment agricultural growth, tariff rather than quantity restrictions be employed as a regulatory instrument in a manner that is stable and neutral, both for consumers and producers. For this, both imports and exports be opened with only moderate duty with a provision of special safeguard. The import duty needs to escalate as one moves from raw material to finished product. However, the current import duty on oilseeds, crude oil and refined oil has an inverted structure and attracts 30 percent, 2.5 percent and 10 percent respectively on these commodities. The Commission recommends 2.5 percent, 5 percent and 12.5 percent import duty on oilseeds, crude oil and refined oil respectively. This will also provide some protection to domestic producers against blending of relatively cheaper palm oil with R&M oil. It is also recommended to continuously monitor domestic and international price trends and identify the trigger points to tweak tariff rates so that these remain relevant and rational in changing global scenario.

Increasing Productivity

S.7 Efficiency gaps in India's yield levels compared to those of the world average are quite significant. It needs to be appreciated that practical solution to contain increasing costs of production lies in enhancing productivity. The Commission's study shows a high positive correlation between percentage area irrigated and profitability. Given the scarcity of water, propagating drip irrigation will help increasing area under irrigation with the same quantity of water. At the same time, irrigation drives productivity, contains cost, increases global competitiveness and profitability which may reduce rural poverty. Therefore, investment in irrigation will be cost effective.

Benchmark Districts

S.8 On the basis of district-wise analysis of productivity of wheat, gram and R&M in major producing states, the benchmark districts (with the highest productivity levels) have been identified. These include Panipat, Indore, Sangrur, Hapur (for wheat), Singrauli, Amravati, Bharatpur (for gram), Gurgaon, Ratlam, Bharatpur, Aligarh (for R&M). The efficiency gaps between productivity levels of these districts and their respective states' average of the concerned crops are upto 39 percent in case of wheat, 64 percent in gram and 40 percent in R&M. Given the fact that there is an increasing pressure on land resources, it becomes important to make optimal utilization of land. The Commission recommends to study these districts in greater details so as to propagate /replicate farming practices and inputs used in these districts to other districts, subject to soil health conditions and climatic suitability. This will go a long way in augmenting productivity levels and containing cost of production.

Price Policy Recommendations

S.9 Taking its terms of reference into consideration, the Commission recommends the MSPs for Rabi Marketing Season 2015-16 as given in the Table-S.1.

Table-S.1: MSPs Recommended for Rabi Marketing Season 2015-16

(Rs./quintal)

Crop	Projected cost for RMS 2015-16		Recommended MSP for RMS 2015-16	Justification	MSP for RMS 2014-15	MSP for RMS 2013-14	Gross Margins w.r.t. MSP now being recommended (Percent)	Net Margins w.r.t. MSP now being recommended (Percent)
	A_2 +FL	Modified C_2#						
Wheat	744	1191	**1450 (3.6)**	Excess Central Pool Stocks; Existing MSP comfortably higher than the projected cost	1400 (3.7)	1350 (5.1)	94.9	21.7
Barley	735	1107	**1150 (4.5)**	Low Stock to use ratio but low International prices; Domestic Prices near MSP	1100 (12.2)	980 (0.0)	56.5	3.9
Gram	1902	3034	**3175 (2.4)**	Low Stock to Use ratio but Domestic prices below MSP	3100 (3.3)	3000 (7.1)	66.9	4.6
Lentil	1866	3007	**3075 (4.2)**	Low Stock to Use ratio. High domestic prices	2950 (1.7)	2900 (3.6)	64.8	2.3
R & M	1504	2510	**3100* (1.6)**	Comfortable Stock to use ratio, costs covered by existing MSP. Domestic prices near MSP	3050 (1.7)	3000 (20.0)	106.1	23.5
Safflower	3025	3732	**3050 (1.7)**	Domestic prices below MSP	3000 (7.1)	2800 (12.0)	0.8	-18.3

Notes: 1. Gross margins={MSP/(A2+FL)-1}*100 and Net margins ={MSP/(C2)-1}*100
2. Figures in parentheses are percentage increases over the previous year.
Includes C2 cost, costs of marketing, transportation and insurance premium.
*Corresponding to oil content of 35 percent

Incentivizing Oilseeds Cultivators: Linking MSP of R&M with Oil Content

S.10 Various oilseeds including R&M are cultivated mainly with a view to extracting oil from it. Yet, oil content in oilseeds is not taken into consideration while recommending MSP, as per the extant practice. This is an over simplification of the matter and deserves a better professional approach. The Commission recommends that MSPs of oilseeds need to have an explicit and direct relation with oil content in oilseeds as fixing its MSP without any reference to the oil content impinges on efficiency levels of farmers. Based on the field visits of the Commission, detailed discussions it held with various stakeholders such as R&M cultivators, processors, scientists of ICAR and also representatives of the Department of Food, the Commission recommends that the MSP of R&M be linked to the basic oil content of 35 percent in R&M and farmers be incentivized by giving an additional Rs. 12.97/qtl. for every 0.25 percent point increase in the oil content over and above the base oil content of 35 percent. This will induce cultivators to adopt better farming practices and processors to invest in modern technology.

S.11 Implementation of the recommendation on linking MSP of oilseeds with oil content requires installation of apparatus such as Fourier Near Infrared (FTNIR) or Near Magnetic Resonance (NMR) to measure oil content at procurement centres/mandis. The Commission recommends installation of these apparatuses in every procurement centre/mandi. This will induce oilseeds farmers to adopt modern technology and better farming practices.

****

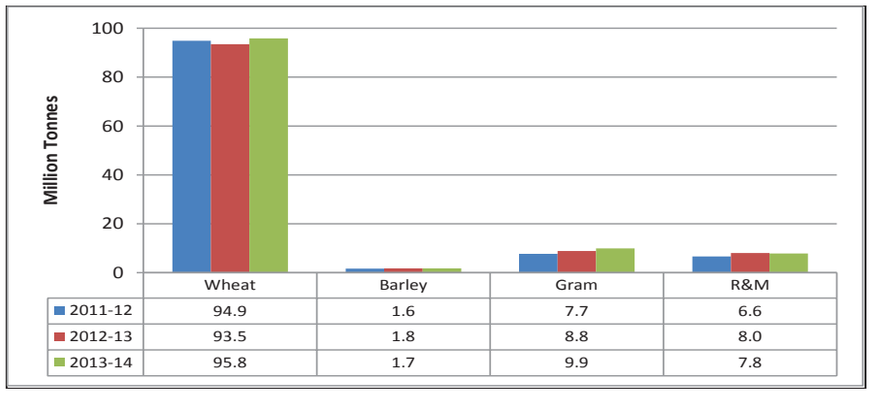
Chapter - 1

An Overview

Agricultural Performance

1.1 India is set to record its highest ever foodgrains production at 264.4 million tonnes[1] in 2013-14. Rabi foodgrains surpassed kharif foodgrains in 2009-10 and have grown at an average rate of 3.1 percent per annum since then. In 2013-14, rabi foodgrains production at 135.0 million tonnes outstripped kharif foodgrains by 5.6 million tonnes. Production of wheat is estimated to increase to 95.8 million tonnes in 2013-14 compared to 93.5 million tonnes in 2012-13, an increase by 2.5 percent (Chart-1.1). The production of barley is estimated to decline to 1.7 million tonnes in 2013-14 as compared to 1.8 million tonnes in the previous year. Gram contributed to half of the total pulses production in 2013-14 and is expected to be 9.9 million tonnes in 2013-14 compared to 8.8 million tonnes in 2012-13, showing an increase at 12.4 percent. The production of the major rabi oilseed i.e., rapeseed and mustard (R&M) is likely to decrease by 2.5 percent to 7.8 million tonnes in 2013-14 against 8.0 million tonnes during last year. The production of safflower is expected to increase to 0.11 million tonnes during 2013-14 against 0.10 million tonnes during last year.

Chart-1.1: Production of Major Rabi Crops, 2011-12 to 2013-14



	Wheat	Barley	Gram	R&M
2011-12	94.9	1.6	7.7	6.6
2012-13	93.5	1.8	8.8	8.0
2013-14	95.8	1.7	9.9	7.8

Source: Third Advance Estimates of Production, 2013-14, DAC

[1]Third Advance Estimates of Production of Foodgrains, 2013-14, DAC. Details in Annex Table 1.1

Outlook for Agricultural Sector in 2014-15

1.2 As on 30th June, 2014 cumulative rainfall during this year's monsoon was 43 percent below the long period average (LPA), making June, 2014 the second driest month since 1951. By the mid-July, 2014, rainfall was deficient by 35 percent. The storage levels were below their respective 10 years' average in 85 major reservoirs. There were 59 reservoirs with water level below 40 percent of their capacity. Among the key crop-growing regions, central India had a shortfall of 61 percent of normal rainfall, while north and northwestern parts of the country were 55 percent deficient. The situation appears to be somewhat similar to that in 2009, when June experienced a 47 percent below average rainfall. However, it may be noted that the relative resilience of the agricultural sector has increased in recent years. In 2002-03, a year of severe drought, agricultural growth rate turned negative at (-) 6.6 percent but in the year 2009-10, the worst drought year since 1972, agriculture recorded a low but positive growth rate of 0.8 percent. The rabi crops of wheat and gram recorded an increase in production during 2009-10 (Table-1.1). Therefore, a deficient monsoon need not create panic but all measures should be taken to contain its adverse impact through effective contingency plans. Besides location specific contingency plans are to be prepared and implemented for minimizing the impact of low rainfall in various regions.

Table-1.1: Production of Major Rabi Crops in Drought Years

Drought Years	Monsoon Rainfall (mm)	Percent Deficit in Monsoon rainfall	Deficiency in rainfall in June (percent)	Percent Change in Production		
				Wheat	R&M	Gram
1982	767.4	-13.8	-16.8	14.3	-7.3	14
1986	769.9	-13.5	-10.8	-5.8	-2.8	-21.7
1987	774.6	-13.0	-21.6	4.2	32.6	-20.0
2002	737.3	-17.2	9.4	-9.6	-23.7	-22.6
2004	774.2	-13.0	-0.8	-4.9	20.7	-4.3
2009	698.2	-21.6	-47.1	0.2	-8.2	6.0
2014 (30 June)	-	-	-43.0	-	-	-

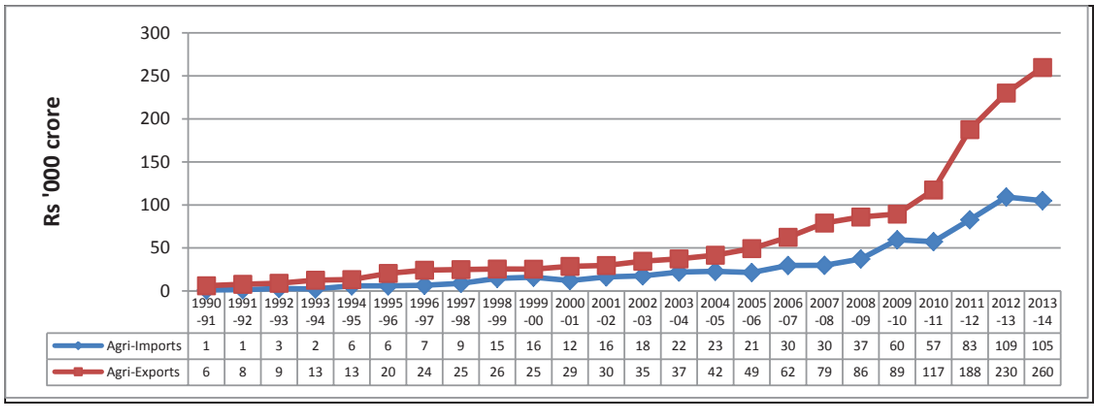
Source: IMD, DES

Note: Production figures are for the corresponding crop year

Agricultural Trade

1.3 India has emerged as a major agri-trading country in recent years. Agri-exports by India during the financial year 2013-14 were more than Rs. 2.6 lakh crore against an import of agri-commodities at Rs. 1.1 lakh crore. Thus, agri-trade has generated a record trade surplus of Rs. 1.5 lakh crore in the year 2013-14 (Chart-1.2). India is currently the world's largest exporter of rice and guar gum and the second largest exporter of cotton and beef (largely buffalo meat). Other major exports are marine products and spices. India is also a large importer of edible oils and pulses (details in Chapter-3).

Chart-1.2: India's Exports and Imports of Agri-Commodities



	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Agri-Imports	1	1	3	2	6	6	7	9	15	16	12	16	18	22	23	21	30	30	37	60	57	83	109	105
Agri-Exports	6	8	9	13	13	20	24	25	26	25	29	30	35	37	42	49	62	79	86	89	117	188	230	260

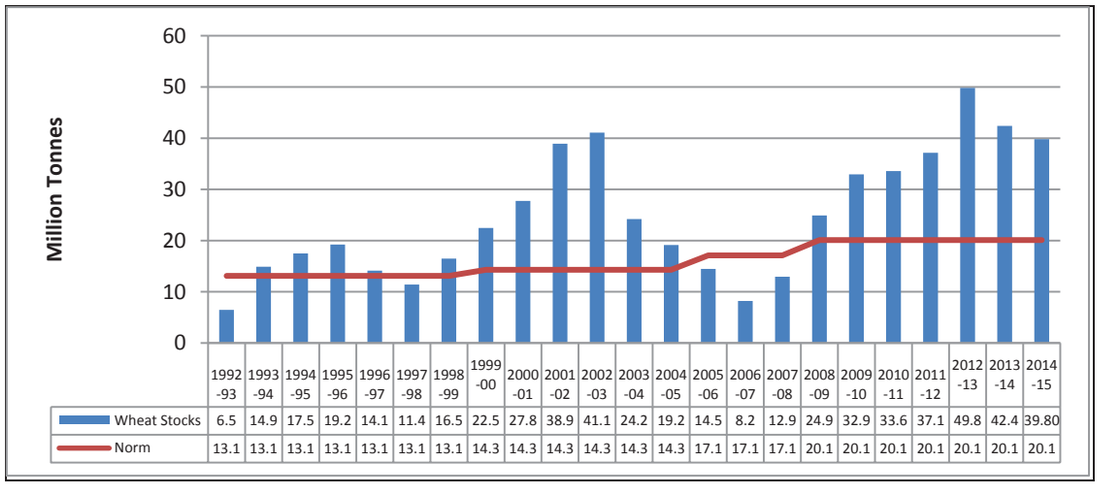
Source: DES and Department of Commerce

Central Pool Stocks

1.4 As against the buffer stock norm of 31.9 million tonnes of rice and wheat (as on 1st July of each year), total Central Pool stocks were more than double at 65.3 million tonnes (25.5 million tonnes of rice and 39.8 million tonnes of wheat) on 1st July, 2014 (Chart-1.3). This amounts to locking of resources, estimated at Rs. 45,640 crores, which entails its own opportunity costs. It needs to be noted here that the economic cost of Food Corporation of India (FCI) is about 32 to 43 percent more than the Minimum Support Price (MSP) of wheat. This has also resulted in rising expenditure on food subsidy which is budgeted to be Rs. 1.15 lakh crore in 2014-15. In addition, there are accumulated arrears of Rs. 44,170 crore in food subsidy to

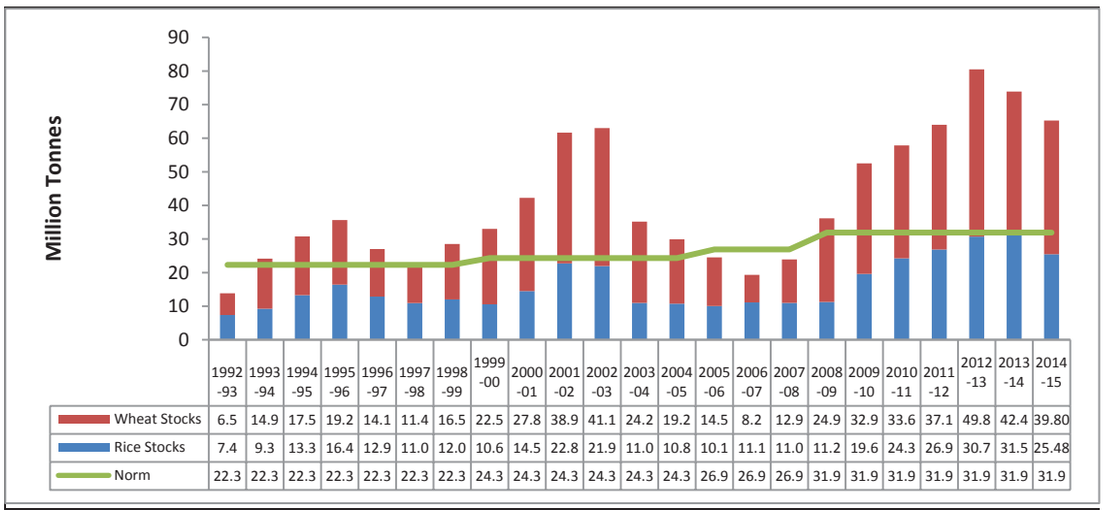
FCI as on 31st March, 2014[2]. This state of affairs calls for a thorough review of the open ended procurement policy as well as stocking and distribution policies in the foodgrain sector.

Chart-1.3 (a) Wheat Stocks



	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Wheat Stocks	6.5	14.9	17.5	19.2	14.1	11.4	16.5	22.5	27.8	38.9	41.1	24.2	19.2	14.5	8.2	12.9	24.9	32.9	33.6	37.1	49.8	42.4	39.80
Norm	13.1	13.1	13.1	13.1	13.1	13.1	13.1	14.3	14.3	14.3	14.3	14.3	14.3	17.1	17.1	17.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1

Chart-1.3(b): Total Central Pool Stocks (Wheat and Rice)



	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Wheat Stocks	6.5	14.9	17.5	19.2	14.1	11.4	16.5	22.5	27.8	38.9	41.1	24.2	19.2	14.5	8.2	12.9	24.9	32.9	33.6	37.1	49.8	42.4	39.80
Rice Stocks	7.4	9.3	13.3	16.4	12.9	11.0	12.0	10.6	14.5	22.8	21.9	11.0	10.8	10.1	11.1	11.0	11.2	19.6	24.3	26.9	30.7	31.5	25.48
Norm	22.3	22.3	22.3	22.3	22.3	22.3	22.3	24.3	24.3	24.3	24.3	24.3	24.3	26.9	26.9	26.9	31.9	31.9	31.9	31.9	31.9	31.9	31.9

Source: FCI

Note: Stocks are shown as on 1st July of each year.

[2]Source: FCI

Food Inflation

1.5 India has been reaping bumper crops of foodgrains during the last few years. But high food inflation has been a persistent problem. A distinct feature of this has been the higher contribution of fruits and vegetables (F&V), milk and fish, meat and eggs to food inflation vis-à-vis the share of cereals and pulses. In 2013-14, cereal inflation contributed around 26 percent but F&V contributed around 58 percent to food inflation. This has come down during the last five months (January to May), when cereals and F&V have contributed 22.5 percent and 27.7 percent (respectively of the food inflation.

Global Outlook

1.6 According to Food and Agriculture Organization's (FAO) Food Outlook, the FAO Food Price Index (FFPI), with the base of 2002-04, averaged 206 points in June 2014, down 3.8 points (or 1.8 percent) from May, 2014 and nearly 6 points, or 2.8 percent, below June 2013. World wheat production in 2014 is forecast at nearly 707 million tonnes, lower by 1.3 percent as compared to last year's record harvest. The bulk of the fall in world wheat production in 2014 is due to sharp drop in Canada from the record harvest in 2013, mostly due to lower acreage, and in the USA, where winter crops were adversely affected by drought conditions. Global wheat stocks are anticipated to reach 180 million tonnes by the end of 2014-15 marketing season, 3.5 percent higher than the preceding year. The supply and demand outlook for wheat in the 2014-15 marketing season points to a generally balanced situation, with world stocks remaining at relatively comfortable levels in spite of a decline in projected world wheat production. As per Chicago Board of Trade (CBOT), wheat prices during 2014 are expected to be around Rs. 1500-1620 per quintal (at exchange rate of 1US$=Rs. 60). Prices of edible oils may move upward, due to a slow growth in production of palm oil and successive cuts in soybean production in USA. However, the prices of rapeseed oil may decline due to the prospect of a record harvest in the European Union (EU).

Structure of the Report

1.7 Chapter-2, of this Report, delineates the demand-supply situation for major rabi crops, its price trends and factors impacting procurement operations. Chapter-3 analyzes domestic and international prices and trade policies with a view to fostering international competitiveness. It also estimates the Nominal Protection Coefficient (NPC) for Indian wheat. Chapter-4 presents the costs, returns, inter-crop price parity and terms of trade. Chapter-5 analyses district-wise productivity levels of major rabi crops, compares and contrasts India's productivities with benchmarked countries to set targets for augmenting productivity, appraises movement in efficiency gaps over time, identifies the drivers of productivity and recommends the linking of MSP of R&M oilseed with its oil content to improve resource use efficiency. Finally, major highlights of all the chapters, leading to the key price and non-price policy recommendations, are presented in Chapter-6.

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Demand-Supply and Procurement Operations

Chapter - 2

Domestic Market Scenario

2.1 Rabi crops posted an all-time high production at 135 million tonnes in the year 2013-14. The stock to use ratio of major rabi crops has been estimated (Table-2.1) and is based on the year-end stocking norm of about 17-20 percent of the production to meet demand until the arrival of the next crop. The details of stock to use ratio may be seen at Annex Table-2.1.

Table-2.1: Stock- to-Use Ratios of Rabi Crops

Commodity	2011-12	2012-13	2013-14
Wheat	24.4	27.3	28.6
Barley	35.4	24.2	6.9
Gram*	3.6	2.9	5.2
Lentil*	8.9	6.7	7.9
Rabi Pulses*	4.3	3.3	5.4
R&M	51.4	43.2	48.5

Sources – DAC, DGCIS, USDA, NCAER

Notes: * as per Indian Pulses and Grains Association (IPGA)

2.2 The stock-to-use ratio of wheat has marginally increased in 2013-14 as compared to previous years (Table-2.1). This is due to large central pool stocks held by FCI. In contrast, it has fallen sharply from 24.2 percent in 2012-13 to only 6.9 percent in 2013-14 in case of barley, indicating upward pressure on its prices.

2.3 For rabi pulses as a whole, the stock to use ratio has increased from 3.3 percent in 2012-13 to 5.4 percent in 2013-14. For lentil, the stock to use ratio increases to 7.9 percent in 2013-14 from 6.7 percent in 2012-13 {Chart-2.1 (d)}. In respect of R&M, the stock to use ratio has increased and is high at 48.5 percent. This is also reflected in the downward movement of prices of R&M during last year {Chart-2.1 (e)}.

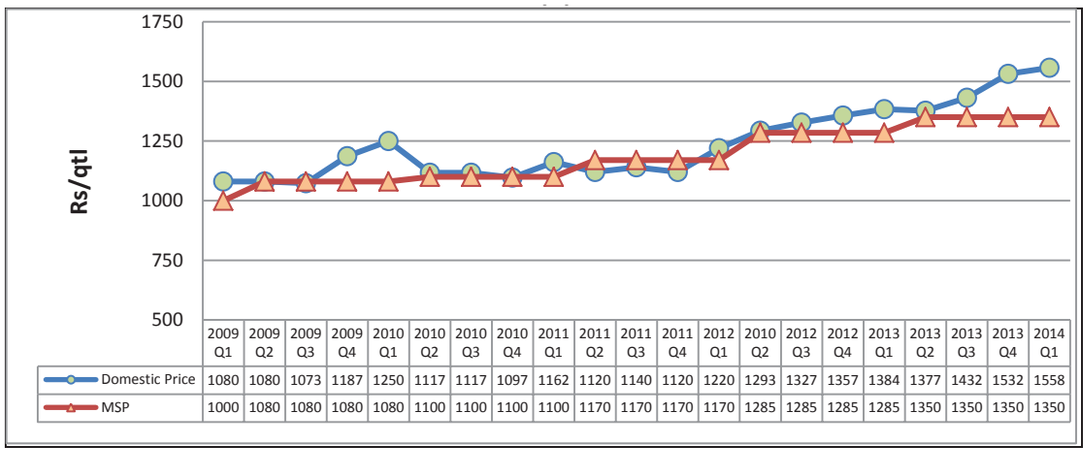
These stocks to use ratios are just preliminary estimates, indicating the tightness or abundance of the supply of the commodity which, in turn, reflects the upward or downward pressure on the prices of the commodities.

Wholesale Prices and MSP

2.4 An examination of the wholesale prices of the major rabi crops reveals that prices of all crops are generally ruling above their respective MSPs (Charts-2.1 (a) to (f)).

Charts-2.1 (a) – (f): Wholesale Prices and MSPs of Rabi Crops (2009 Q1 – 2014 Q1)

Chart-2.1 (a): Wheat

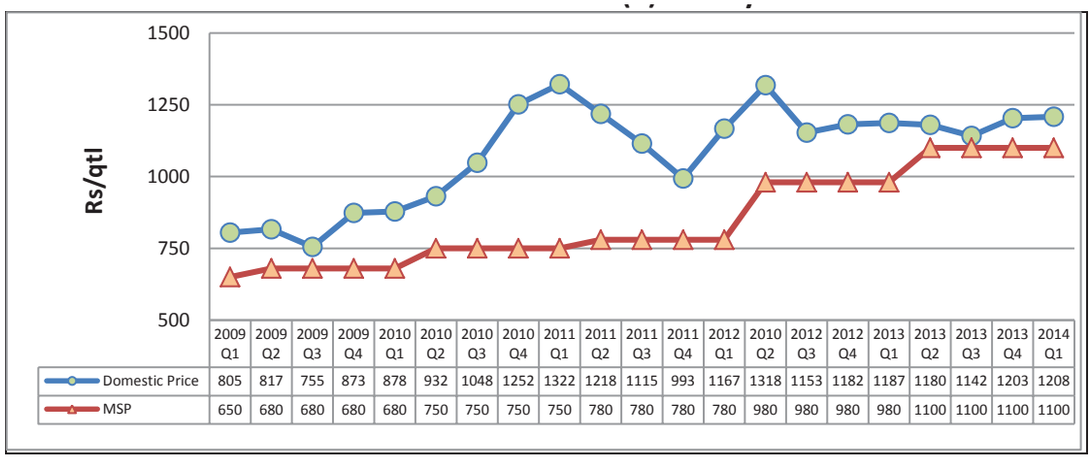


	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2010 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
Domestic Price	1080	1080	1073	1187	1250	1117	1117	1097	1162	1120	1140	1120	1220	1293	1327	1357	1384	1377	1432	1532	1558
MSP	1000	1080	1080	1080	1080	1100	1100	1100	1100	1170	1170	1170	1170	1285	1285	1285	1285	1350	1350	1350	1350

Source: DES

Note: Wholesale Prices at Punjab

Chart-2.1 (b): Barley

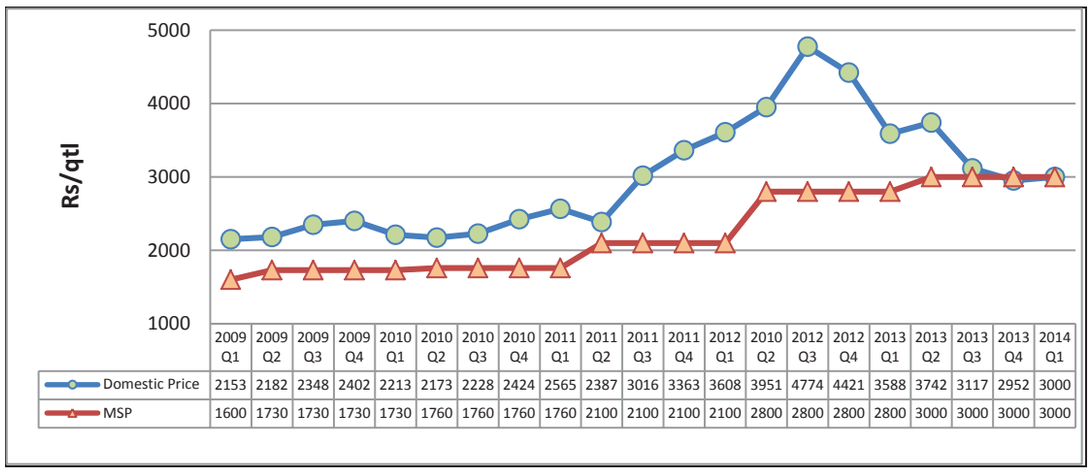


	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2010 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
Domestic Price	805	817	755	873	878	932	1048	1252	1322	1218	1115	993	1167	1318	1153	1182	1187	1180	1142	1203	1208
MSP	650	680	680	680	680	750	750	750	750	780	780	780	780	980	980	980	980	1100	1100	1100	1100

Source: DES

Note: Wholesale Prices of Barley at Rajasthan

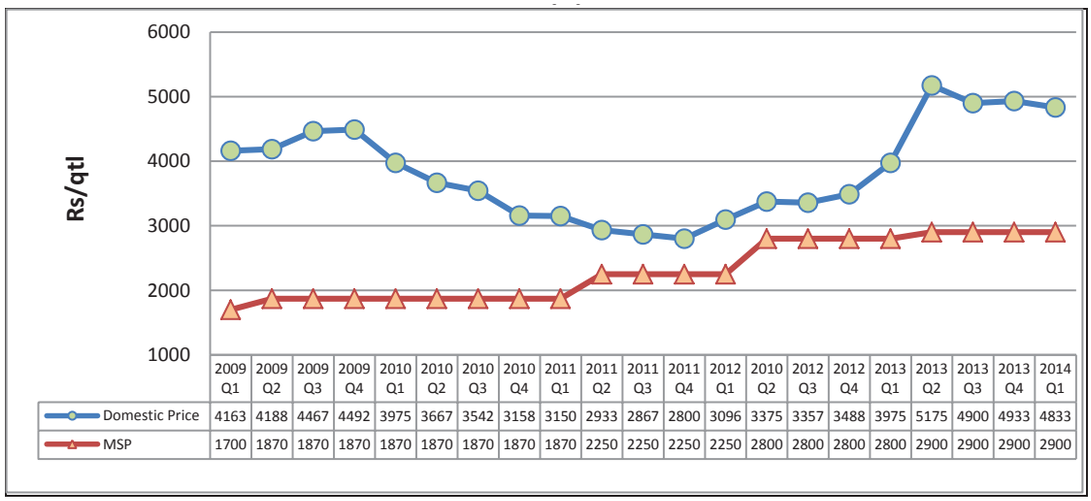
Chart-2.1 (c): Gram



	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2010 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
Domestic Price	2153	2182	2348	2402	2213	2173	2228	2424	2565	2387	3016	3363	3608	3951	4774	4421	3588	3742	3117	2952	3000
MSP	1600	1730	1730	1730	1730	1760	1760	1760	1760	2100	2100	2100	2100	2800	2800	2800	2800	3000	3000	3000	3000

Source: NAFED

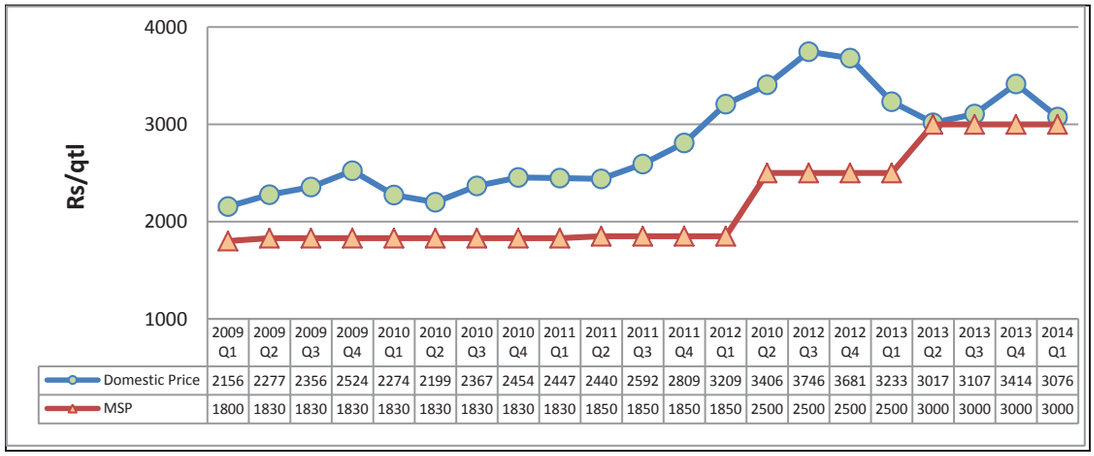
Chart-2.1 (d): Lentil



	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2010 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
Domestic Price	4163	4188	4467	4492	3975	3667	3542	3158	3150	2933	2867	2800	3096	3375	3357	3488	3975	5175	4900	4933	4833
MSP	1700	1870	1870	1870	1870	1870	1870	1870	1870	2250	2250	2250	2250	2800	2800	2800	2800	2900	2900	2900	2900

Source: NAFED

Chart-2.1 (e): R&M

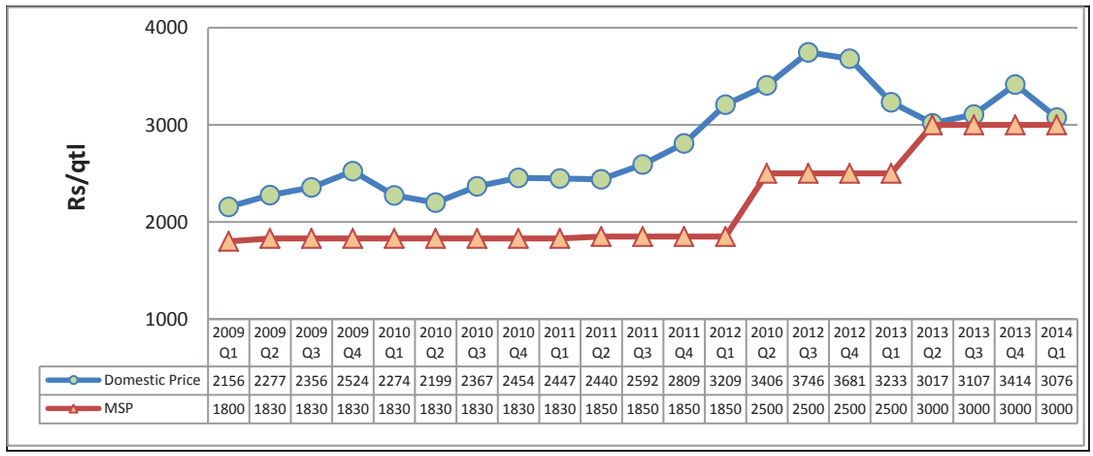


	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2010 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
Domestic Price	2156	2277	2356	2524	2274	2199	2367	2454	2447	2440	2592	2809	3209	3406	3746	3681	3233	3017	3107	3414	3076
MSP	1800	1830	1830	1830	1830	1830	1830	1830	1830	1850	1850	1850	1850	2500	2500	2500	2500	3000	3000	3000	3000

Source: DES

Note: Wholesale Prices at Rajasthan

Chart-2.1 (f): Safflower



	2009 Q1	2009 Q2	2009 Q3	2009 Q4	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	2012 Q1	2010 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1
Domestic Price	2156	2277	2356	2524	2274	2199	2367	2454	2447	2440	2592	2809	3209	3406	3746	3681	3233	3017	3107	3414	3076
MSP	1800	1830	1830	1830	1830	1830	1830	1830	1830	1850	1850	1850	1850	2500	2500	2500	2500	3000	3000	3000	3000

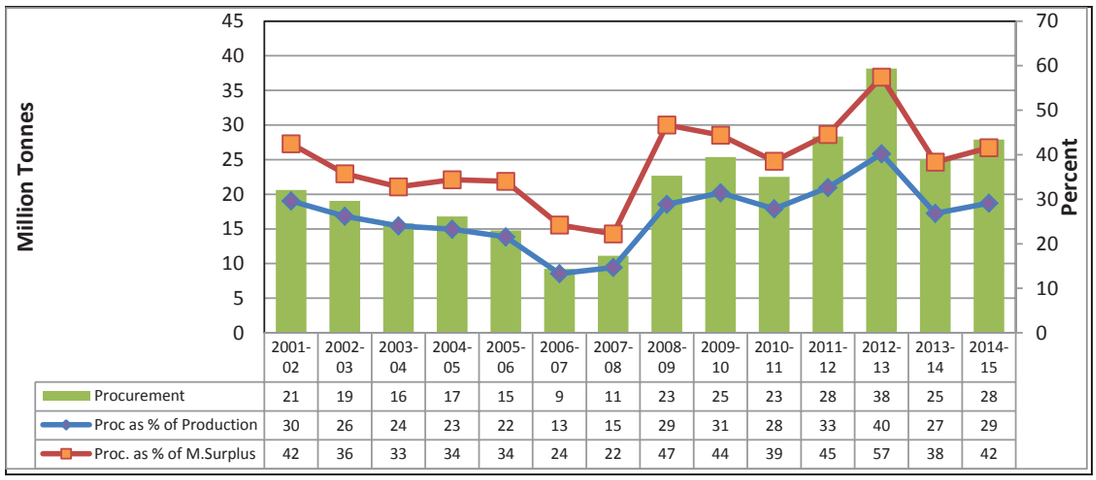
Source: DES

Note: Wholesale Prices at Maharashtra and Karnataka.

Procurement- Policy and Operations

2.5 The procurement operations by FCI are concentrated mainly on two crops viz., wheat and paddy. Average procurement of wheat for Central Pool accounted for 28 percent of its total production and 40 percent of its marketed surplus during RMS 2013-14 and RMS 2014-15 (Chart-2.2). Procurement of wheat peaked at 38.2 million tonnes in RMS 2012-13. Since then, there has been a fall in procurement levels despite higher targets. In RMS 2013-14, procurement of wheat was only 25.1 million tonnes against a target of 44 million tonnes. Even in RMS 2014-15, against a lower target of 31.0 million tonnes, procurement as on 30th June, 2014 was 28.0 million tonnes. The decline in procurement may be attributed to enhanced participation of private players in procurement due to higher market prices of wheat in the last two years.

Chart-2.2: Wheat Procurement as Percent of Production and Marketed Surplus (RMS 2001-02 to 2014-15)



	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Procurement	21	19	16	17	15	9	11	23	25	23	28	38	25	28
Proc as % of Production	30	26	24	23	22	13	15	29	31	28	33	40	27	29
Proc. as % of M.Surplus	42	36	33	34	34	24	22	47	44	39	45	57	38	42

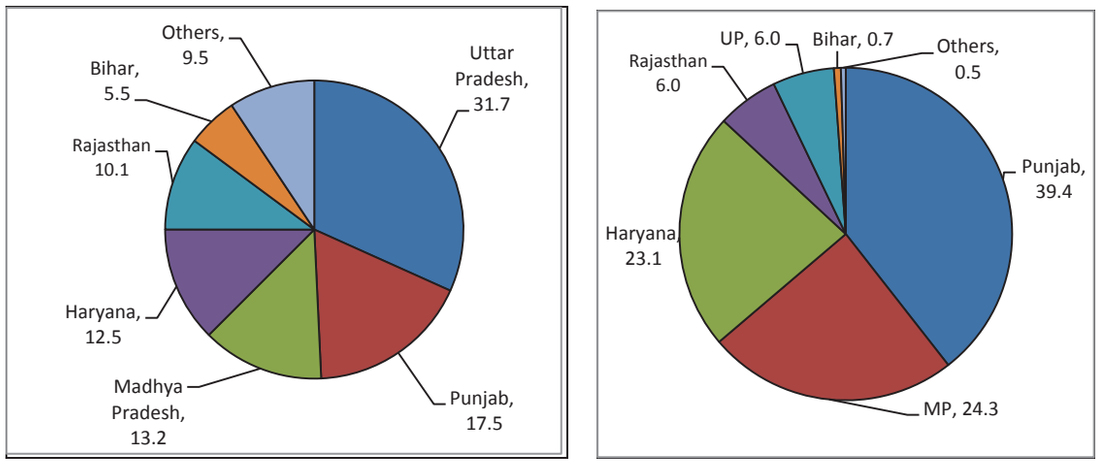
Sources: DES, DFPD

Note: Marketed Surplus Ratio is available up to 2011-12 and is repeated thereafter

2.6 The major wheat producing states are Haryana, Madhya Pradesh (MP), Punjab and Uttar Pradesh (UP), which accounted for almost 75 percent of the total production of wheat in the country in TE 2013-14. Of these major states, three states namely Haryana, MP and Punjab accounted for 87 percent of the total procurement of wheat in TE 2013-14 while Uttar Pradesh, the largest producer of wheat accounted for only 6 percent in procurement (Chart-2.3). Thus, the procurement operations are heavily concentrated in only three states. Procurement machinery needs to be strengthened in other major wheat producing states.

Chart-2.3: Share of Major States in Wheat Production and Procurement, TE 2013-14

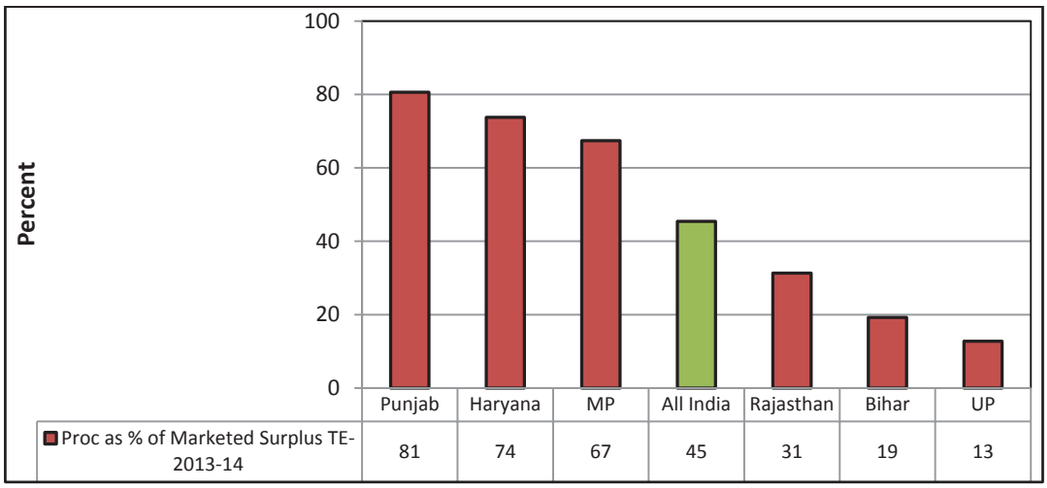
(a) Wheat Production **(b) Wheat procurement**



Sources: DES, DFPD

2.7 The states of Haryana, Madhya Pradesh and Punjab procure more than two-third of the marketed surplus arrivals in their respective states (Chart-2.4). Notwithstanding the fact that there has been enhanced participation of the private players, the Government continues to be the largest buyer in the wheat market and thus is in a monopsonistic position. The absence of competition is not healthy for long term efficiency in procurement operations and distorts wheat markets.

Chart-2.4: Procurement as a Percent of Marketed Surplus in Major States, TE 2013-14

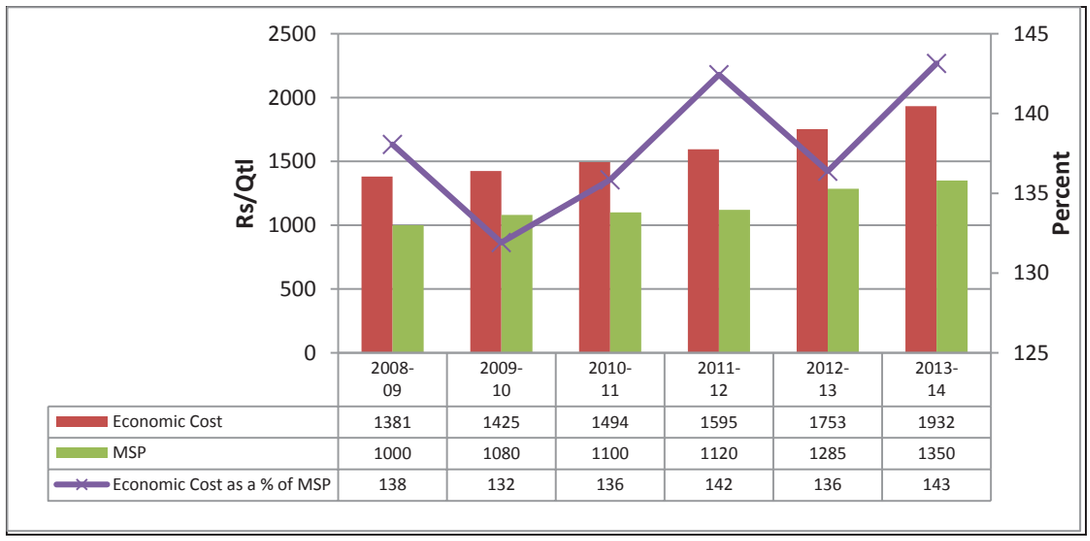


Sources: DFPD, DES

Economic Cost of Procurement

2.8 The economic cost of FCI for acquiring, storing and distributing wheat has been higher than MSP in the range of 32 to 43 percent during 2008-09 to 2013-14 (Chart-2.5). The component of economic cost which is over and above MSP includes procurement incidentals (market fees, development cess, arhatia commission, cost of gunny bags, charges to State governments for storage and interest etc.) and distribution costs.

Chart-2.5: MSP and Economic Cost of Wheat



	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Economic Cost	1381	1425	1494	1595	1753	1932
MSP	1000	1080	1100	1120	1285	1350
Economic Cost as a % of MSP	138	132	136	142	136	143

Sources: DES, FCI

Crop Specific Bonuses

2.9 The crop production pattern ought to be in sync with the changing demand pattern. The domestic supply of edible oils and pulses falls short of the demand and the shortfall is made good by imports. In contrast, since the granaries are over flowing with wheat and rice, there is an urgent need to move away from cereals to pulses and oilseeds. In such a situation, giving state-specific bonuses on wheat (and also on paddy) encourages more production of this commodity and dampens the prospects of diversification towards oilseeds and pulses. The Government has conveyed to the surplus DCP procuring states giving state-specific bonus that it would limit the procurement for Central pool to the extent of requirement of foodgrains for Targeted Public Distribution System (TPDS)/Other Welfare Schemes (OWS) allocations of those states and will provide acquisition and distribution subsidy to the State Government accordingly. The State Government would, itself, be responsible for the disposal of any surplus quantity procured in the state over and above this quantity. Further, with regard to non-DCP states, if a State announces bonus over and above MSP, the FCI will not take part in MSP operations in the State concerned and state agencies will have to mobilise their resources and take care of entire MSP operations in the state on their own including arrangements for storage of procured foodgrains.

Procurement and Statutory Levies

2.10 A major contribution of increasing procurement incidentals is high rates of statutory levies imposed on the market by states like Punjab (14.5 percent), Haryana (11.58 percent) and Madhya Pradesh (7.0 percent) (Table-2.2). These three states are the major contributors to the wheat procurement. Therefore, high statutory levies in these states add to the costs of procurement for FCI which ultimately add to the food subsidy bill. The revenues received from the taxes/ levies accrue to state governments account. Therefore, states have an incentive to keep these levies high. These taxes also drive out the private sector with the result that the entire stock of foodgrains has to be bought by the Government. It may be noted that the Government has decided to limit the procurement from states which announce state-specific bonus. The Commission recommends a similar dispensation be put in place in case of states levying statutory taxes in excess of 5 percent.

Table-2.2: Statutory Levies Imposed on Wheat by States in 2014-15

Sl No	State	Taxes/Levies (As % of MSP)		Price After Tax (Rs/Qtl)	
		2013-14	2014-15	2013-14	2014-15
	MSP			**1350**	**1400**
1	Punjab	14.50	14.50	1546	1603
2	Haryana	11.50	11.58	1505	1562
3	Madhya Pd.	7.02	7.02	1445	1498
4	Rajasthan	1.60	1.60	1372	1422
5	Uttarakhand	7.50	7.50	1451	1505
6	Uttar Pd.	6.50	6.50	1438	1491
7	Himachal Pd.	3.50	3.50	1397	1449

Sources : FCI and State Governments

Procurement and Storage Capacity

2.11 As the procurement levels have been increasing, there have been efforts to increase the storage capacity of the FCI. The Central Pool stocks were 65.3 million tonnes on 1st July, 2014 as compared to 73.9 million tonnes on 1st July, 2013. As on 31st March, 2014, the total storage capacity of FCI and state

agencies for Central Pool Stock was 74.8 million tonnes with respective shares of 49.3 percent and 50.7 percent. Out of this, covered capacity was 55.4 million tonnes and the rest was Cover and Plinth (CAP). Out of the covered storage capacity, the share of FCI and state agencies was 61.1 percent and 38.9 percent respectively. Thus, the state agencies are storing most of the procured grains in CAP which exposes the grains to weather extremities. The Commission recommends that adequate covered storage capacity be created to protect grains procured from damages due to weather extremities. Alternatively, warehouses should be encouraged to be developed in the private sector with facility of Negotiable Warehouse Receipts (NWRs) system for farmers. NWRs, currently regulated by Warehousing Development and Regulatory Authority (WDRA), allow transfer of ownership of a commodity stored in a warehouse without physical delivery which help farmers getting loans from banks against these receipts and avoid distress sale. It would increase liquidity in the rural areas and encourage better price risk management in agriculture commodities. Pilot projects in certain states need to be taken up where NWRs can supplement procurement by FCI.

Develop Efficient Agro-Markets

2.12 Well-functioning markets are fundamental to the growth of agriculture sector. Agricultural markets in India are established and regulated under the State Agricultural Produce Market Committees (APMC) Act. The monopoly of Government regulated wholesale markets have prevented development of a competitive marketing system in the country and establishing effective linkages between farm production and retail chains. It is vital that agri-marketing reforms are effectively pursued so that free and competitive markets operate. Government must encourage direct buying by organized retailers from farmer groups. This would impart efficiency in value chains and induce private sector investment in logistics and warehousing. In a recent initiative by the Central Government, it has advised all the State Governments to de-list fruits and vegetables from the APMC Act. If this advice is implemented, it will give the farmers freedom to sell their produce directly to retailers/consumers, without being routed through mandis or middlemen and will enable competitive pricing. This is likely to offer better prices to producers, sellers and consumers.

Recapitulation

2.13 To sum up, adequate covered storage capacity should be created by FCI to protect procured grains from weather extremities. NWRs, which provide an efficient alternative to physical procurement, should be encouraged. High taxes and levies not only add to economic costs and increase subsidy on food but also crowd out private players and distort the markets. On the pattern of restricting the procurement in case of states announcing crop specific bonuses, the Central Government should make similar dispensation for states levying taxes in excess of 5 percent.

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Trade Competitiveness of Indian Agriculture

Chapter-3

Trade Performance

3.1 India has an inherent competitive advantage in agricultural production due to its varied agro-climatic conditions. It is a net exporter of agricultural commodities whereas it is net importer in overall trade. Agri-exports, which constituted 13.7 percent of India's total exports in 2013-14, have increased from Rs. 28,756 crores in 2001-02 to Rs. 2,59,855 crores in 2013-14 whereas agri-imports, which accounted for only 3.9 percent of India's total imports in 2013-14, have increased from Rs. 16,257 crores in 2001-02 to Rs. 1,05,045 crores in 2013-14.

3.2 Major agricultural commodities which have achieved considerable growth in exports in 2013-14 are poultry and dairy products (91.7 percent), marine products (62.5 percent), meat and meat preparations (52.2 percent), rice (38.2 percent) and processed foods (37.8 percent). It may be noted that India has emerged as world's top exporter of rice in 2012-13 and 2013-14 with exports of 10.1 and 10.9 million tonnes respectively. In value terms, marine products have emerged as India's second highest export item after rice in 2013-14. However, exports of some of the major agricultural commodities have declined in 2013-14, viz. guargum meal [(-) 44.9 percent], sugar [(-) 17.4 percent] and wheat [(-) 12.1 percent]. Edible oils, the biggest item of India's agri-imports, constituted about 54 percent whereas pulses accounted for 10 percent of total agri-imports in 2013-14.

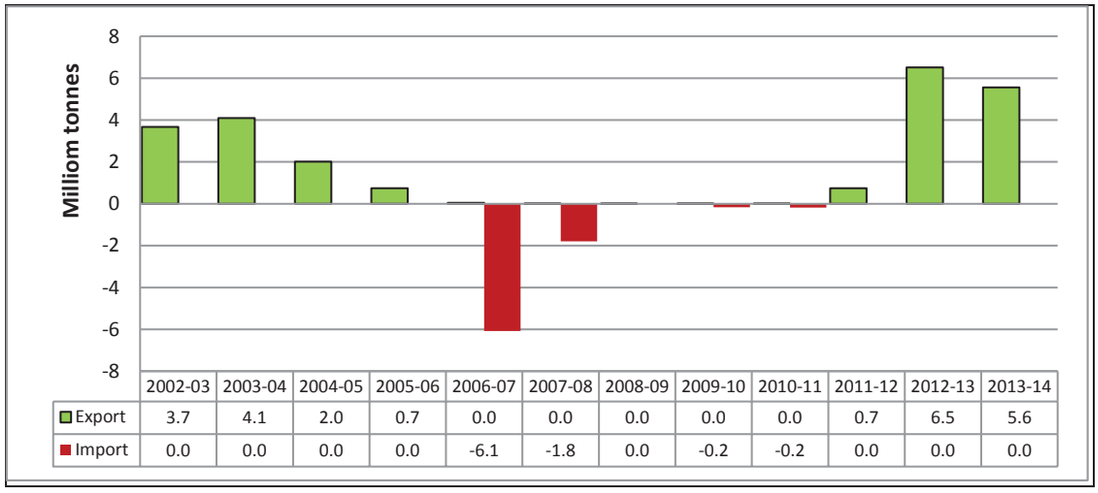
Wheat

3.3 As per USDA, global wheat production was 689.1 million tonnes in TE 2013-14 out of which 22.2 percent is traded. EU is the biggest producer of wheat with a share of 20.1 percent in the global wheat production followed by China (17.4 percent) and India (13.3 percent). US, EU, Australia and Canada are the major exporters of wheat, accounting for about 60 percent share in global exports. Algeria, Brazil,

Egypt, Indonesia, and Japan are the major importers of wheat, accounting for about 25 percent of global imports in TE 2013-14.

3.4 India occasionally trades in wheat, depending upon the demand-supply situation in the domestic market. Exports of wheat were prohibited in August, 2003 as there was a severe drought in 2002. Exports on private account were also prohibited in February, 2007. This ban on exports of wheat was lifted in September, 2011 when export of 2 million tonnes of wheat was allowed under Open General License (OGL) by private parties out of privately held stocks through Electronic Data Interchange (EDI) enabled ports. From February, 2012, unrestricted exports of wheat, under OGL have been allowed. India's exports of wheat during 2011-12 were only 0.7 million tonnes which increased to a record export of 6.5 million tonnes in 2012-13 (Chart-3.1). Exports of wheat during 2011-12 to 2013-14 is attributed to lower domestic wholesale prices than international prices, thus making Indian wheat export competitive (Chart-3.2).

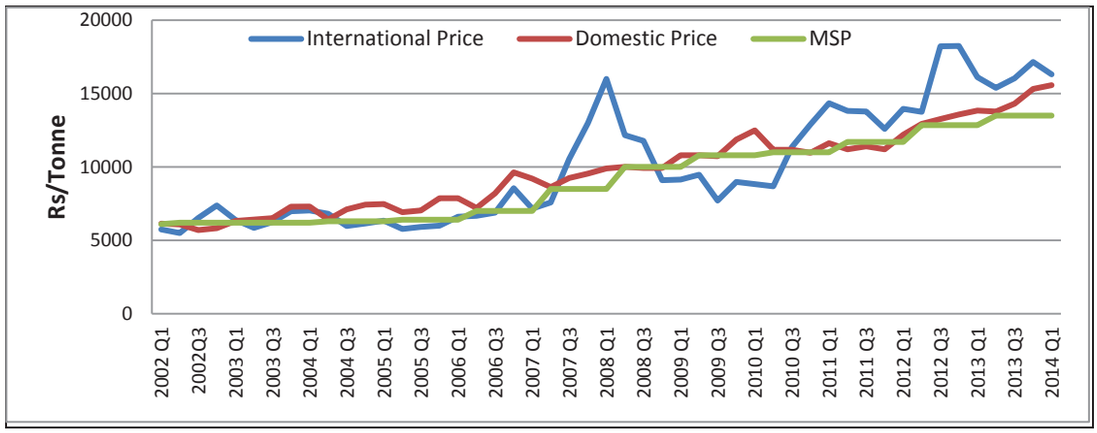
Chart-3.1: India's Exports and Imports of Wheat, 2002-03 to 2013-14



	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Export	3.7	4.1	2.0	0.7	0.0	0.0	0.0	0.0	0.0	0.7	6.5	5.6
Import	0.0	0.0	0.0	0.0	-6.1	-1.8	0.0	-0.2	-0.2	0.0	0.0	0.0

Source: DGCIS

Chart 3.2: Prices (Domestic and International) and MSP of Wheat



Sources: USDA, World Bank and DES

Notes: 1. Wheat (US), soft red winter, export price delivered at the US Gulf port

2. Domestic price (Punjab)

3.5 India did not import any wheat during the period from 2001-02 to 2005-06 but it did so during 2006-07 (6.1 million tonnes) and 2007-08 (1.8 million tonnes) to meet the shortfall in the Central Pool. Since then, there has been no import due to adequate production in subsequent years. The import duty on wheat was reduced from 50 percent to 5 percent in June, 2006 and further to zero in September, 2006.

Nominal Protection Coefficient (NPC) of Wheat

3.6 As per OECD, the producer Nominal Protection Co-efficient (NPC) is an indicator of protection to domestic producers, measuring the ratio between the average price received by producers (at farm gate), including payments per tonne of current output, and the border price (measured at farm gate level). The border price is the f.o.b. price in case of an exportable and the c.i.f. price in case of an import-competing good. If NPC it is more than one, domestic producers are receiving a higher price than they would receive in the absence of intervention i.e., they are protected. If NPC=1, then incentives are neutral for domestic and foreign producers. If NPC is lower than one, it indicates that the commodity is competitive i.e. in case of exportable hypothesis the commodity is export competitive and in case of importable hypothesis the commodity is import competitive. The NPC estimates of wheat under exportable hypothesis indicate (Table-3.1), that in general the level

of protection accorded to wheat has declined in recent years i.e., wheat has become export competitive.

Table-3.1: NPC of Wheat (exportable)

Year	NPC (MSP, SRW)	NPC (Weighted average domestic wholesale price, SRW)
2005-06	1.6	1.8
2006-07	1.2	1.6
2007-08	1.0	1.1
2008-09	1.3	1.4
2009-10	1.7	1.8
2010-11	1.3	1.4
2011-12	1.1	1.1
2012-13	1.0	1.0

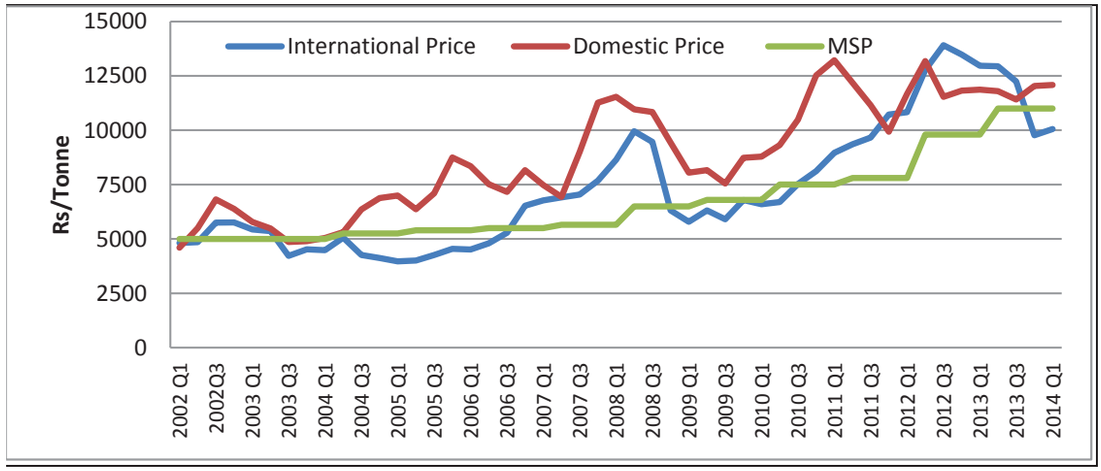
Source: Computed by CACP

Barley

3.7 As per USDA, global production of barley was 136.2 million tonnes in TE 2013-14 of which 15.6 percent is traded. EU is the biggest producer with a share of 40.7 percent in the global production followed by Russia (11.3 percent), Canada (6.4 percent) and Australia (6.2 percent). Australia is the biggest exporter of barley with a share of 25.3 percent followed by EU (22.3 percent) and Argentina (16.1 percent). Saudi Arabia is the biggest importer of barley with a share of 42.0 percent followed by China (12.6 percent), Japan (6.1 percent) and Iran (5.2 percent).

3.8 Quantitative ceiling on export of barley was removed in March, 2002 and since then export of barley continues to be free. Though domestic wholesale prices of barley are generally higher than its international prices, India exported 0.26 million tonnes in TE 2013-14 to countries like Iran, UAE, Oman, Bhutan and Pakistan where it enjoys a freight advantage (Chart-3.3).

Chart-3.3: Prices (Domestic and International) and MSP of Barley



Sources: USDA, World Bank and DES

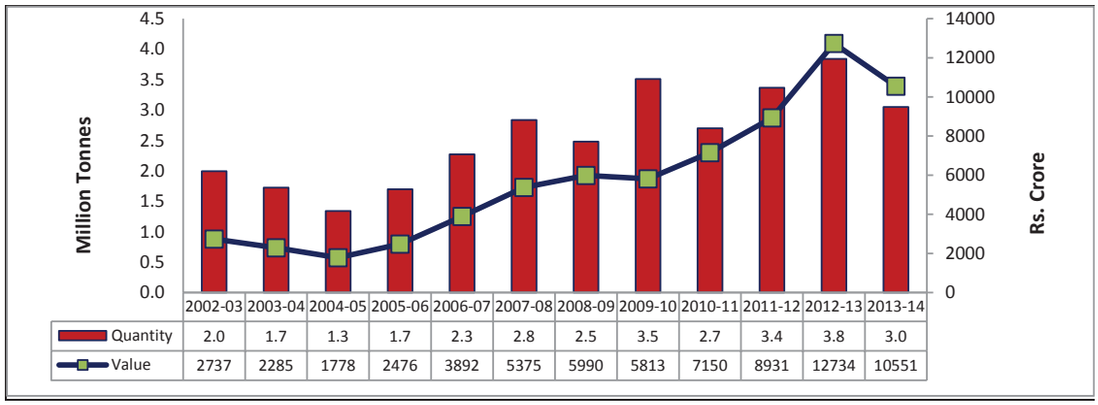
Notes: 1. Barley Canadian, No 1 Western Barley, spot price.

2. Domestic Price at Jaipur.

Pulses

3.9 As per FAO, the production of total pulses in the world was 70.2 million tonnes in TE 2012, out of which 17.3 percent is traded. India is the biggest producer of pulses in the world with a share of 24.3 percent in TE 2012. Other major producers of pulses are Myanmar (7.5 percent share), Canada (6.6 percent share), China (6.1 percent share), Brazil (4.5 percent share) and Australia (4.0 percent share). Despite being the largest producer of pulses, it is also the largest consumer of pulses, thus, making it the biggest importer of pulses in the world. As per DGCIS, India's imports have increased from 1.3 million tonnes in 2004-05 to 3.8 million tonnes in 2012-13 (Chart-3.4). These have fallen to 3.0 million tonnes in 2013-14, mainly due to increased domestic production during the year.

Chart-3.4: India's Imports of Pulses, 2002-03 to 2013-14



	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Quantity	2.0	1.7	1.3	1.7	2.3	2.8	2.5	3.5	2.7	3.4	3.8	3.0
Value	2737	2285	1778	2476	3892	5375	5990	5813	7150	8931	12734	10551

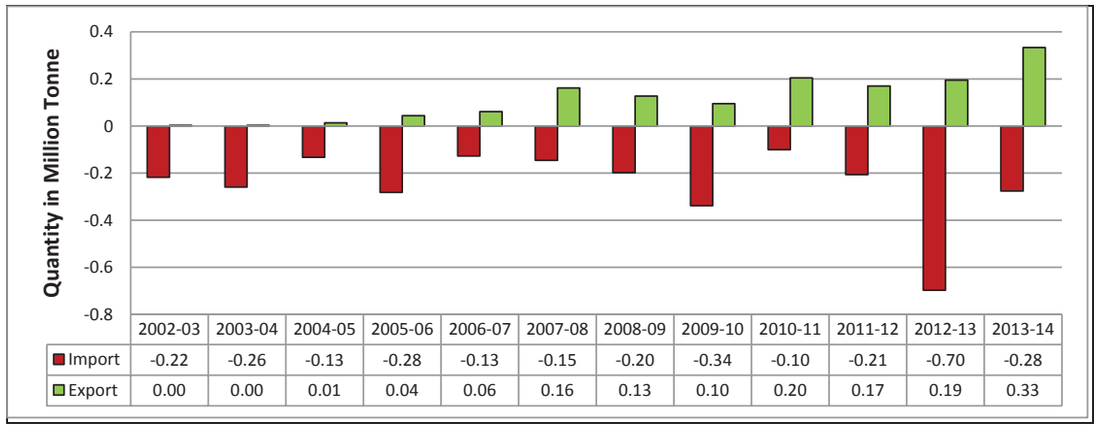
Source: DGCIS

3.10 Import duty on pulses was brought down from 10 percent to zero in June, 2006. Exports of pulses were initially prohibited for a period of six months in June, 2006 which has been extended from time to time, the latest being in March, 2014. But this prohibition does not apply to kabuli channa as per notifications in February, 2007 and March, 2007. Also, exports of 10,000 tonnes per annum of organic pulses and lentil have been allowed in March, 2011, subject to the condition that it should be duly certified by Agricultural and Processed Food Products Export Development Authority (APEDA) and the exports shall be allowed only from Customs EDI ports.

Gram (Chickpea)

3.11 Global gram (chickpea) production, as per FAO, was 11.5 million tonnes in TE 2012. India is the biggest producer of gram with a share of 68 percent in TE 2012. Other major producers are Australia (5.2 percent), Turkey (4.5 percent), Myanmar (4.1 percent) and Pakistan (3.9 percent). India imported 0.39 million tonnes and exported 0.23 million tonnes of gram in TE 2013-14. India's exports of gram (mostly kabuli channa) have increased from 2.2 thousand tonnes in 2002-03 to 0.33 million tonnes in 2013-14 (Chart-3.5).

Chart-3.5: India's Exports and Imports of Gram, 2002-03 to 2013-14



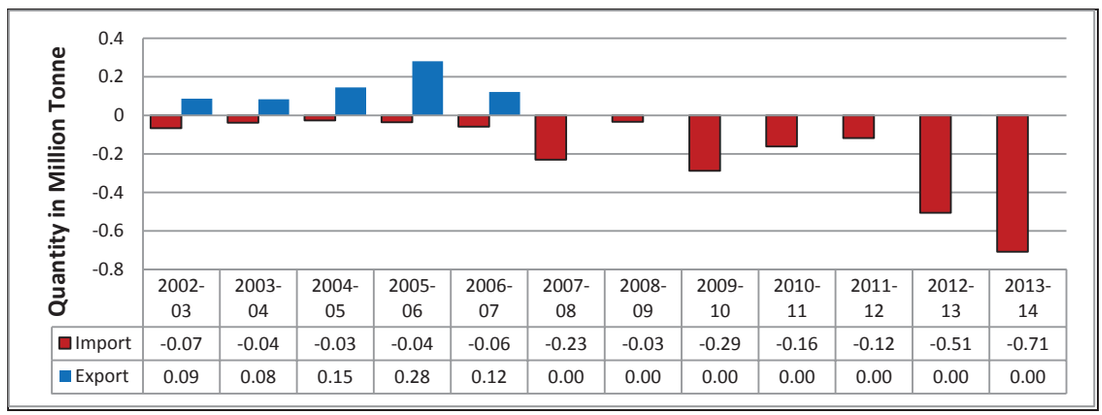
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Import	-0.22	-0.26	-0.13	-0.28	-0.13	-0.15	-0.20	-0.34	-0.10	-0.21	-0.70	-0.28
Export	0.00	0.00	0.01	0.04	0.06	0.16	0.13	0.10	0.20	0.17	0.19	0.33

Source: DGCIS

Masoor (Lentil)

3.12 Global production of Masoor (lentil), as per FAO, was 4.6 million tonnes in TE 2012. Canada is the biggest producer of masoor with a share of 36.3 percent followed by India (21.3 percent). India's imports of masoor have increased from a low of only 0.03 million tonnes in 2004-05 to a high of 0.71 million tonnes in 2013-14 (Chart-3.6).

Chart-3.6: India's Exports and Imports of Masoor (lentil), 2002-03 to 2013-14



	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Import	-0.07	-0.04	-0.03	-0.04	-0.06	-0.23	-0.03	-0.29	-0.16	-0.12	-0.51	-0.71
Export	0.09	0.08	0.15	0.28	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00

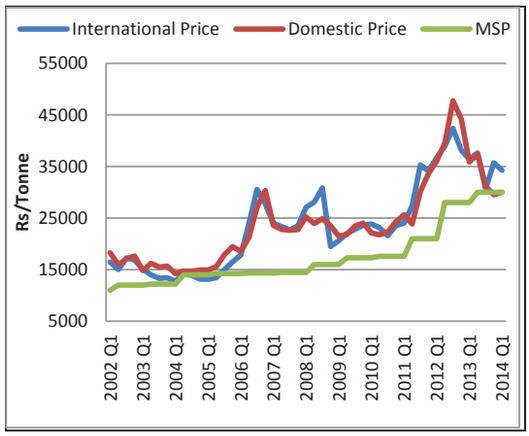
Source: DGCIS

3.13 Domestic wholesale prices of gram and masoor have followed the trend of international prices during the period from 2002 to 2014 (Chart-3.7). Their MSPs

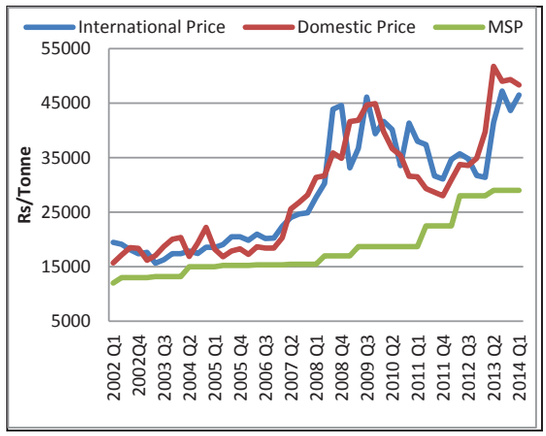
have been generally lower than the corresponding domestic wholesale and international prices during this period.

Chart-3.7: Prices (Domestic and International) and MSP of Gram and Masoor

(a) Gram



(b) Masoor



Sources: NAFED, DES and UN Com Trade

Oilseeds/Edible Oils

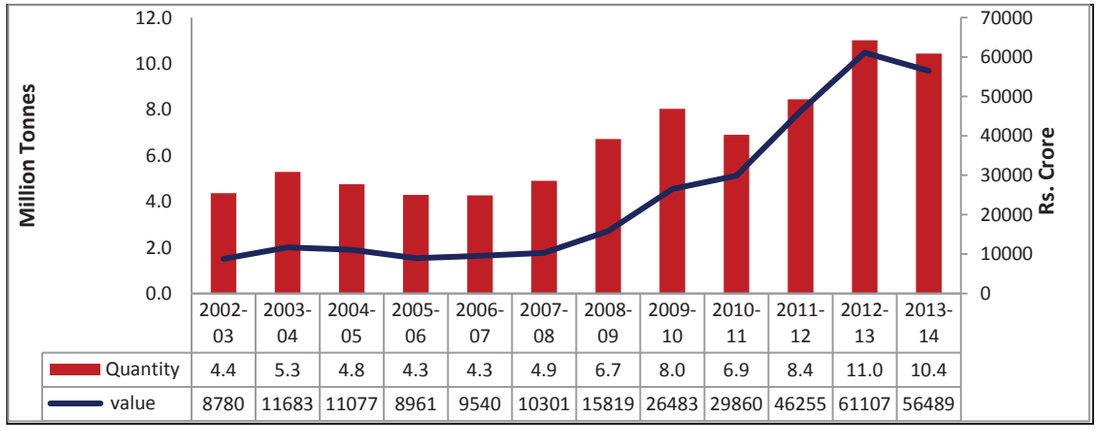
3.14 Global production of major oilseeds, as per USDA, was 474.6 million tonnes in TE 2013-14, out of which about 25 percent is traded. USA is the biggest producer of oilseeds with a share of 19.8 percent closely followed by Brazil (17.3 percent). Other major producers of oilseeds are China (12.5 percent), Argentina (11.0 percent) and India (7.8 percent). Brazil and USA, together export about two-third of the world's total exports, with a share of 34.2 and 33.1 percent respectively. China is the biggest importer of oilseeds in the world with a share of 56.7 percent. Other major importers of oilseeds are EU (14.5 percent), Japan (4.6 percent) and Mexico (4.5 percent) in TE 2013-14.

3.15 Global production of vegetable oils, as per USDA, was 162.2 million tonnes in TE 2013-14, out of which 41.4 percent is traded. Indonesia is the biggest producer of vegetable oils with a share of 20.2 percent. Other major producers are China (13.7 percent), Malaysia (13.1 percent) and EU (10.3 percent). Indonesia and Malaysia export more than 60 percent of total exports of vegetable oil in the world with a

share of 32.8 percent and 28.6 percent respectively. India is the biggest importer of vegetable oils with a share of 16.8 percent closely followed by China (15.7 percent) and EU (14.8 percent).

3.16 As per DGCIS, India's imports of edible oils have increased from 4.4 million tonnes, valued at Rs 8,780 crores, in 2002-03 to a high of 11.0 million tonnes, valued at Rs 61,107 crores in 2012-13 (Chart-3.8). However, India's imports of edible oils have declined to 10.4 million tonnes, valued at Rs 56,489 crores in 2013-14 due to increase in domestic production of oilseeds/edible oils and also because of decline in international prices of most of the edible oils from June-July, 2013 onwards.

Chart-3.8: India's Imports of Edible Oils, 2002-03 to 2013-14



	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Quantity	4.4	5.3	4.8	4.3	4.3	4.9	6.7	8.0	6.9	8.4	11.0	10.4
value	8780	11683	11077	8961	9540	10301	15819	26483	29860	46255	61107	56489

Source: DGCIS

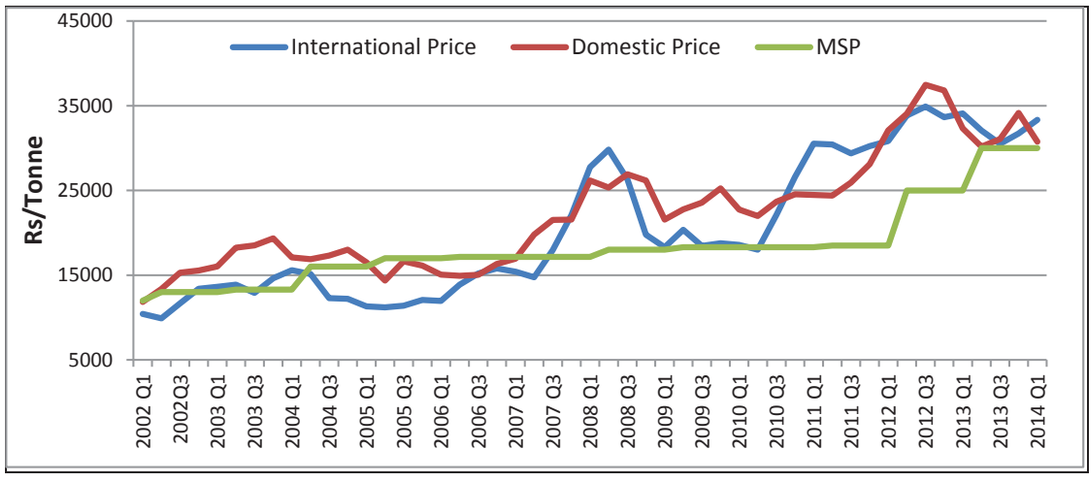
Rapeseed and Mustard (R&M) Oilseeds

3.17 Global production of R&M, as per USDA, was 65.3 million tonnes in TE 2013-14 out of which about 20 percent is traded. EU is the biggest producer of R&M with a share of 30.6 percent followed by Canada (23.7 percent), China (21.3 percent) and India (10.4 percent). Canada is the biggest exporter of R&M with a share of 61.1 percent while EU is the biggest importer of R&M with a share of 26.3 percent closely followed by China (24.6 percent) and Japan (18.4 percent).

3.18 India exports small quantities of R&M while it has not imported this commodity. As per DGCIS, exports of R&M have fluctuated between 10.9 thousand tonnes and

53.8 thousand tonnes during the period from 2002 to 2014. The domestic wholesale prices of R&M have followed the trend of the international prices during the period from 2002 to 2014 (Q1) (Chart-3.9).

Chart-3.9: Prices (Domestic and International) and MSP of R&M



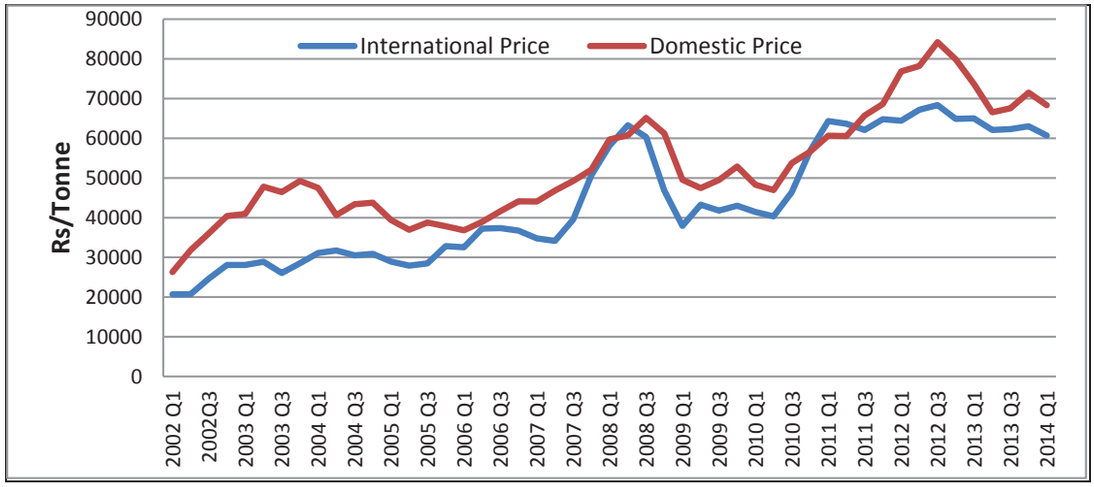
Sources: 1. R&M Oil, Hamburg CIF; Europe "00" OIL, Oil World; USDA; World Bank

2. NAFED, Agmarknet and DES (Avg. Price of Rajasthan)

R&M Oil

3.19 Global production of R&M oil, as per USDA, was 25 million tonnes in TE 2013-14, out of which 15.7 percent is traded. EU is the biggest producer of R&M oil with a share of 37.1 percent and other major producers are China (24.0 percent), Canada (12.2 percent) and India (9.5 percent). Canada is the biggest exporter of R&M oil with a share of 65.1 percent followed by EU (8.9 percent). China is the biggest importer of R&M oil with a share of 33.2 percent followed by EU (9.4 percent) and Canada (2.9 percent). India's exports of R&M oil are negligible but it imports small quantities. Imports of R&M oil were 55 thousand tonnes in TE 2013-14. The domestic wholesale prices of R&M oil have been generally higher than the international prices during 2002 to 2014 (Chart-3.10).

Chart-3.10: Prices (Domestic and international) of R&M Oil



Sources: 1. USDA; World Bank for international Price at Rotterdam, Dutch, FOB EX-Mill; Oil World.
2. The Solvent Extractors Association of India for domestic price quoted at Mumbai

Trade Policy – Oilseeds/Edible oils

3.20 Exports of oilseeds are free while imports of oilseeds are under OGL, with an import duty of 30 percent since January, 2003. Edible oils were under negative list of imports till April, 1994 when import of edible palmolein was placed under OGL subject to 65 percent import duty. Subsequently, imports of other edible oils were also placed under OGL and import duty was levied at high levels during early 2000s but was reduced to zero percent on crude and 7.5 percent on refined edible oil in April, 2008. However, import duties on crude and refined edible oils have been increased to 2.5 percent in January, 2013 and to 10 percent in January, 2014 respectively.

3.21 Export of edible oils was initially prohibited for a period of one year in March, 2008 which was extended from time to time[3]. However, there are certain exemptions, namely (a) Castor oil, (b) Coconut oil from all Electronic Data Interchange (EDI) Ports and through all Land Custom Stations (LCS), (c) Deemed export of edible oils (as input raw materials) from Domestic Tariff Area (DTA) to 100 percent Export Oriented Units (EOUs) for production of non-edible goods to be exported, (d) Edible oils from DTA to Special Economic Zones (SEZs) to be consumed by

[3] Ban on export of edible oils has been extended till further orders in June, 2013

SEZ units for manufacture of processed food products, subject to applicable value addition norms, (e) Edible oils produced out of minor forest produce, and (f) 10,000 tonnes of organic edible oils per annum. In addition, export of edible oils in branded consumer packs of up to 5 kg is permitted with a Minimum Export Price (MEP) of US$ 1100 per MT. India's trade policy for major rabi crops is summarized in Table-3.2.

Table-3.2: India's Trade Policy–Rabi Crops

Crop/Commodity	Trade Policy				
	Import Policy			Export Policy	
	OGL/Import ban	Import duty (percent)	Bound Duty (percent)	OGL/Export ban	Export duty (percent)
Cereals					
Wheat	OGL	Zero	100	OGL	Zero
Barley	OGL	Zero	100	OGL	Zero
Pulses					
Gram (Chickpeas)	OGL	Zero	100	Export ban {except (i) Kabuli chana (ii)10000 tonnes per annum of organic pulses and lentil}	
Masoor (Lentil)	OGL	Zero	100		
Oilseeds/Edible Oils					
R&M	OGL	30	100	OGL	Zero
R&M oil (Crude)	OGL	2.5	75	Export ban *	
R&M oil (Refined)	OGL	10	75	Export ban *	

*Export of edible oils in branded consumer packs up to 5 kg is permitted with a minimum MEP of US$ 1100 per tonne

Recapitulation

3.22 Tariffs rather than quantity restrictions should be employed as a regulatory instrument in a manner that is stable and neutral, both for consumers and producers. Based on sound economic principle, import duty ought to escalate from raw material to finished product. In so far as oilseeds /edible oils are concerned, it attracts a sort of inverted duty structure which impacts domestic industry adversely. It is high at 30 percent for raw material i.e. oilseeds and low at 2.5 percent for crude oil and in between at 10 percent for finished product i.e. refined oil. The Commission recommends that import duty for oilseeds, crude oil and refined oil be fixed at 2.5 percent, 5 percent and 12.5 percent respectively. It will address, to some extent, the issue of blending of relatively less expensive oil (palm oil) with mustard oil. This would promote resource use efficiency, generate surpluses and augment agricultural growth. It is imperative to continuously monitor domestic and international price trends and identify the trigger points to tweak tariff rates so that these remain relevant and rational in changing global scenario.

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Chapter-4

Costs, Profitability, Inter-Crop Price Parity and Terms of Trade

4.1. Cost of production (CoP) is one of the important factors in the determination of MSP of mandated crops. Besides cost, the Commission considers other important factors such as demand and supply, price trends in the domestic and international markets, inter-crop price parity and terms of trade between agricultural and non-agricultural sectors, the likely impact of MSPs on consumers, besides ensuring rational utilization of natural resources like land and water.

4.2. The Commission uses the cost estimates furnished by the DES, Ministry of Agriculture under Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops in India (CS). Since CS data generally comes with a time lag of two years, it needs to be projected for the year under consideration state-wise and at all-India level. These projected cost estimates are factored into formulation of price policy recommendations.

4.3. The Commission has projected CoP estimates for 2014-15 rabi crop season (RMS 2015-16), based on actual estimates for the latest three years' *viz*. 2010-11 to 2012-13 for each state. These three projections capture increase in overall input cost separately for the year 2014-15 over each of the years' *viz*., 2010-11, 2011-12 and 2012-13. An assessment of overall increase in input cost likely for the year 2014-15 with reference to each of the three consecutive years ending with 2012-13 is made by constructing the Composite Input Price Index (CIPI) based on latest prices of different inputs like human labour, bullock labour, machine labour, seeds, fertilizers, manures, insecticides, and irrigation charges based on the latest data from different sources like Labour Bureau, inputs from State governments, Office of the Economic Adviser (OEA), Ministry of Commerce and Industry, Fertilizers Association of India (FAI), National Seeds Corporation (NSC) etc. Based on CIPI, the Commission then projected CoP for 2014-15 rabi crop season.

[4] Estimated at the prevailing market prices during harvest season in the village/cluster of villages where crops are grown and harvested.

Costs and Profitability of Rabi Crops during 2010-11 to 2012-13

4.4. Profitability can be seen from two perspectives. The first is gross returns which are defined as gross value of output[4] less costs A_2+FL and the second is net returns which represent gross value of output less costs C_2. The average returns (both gross and net) during 2010-11 to 2012-13 for various rabi crops are presented in Table-4.1 and Chart-4.1. It may been seen from Table-4.1 that gross returns as percent of cost A_2+FL is maximum for R&M at 158 percent followed by lentil and wheat at 142 and 123 percent respectively. The state-wise details of average returns are given at Annex Table-4.1.

Table-4.1: Gross and Net Returns of Rabi Crops

(Average from 2010-11 to 2012-13)

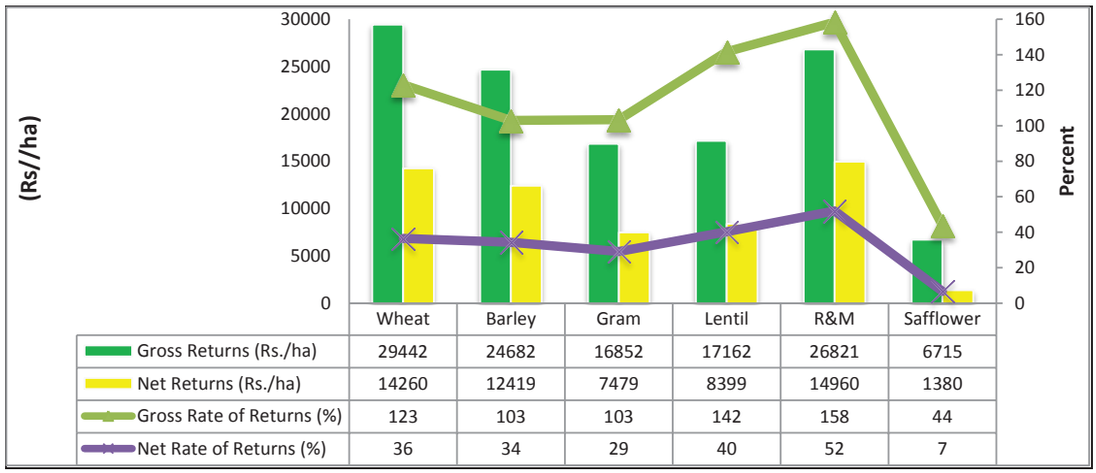
(Rs/ha)

Crop	Cost A_2+FL	Cost C_2	GVO	Gross Returns	Gross Returns (percent)	Net Returns	Net Returns (percent)
Wheat	23914	39096	53356	29442	123	14260	36
Barley	23970	36233	48652	24682	103	12419	34
Gram	16291	25664	33143	16852	103	7479	29
Lentil	12114	20878	29276	17162	142	8399	40
Rapeseed/Mustard	16934	28796	43755	26821	158	14960	52
Safflower	15300	20636	22016	6715	44	1380	7

A_2+FL cost includes all expenses in cash and kind on account of hired human labour, bullock labour, machine labour, seed, insecticides, pesticides, manure, fertilizers, irrigation charges and miscellaneous expenses including family labour.

C_2 cost includes A_2+FL cost, rental value of owned land and interest on owned fixed capital.

Chart-4.1: All-India Profitability of Rabi Crops (Average from 2010-11 to 2012-13)

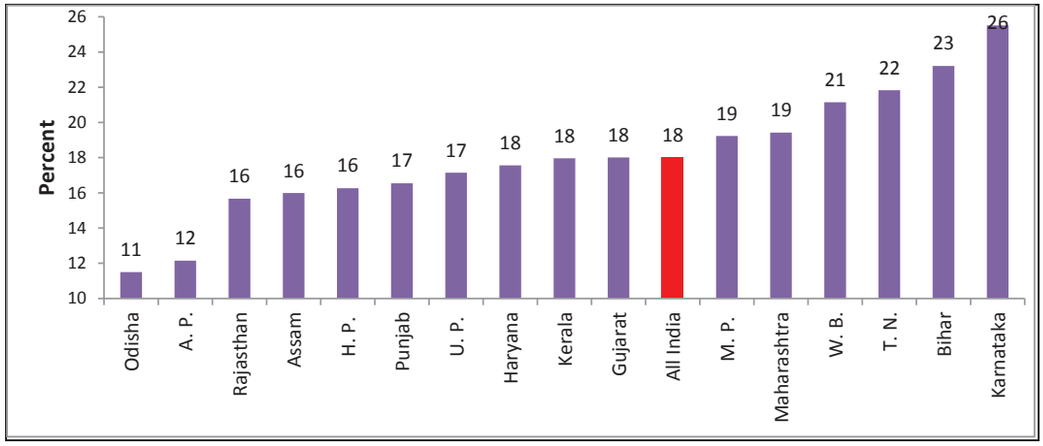


	Wheat	Barley	Gram	Lentil	R&M	Safflower
Gross Returns (Rs./ha)	29442	24682	16852	17162	26821	6715
Net Returns (Rs./ha)	14260	12419	7479	8399	14960	1380
Gross Rate of Returns (%)	123	103	103	142	158	44
Net Rate of Returns (%)	36	34	29	40	52	7

Labour and Input Price Movement

4.5. Chart-4.2 depicts average annual growth rate of agriculture wage rate in states and at all-India level in nominal terms during July 2010-June 2011 to July 2013-February 2014. Agricultural wage rates have gone up by 18 percent per annum over the last three years. The highest rate of increase during the three years period is reported for Karnataka at 26 percent and the lowest for Odisha at 11 percent. Given that wage rates have been increasing rapidly in the recent years, it is imperative to ramp up farm mechanization in a big way so as to achieve precision and speed. The state-wise details of monthly average daily wage rate of agriculture labour are given in Annex Table-4.2.

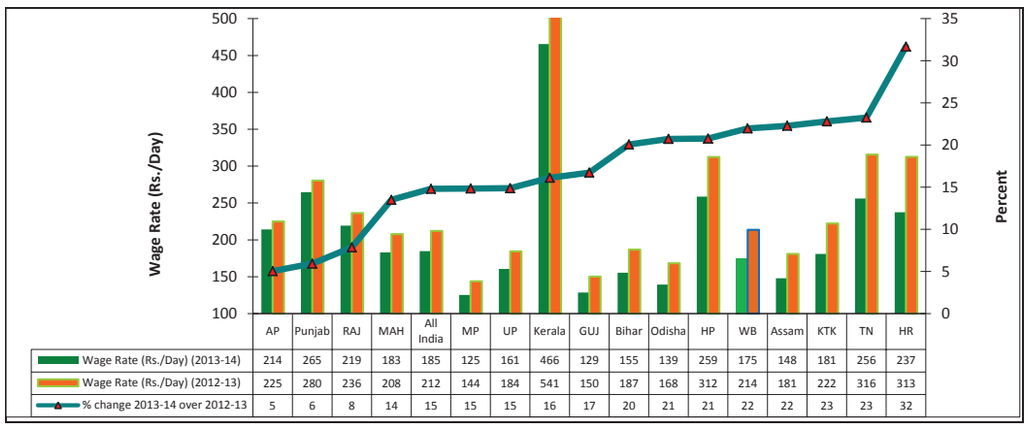
Chart-4.2: State-wise and All India Average Annual Growth Rate of Wages of Agricultural Labour in Nominal Terms (July 2010-June 2011 to July 2013-Feb. 2014)



Source: Labour Bureau, Shimla

4.6. Chart-4.3 depicts average annual growth rate of agriculture wage rate in states and at all-India level in nominal terms during July 2012-June 2013 to July 2013-Feb. 2014. Agricultural wage rates have gone up by 15 percent per annum during the last one year. The highest rate of increase during the last one year is reported for Haryana at 32 percent and the lowest for Andhra Pradesh at 5 percent.

Chart-4.3: State-wise and All India Average Annual Growth Rate of Wages of Agricultural Labour in Nominal Terms (July 2012-June 2013 to July 2013-Feb. 2014)

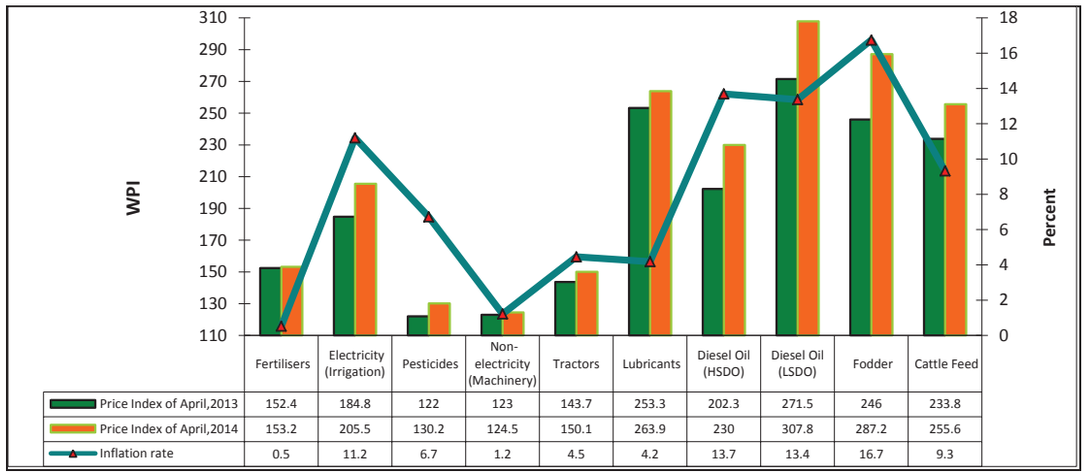


	AP	Punjab	RAJ	MAH	All India	MP	UP	Kerala	GUJ	Bihar	Odisha	HP	WB	Assam	KTK	TN	HR
Wage Rate (Rs./Day) (2013-14)	214	265	219	183	185	125	161	466	129	155	139	259	175	148	181	256	237
Wage Rate (Rs./Day) (2012-13)	225	280	236	208	212	144	184	541	150	187	168	312	214	181	222	316	313
% change 2013-14 over 2012-13	5	6	8	14	15	15	15	16	17	20	21	21	22	22	23	23	32

Source: Labour Bureau, Shimla

4.7. Based on WPI (2004-05=100), it may be observed (Chart-4.4) that prices of farm inputs exhibit an upward trend during the period April 2013 to April 2014. Electricity for irrigation have increased by 11.2 percent, pesticides by 6.7 percent, tractors by 4.5 percent, lubricants by 4.2 percent, high speed diesel oil (HSDO) by 13.7 percent, fodder by 16.7 percent, cattle feed by 9.3 percent (details in Annex Table-4.3).

Chart-4.4: WPI and Percent Increase in Prices of Farm Inputs (April 2014 over April 2013)



	Fertilisers	Electricity (Irrigation)	Pesticides	Non-electricity (Machinery)	Tractors	Lubricants	Diesel Oil (HSDO)	Diesel Oil (LSDO)	Fodder	Cattle Feed
Price Index of April,2013	152.4	184.8	122	123	143.7	253.3	202.3	271.5	246	233.8
Price Index of April,2014	153.2	205.5	130.2	124.5	150.1	263.9	230	307.8	287.2	255.6
Inflation rate	0.5	11.2	6.7	1.2	4.5	4.2	13.7	13.4	16.7	9.3

Source: DIPP

Cost Projections for 2014-15 Rabi Season (RMS 2015-16)

4.8. Based on the methodology of cost projections, costs have been projected state-wise. These projected costs for various crops vary across states. Based on the state-wise costs, an all India weighted cost of production, with weights being relative shares of the states in the total production in TE 2013-14, has been arrived at. Table-4.2 presents the projected cost (A_2+FL and C_2) and modified costs (including costs of marketing, transportation and insurance premium) of crops at all India level. State-wise and all India projected costs of six rabi crops under the domain of MSP for RMS 2015-16 are given in Annex Table-4.4. Also state-wise actual costs for 2011-12 and 2012-13 are at Annex Table-4.5 (a) to (f).

Table-4.2: All India Projected Costs for Rabi Crops for 2014-15 Crop Season (RMS 2015-16)

(Rs/qtl)

Crop	A_2+FL	C_2	Cost of Marketing, Transportation and Insurance Premium	Modified Cost#
Wheat	744	1147	44	1191
Barley	735	1065	42	1107
Gram	1902	2981	53	3034
Lentil (masoor)	1866	2952	55	3007
Rapeseed/Mustard	1504	2455	55	2510
Safflower	3025	3685	47	3732

Modified cost is total of projected C_2cost plus transportation, insurance and marketing charges.

4.9. Charts-4.5 (a) to (e) depict the cost of production (C_2) by states as well as all-India level in ascending order of cost with their corresponding relative shares in total production for different crops. These crop-wise charts illustrate the percent of cost of major producing states that is covered by all India weighted cost of production in terms of relative share of production of those states for different rabi crops. It may be noted that all-India cost of production (C_2) per quintal for wheat is Rs 1147 (covers cost of 90 percent of production), for barley is Rs 1065 (covers cost of 66 percent of production), for gram is Rs 2981 (covers cost of 63 percent of production), for lentil is Rs 2952 (covers cost of 46 percent of production), for R&M is Rs 2455 (covers cost of 79 percent of production).

Chart-4.5: Supply Curves and Projected Costs of Rabi Crops for RMS 2015-16

Chart- 4.5(a) Wheat

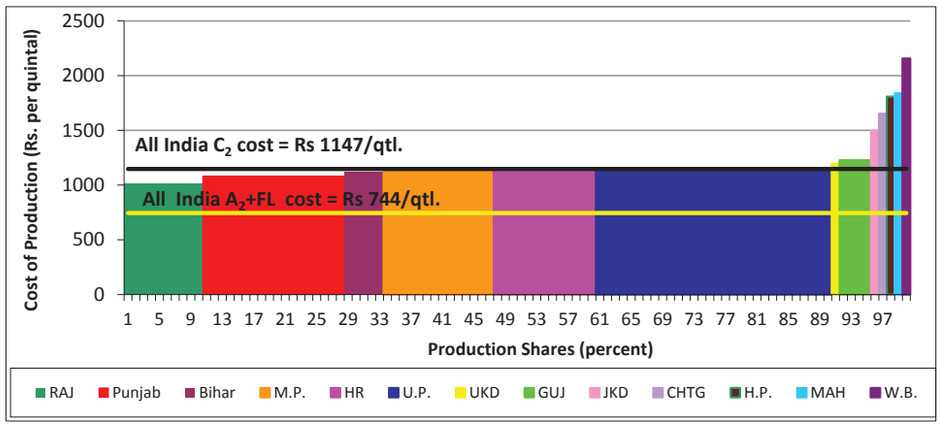


Chart-4.5(b) Barley

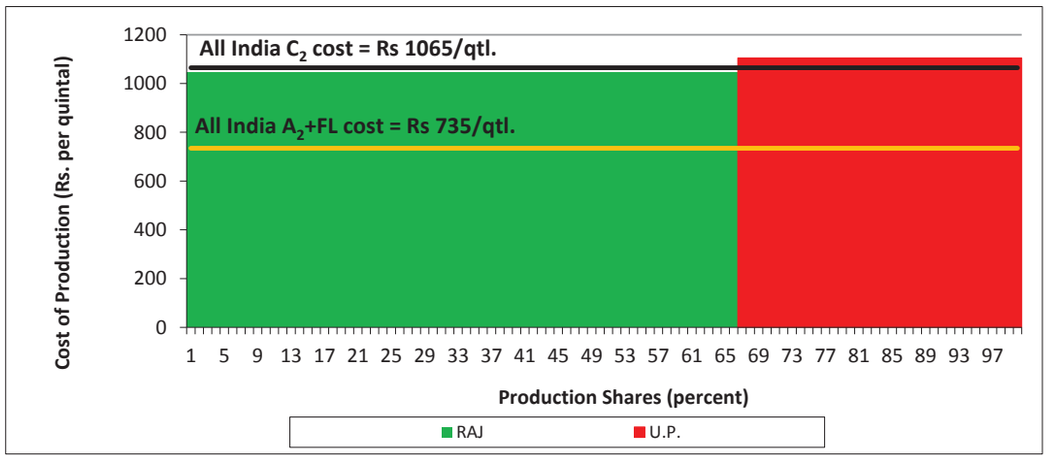


Chart-4.5(c) Gram

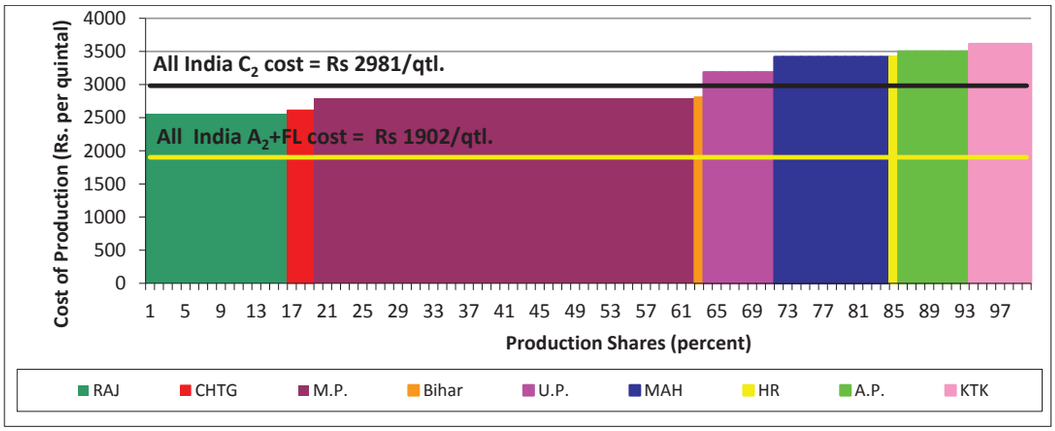


Chart-4.5(d) Lentil (Masoor)

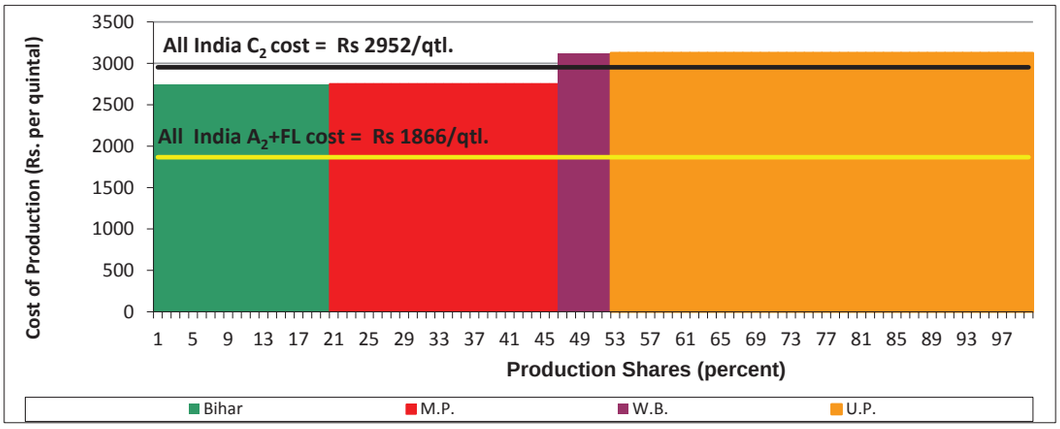
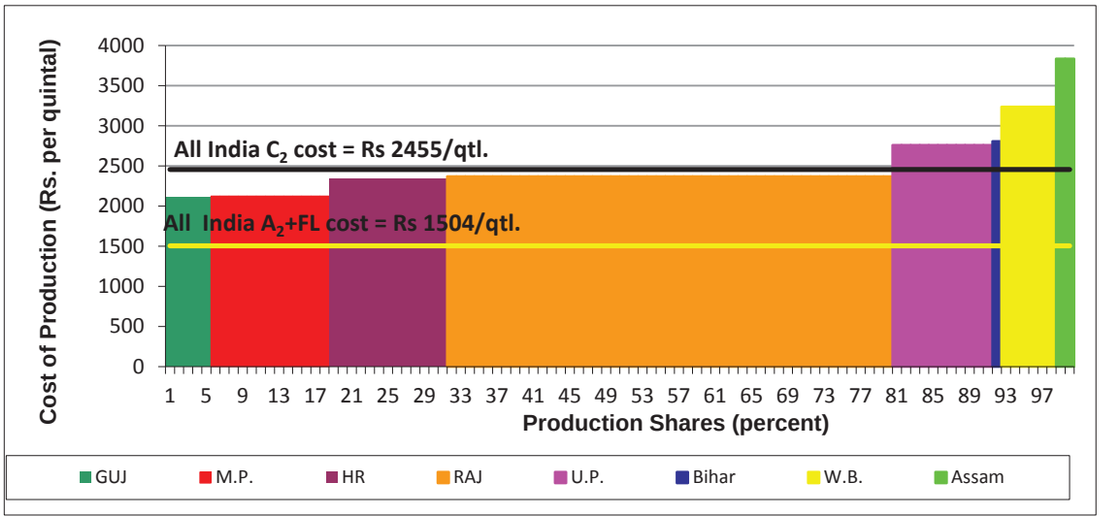


Chart-4.5(e) R&M



Inter Crop Price Parity

4.10. Inter crop price parity being a factor for determination of MSPs, the Commission computes per hectare returns of different crops that are substitutes for each other. Table-4.3 outlines relative returns over A_2+FL and C_2 in percent terms for various rabi crops in reference to that of wheat, as numeraire. It is found that the returns for gram, barley and safflower are low as compared to wheat and R&M. Out of all the rabi crops, the return is maximum for R&M at 142 whereas it is minimum for safflower at 18.

Table-4.3: Crop-wise Relative Returns (percent)
(Average from 2010-11 to 2012-13)

CROP	Relative returns over A_2+FL of crops with wheat as numeraire	Relative returns over C_2 of crops with wheat as numeraire
Wheat	100	100
Barley	84	94
Gram	84	80
Lentil	115	110
Rapeseed/Mustard	129	142
Safflower	36	18

Terms of Trade Analysis

4.11. The Terms of Trade (ToT) between agriculture and non-agriculture sectors are important as farmers are concerned not only with prices they receive for their produce but also the prices of goods and services purchased by them. The relative shifts in prices of agricultural and non-agricultural commodities over time have a direct bearing on the welfare of the farm sector. ToT has remained relatively stable over time and marginally tilted in favour of agriculture sector in recent years (Annex Table-4.6). It has fluctuated between 101.9 and 106.6 during 1990-91 and 2009-10, being 106.6 in 2005-06 and 102.6 in 2009-10. The ratio of agricultural prices to non-agricultural prices as calculated from the WPI improved substantially from 100.8 in 2005-06 to 154 in 2013-14 (with base year 2004-05=100). The Ministry of Agriculture has set up a Committee in May, 2012 to examine both the basket of goods and services included in ToT and also its base year. Once the Committee submits its report and the recommendations are implemented, ToT will capture the ground reality in a more realistic manner.

Recapitulation

4.12. To sum up, the pricing policy (MSPs) is not rooted in the 'cost plus' exercise, though cost is one of its important determinants. Given the time lag of about two to three years in dissemination of data from field levels to DES, and then to CACP, the Commission projects the cost estimates on the basis of the latest three years for which data is available. Accordingly, A_2+FL costs per quintal for wheat, barley, gram, lentil, R&M and safflower have been projected at Rs. 744, Rs. 735, Rs. 1902, Rs.1866, Rs. 1504 and Rs. 3025 respectively. The corresponding modified C_2 costs are Rs. 1191, Rs. 1107, Rs. 3034, Rs. 3007, Rs. 2510, Rs. 3732 respectively. These projected costs have been factored into formulation of price policy recommendations.

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Chapter-5

Productivity and Its Various Dimensions

Productivity Overview

5.1 Given that the land and water resources are increasingly coming under pressure, enhancing productivity levels assumes importance not only from the point of view of meeting the rising demands but also to make our agriculture globally competitive. Empirical evidence suggests that prices tilt competitive advantage, *ceteris paribus*, on a sustainable basis. One way to reduce real prices of commodities is to increase their total factor productivity (TFP). While it may take some time to study TFP for Indian agriculture and for specific crops based on cost of cultivation data, it would be interesting to see how land productivity, a partial component of TFP, impacts cost of production of rabi crops under MSP domain, namely wheat, barley, gram, lentil, rapeseed & mustard and safflower. With this objective in view, this chapter dissects productivity levels by Five Year Plan Period-wise (FYP), and also at district levels, compares Indian productivity levels of different crops with those of the respective benchmarking countries, appraises behaviour of efficiency gaps over time, looks into the drivers of the productivity, and assesses impact of improving productivity levels on containing real costs of production. To improve resource efficiency levels, the Commission establishes an explicit link, based on cogent logic, between the recommended MSP of oilseeds (R&M) with its oil content.

Productivity Performance over Five Year Plan Periods

5.2 The average annual growth rates of area, production and productivity of various rabi crops from the ninth FYP period onwards (1997-98 to 2013-14) are presented in the Table-5.1:

Table-5.1: All India Average Annual Growth Rates of Rabi Crops, 1997-98 to 2013-14

(Percent)

Crop		Area Growth				Production Growth				Productivity Growth			
		1997-2002	2002-2007	2007-2012	2012-14	1997-2002	2002-2007	2007-2012	2012-14	1997-2002	2002-2007	2007-2012	2012-14
Wheat	GR	0.4	1.3	1.3	2.5	1.2	1.1	4.6	0.5	0.7	-0.3	3.3	-1.9
	C V	2.9	3.7	3.0	3.1	5.2	5.4	7.9	1.7	4.7	2.1	5.1	1.3
Barley	GR	-2.2	-0.3	0.7	2.0	-0.2	-1.2	6.3	3.5	2.6	-0.9	4.5	1.6
	C V	9.8	5.0	7.2	2.5	7.2	6.4	14.5	0.9	5.9	2.3	8.9	1.6
Gram	GR	0.6	3.6	2.3	11.1	2.7	4.7	4.6	13.5	1.3	0.3	2.2	2.8
	C V	18.9	8.6	7.3	12.6	20.3	14.0	12.9	8.2	5.1	6.0	7.6	4.4
Lentil*	GR	1.5	0.1	1.5	-8.9	1.3	-0.8	3.6	7.1	-0.5	-0.9	2.3	17.6
	C V	5.6	3.8	8.4	*	10.6	6.8	10.0	*	7.3	7.7	7.2	*
R & M	GR	-4.0	7.3	-1.7	4.9	-2.6	11.5	-0.4	9.5	2.2	3.2	0.8	4.2
	C V	18.0	19.6	8.4	1.3	13.1	25.4	12.7	1.8	14.8	11.3	6.7	3.1
Safflower	GR	-10.1	-1.3	-7.3	-14.9	3.5	4.4	-9.2	-9.2	22.0	5.4	-1.8	6.1
	C V	18.8	1.4	9.1	2.2	25.2	22.6	12.5	4.7	33.5	21.9	4.1	6.9

Source: DES

Notes: Periods 1997-2002, 2002-2007, 2007-2012 and 2012-14 pertain to Ninth, Tenth, Eleventh and Twelfth (part) Five Year Plans; GR: Growth Rates, CV: Coefficient of Variation, *:Data for Lentil upto 2012-13

5.3 Based on Table-5.1, the following points emerge and are noteworthy:

i. Pulses and oilseeds posted significant improvement in its productivity levels during the first two years of twelfth FYP (2012-13 to 2013-14). This is explained, at least partly, by increases in their respective MSPs.

ii. Gram posted an impressive growth in both its area (11.1 percent p.a.) and production (13.5 percent p.a.) during 2012-13 to 2013-14. The growth in productivity level at 2.8 percent p.a. during the corresponding period is higher compared to 0.3 percent p.a. and 2.2 percent p.a. achieved during the tenth and the eleventh FYP periods respectively.

iii. Lentil registered a remarkable growth in its productivity at 17.6 percent in a single year (2012-13).

iv. R&M witnessed an average productivity growth at 4.2 percent p.a. during the first two years of twelfth FYP (2012-13 to 2013-14) compared to 0.8 percent p.a. in the preceding FYP. This, coupled with increase in area at 4.9 percent p.a., led to increase in production at 9.5 percent p.a. during the corresponding period.

v. Growth in area under wheat accelerated to 2.5 percent p.a. on an average during the first two years of the twelfth FYP period (2012-13 to 2013-14) compared to 1.3 percent p.a. each during the tenth and the eleventh FYP periods. This shows farmers' preference for wheat, notwithstanding overflowing of granaries, due to almost assured procurement.

vi. Lower growth in the production of wheat at 0.5 percent p.a. during the first two years of twelfth FYP compared to growth in its area at 2.5 p.a. indicates negative growth (-1.9 percent p.a.) in its productivity levels. This is significant, given productivity level grew at 3.3 percent p.a. during the preceding FYP (2007-08 to 2011-12).

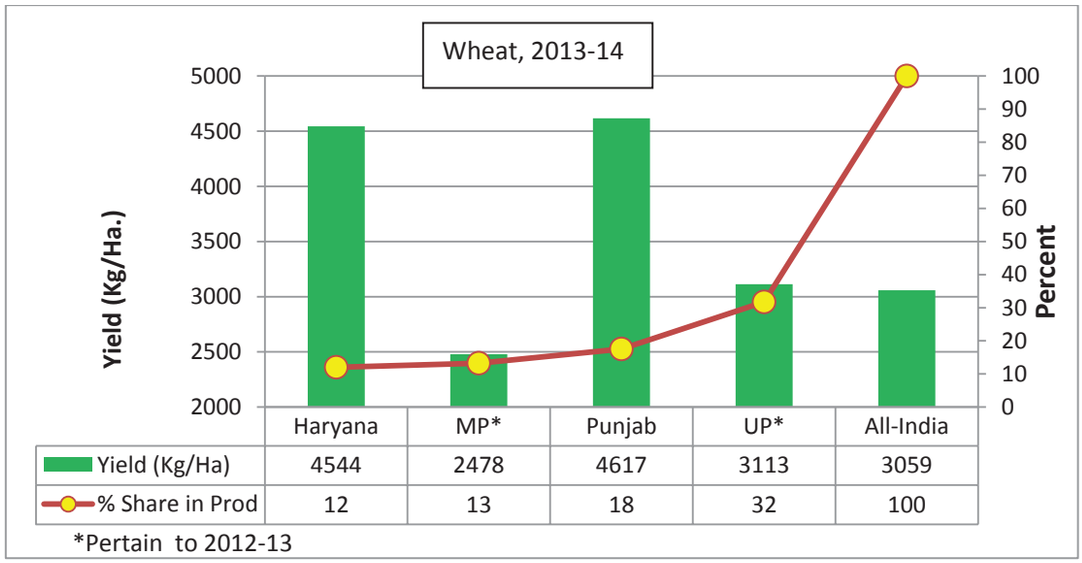
District-wise and State-wise Productivity Levels in Major Wheat, Gram and R&M Producing States

5.4 This section seeks to analyze district-wise productivity behaviour of important rabi crops namely wheat, gram and R&M in major producing states.

a. Wheat

5.5 Four major wheat producing States namely Haryana, Madhya Pradesh, Punjab and Uttar Pradesh contribute 75 percent of total wheat production in the country (Chart-5.1).

Chart-5.1: State-wise Productivity Levels of Wheat, 2013-14



Source : DES

5.6 To appraise productivity at district level, the Commission has arranged yield levels in ascending order in these states, made yield bands based on 'intelligible differentia' and then worked out area coverage corresponding to each of the yield bands (Table-5.2). The objective of this analysis is to identify the districts with the highest productivity levels in major producing states of important crops so that other districts can emulate these benchmarking districts, subject to adaptability and other technical constraints.

Table 5.2: District-Level Yield-bands of Wheat in Major Producing States, 2013-14

S.No	Yield Band (Kg/Ha.)	Haryana		MP*		Punjab		UP*	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
1	Up to 2000	0	0	22	13	0	0	1	1
2	2001-3000	1	1	57	27	0	0	38	29
3	3001-4000	0	0	19	9	1	1	60	42
4	4001-5000	99	20	2	1	88	19	1	3
5	Above 5000	0	0	0	0	11	2	0	0
Summary Indicators of Land Productivity	Total Area ('000 ha)	2522		5300		3500		9734	
	Max Yield (Kg/Ha.)	4723		4088		5065		4602	
	Top 3 distts. in descending order of Yields	Panipat, Kurukshetra, Kaithal		Indore, Sheopur, Bhind		Sangrur, Fatehgarh Sahib, Moga		Hapur, Bagpat, Ghaziabad	
	Area under top 3 distts (%) (highest yield levels)	14.4		5.2		15.5		1.3	
	Minimum Yield. (Kg/ha.)	2884		1119		3934		1913	
	Distt. Having Min. Yield.	Panchkula		Balaghat		Pathankot		Mahoba	
	Share of Area under Min. Yield (%)	0.7		0.5		1.2		0.7	
	Average Yield (Kg/Ha)	4544		2478		4617		3113	
	Efficiency Gap (%)	3.8		39.4		8.9		32.4	

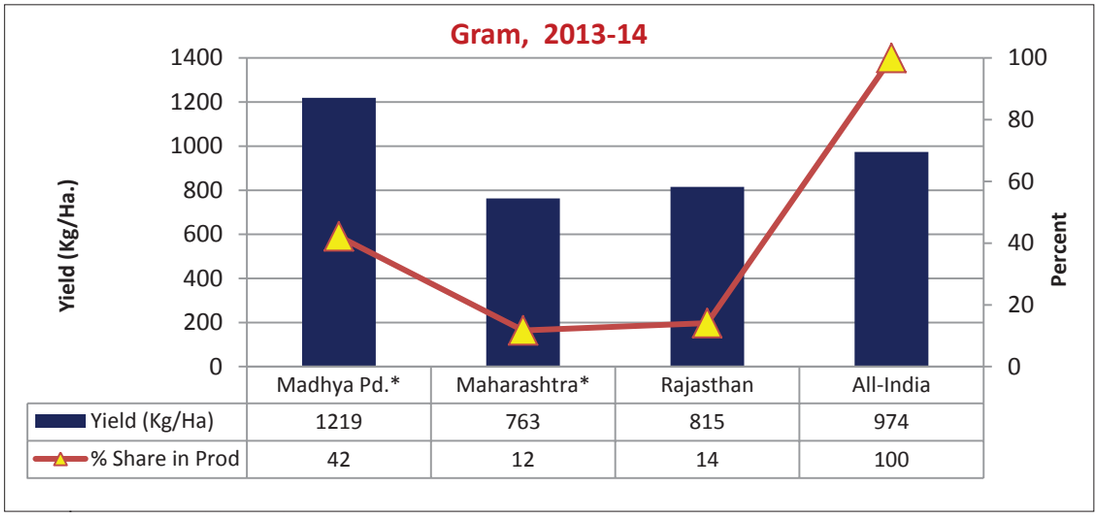
Sources: State Governments, DES

*: Pertain to 2012-13

b. Gram

5.7 Madhya Pradesh, Maharashtra and Rajasthan contribute over two-third of the total gram production in the country (Chart-5.2).

Chart-5.2: State-wise Productivity Levels of Gram, 2013-14



Source: DES

*: Pertain to 2012-13

Table 5.3: District-Level Yield-bands of Gram in Major Producing States, 2013-14

S.No	Yield Band (Kg/Ha.)	MP*		Maha*		Raj	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
1	Up to 500	7	4	21	7	0	1
2	501-1000	20	13	57	18	76	19
3	1001-1500	55	22	22	5	24	13
4	1501-2000	16	9	0	0	0	0
5	Above 2000	2	2	0	0	0	0
Summary Indicators of Land Productivity	Total Area ('000 ha)	3129		1120		1897	
	Max Yield (Kg/Ha.)	3402		1245		1404	
	Top 3 distts. In descending order of Yields	Singrauli, Chhindwara, Bhind		Amravati, Nanded, Yavatmal		Bharatpur, Baran, Dholpur	
	Area under top 3 distts (%) (highest yield levels)	3.0		15.9		0.8	
	Minimum Yield. (Kg/ha.)	451		160		503	
	Distt. Having Min. Yield.	Mandla		Jalna		Churu	
	Share of Area under Min. Yield (%)	0.3		1.7		20.4	
	Average Yield (Kg/Ha)	1219		763		815	
	Efficiency Gap (%)	64.2		38.8		42.0	

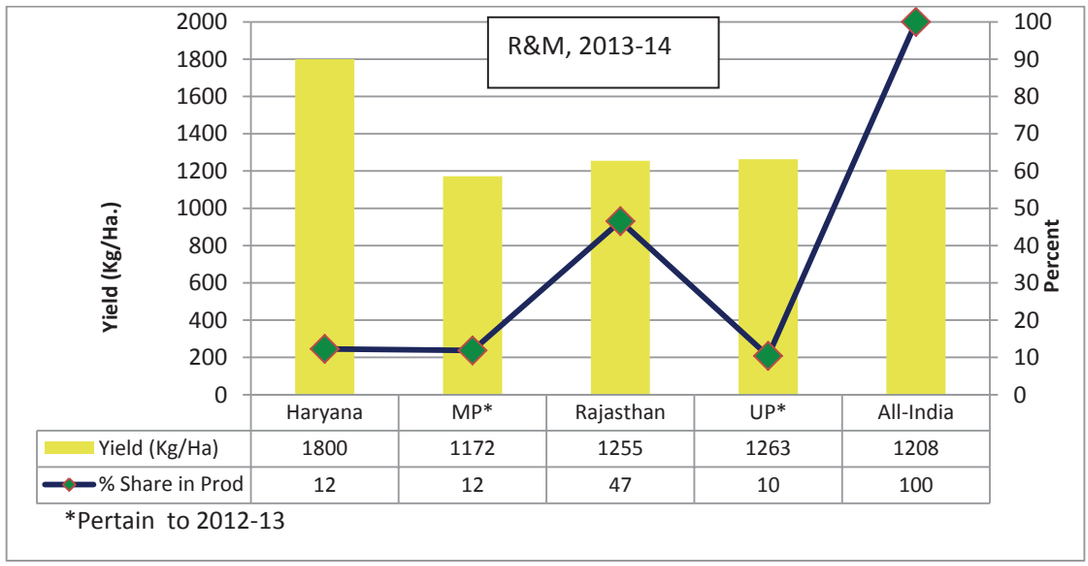
Source: State Governments, DES

*: Pertain to 2012-13

c. Rapeseed & Mustard

5.8 Haryana, Madhya Pradesh, Rajasthan and UP produce over 80 percent of total R&M production in the country (Chart-5.3).

Chart-5.3: State-wise Productivity Levels of R&M, 2013-14



	Haryana	MP*	Rajasthan	UP*	All-India
Yield (Kg/Ha)	1800	1172	1255	1263	1208
% Share in Prod	12	12	47	10	100

*Pertain to 2012-13

Source: DES

Table 5.4: District-Level Yield-bands of R&M in Major Producing States, 2013-14

S.No	Yield Band (Kg/Ha.)	Haryana		MP*		Raj		UP*	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
1	Up to 500	0	0	11.8	10	0	0	0.8	1
2	501-1000	0	0	18.6	20	11.2	6	37.0	27
3	1001-1500	11.8	1	41.8	14	74.5	23	35.0	39
4	1501-2000	84.5	15	27.8	4	14.2	4	27.2	8
5	Above 2000	3.7	5	0	0	0	0	0	0
Summary Indicators of Land Productivity	Total Area ('000 ha)	541		785		2896		662	
	Max Yield (Kg/Ha.)	2295		1953		1644		1993	
	Top 3 distts. In descending order of Yields	Gurgaon, Palwal, Karnal		Ratlam, Morena, Mandsaur		Bharatpur, Kota, Karoli		Aligarh, Kashganj, Etah	
	Area under top 3 distts (%) (highest yield levels)	3.3		27.6		11.8		6.0	
	Minimum Yield. (Kg/ha.)	1472		286		593		441	
	Distt. Having Min. Yield.	Hisar		Chhatarpur		Jaisalmer		Mahoba	
	Share of Area under Min. Yield (%)	11.8		2.6		3.9		0.8	
	Average Yield (Kg/Ha)	1800		1172		1255		1263	
	Efficiency Gap (%)	21.6		40.0		20.7		36.6	

*: Pertain to 2012-13

5.9 Based on district-wise analysis of productivity of important rabi crops in major producing states, it emerges that certain districts give significantly higher yields compared to their respective state averages and the efficiency gaps are upto 39 percent in case of wheat, 64 percent in gram and 40 percent in R&M. The top three districts in each of major producing states of wheat are Panipat, Kurukshetra, Kaithal (Haryana), Indore, Sheopur, Bhind (Madhya Pradesh), Sangrur, Fatehgarh Sahib, Moga (Punjab), Hapur, Bagpat, Ghaziabad (Uttar Pradesh). In case of gram, these are Singrauli, Chhindwara, Bhind (Madhya Pradesh), Amravati, Nanded, Yavatmal (Maharashtra), Bharatpur, Baran, Dholpur (Rajasthan). Likewise, top districts in terms of productivity of R&M are Gurgaon, Palwal, Karnal (Haryana), Ratlam, Morena, Mandsour (Madhya Pradesh), Bharatpur, Kota, Karoli (Rajasthan),

Aligarh, Kasganj, Etah (Uttar Pradesh). Many of these districts with higher yield levels for a particular crop in a state are contiguous i.e. are neighbouring districts (District-wise maps at Annex). While these districts may have certain advantage in terms of natural endowment, they could be following different farming practices, and applying better inputs which need to be explored separately. Given the fact that there is an increasing pressure on land resources, it becomes important to make optimal utilization of land. In this background, it is imperative to study these districts in greater details so as to propagate /replicate farming practices and inputs used in these districts to other districts. This will go a long way in augmenting productivity levels.

5.10 Deteriorating soil health has been a cause of concern and leads to sub optimal utilization of farming resources. Indian soils show deficiency of nutrients i.e. N, P, K in many parts of the country. Site specific nutrient management involving soil test based application of fertilizers is critical to enhance fertilizer use efficiency. In this context, the Commission takes note of allocation of Rs.100 crores in BE 2014-15 for providing soil health cards to every farmer and Rs. 56 crores for setting up 100 Mobile Soil Testing Laboratories across the country. Since these measures will help improving the productivity levels, the Commission recommends its implementation on priority basis across the country.

Impact of Oil Content on MSP of R&M

5.11 Various oilseeds including R&M are mainly cultivated with a view to extracting oil from it. Yet, oil content in oilseeds is not taken into consideration while recommending MSP, as per the extant practice. This is an over simplification of the matter and deserves a better professional approach. Based on sound economic principle, MSPs need to have an explicit and direct relation with oil content in oilseeds as fixing its MSP without any reference to the oil content impinges on efficiency levels of farmers. On the basis of the field visits of the Commission, detailed discussions it held with various stakeholders such as R&M cultivators, processors, scientists of ICAR and also representatives of the Department of Food, the Commission recommends that the level of MSP of R&M, as determined on the basis of factors enumerated in Chapter-4, be linked to the basic oil content of 35 percent in R&M and farmers be incentivized for every 0.25 percent point increase in its oil content to improve their efficiency.

5.12 To cogently determine the scale of incentive for higher oil content, it is assumed, without loss of generality, that miller processes 1 quintal of oilseeds. From this process, he will get 35 kgs of oil and 65 kgs of oil cake. Based on average prices of oil cakes at Rs.1640/qtl and MSP at Rs.3100/qtl. (being recommended in this report), he will realize Rs.1066 (Rs.1640*0.65) from the cake. Thus, the cost of this raw material (conceptually, oil component but without cake) would be Rs. 2034 (Rs.3100 -1066) which will contain 35 kgs of oil. Thus, the cost per kg (which is nothing but 1 percent) of oil will be Rs. 58.11 or Rs.14.53 for every 0.25 percent point {Table-5.5 (abridged version), details in Annex Table-5.3)}.

Table-5.5 : Simulation-Impact of Oil Content on MSP of R&M

S.N.	Oil Content (%)	Oil Cake (%) {100-col(2)}	Realisation from oil cake on processing of 1 quintal of oilseeds, assuming price of cake/ qtl. = **Rs.1640** {col(3)*-Price of Oil cake}/100	Cost of Oil Con-tent i.e. oilseeds without cake (Rs/ qtl.), assuming MSP/qtl.= **Rs. 3100** MSP-Col(4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (Rs/qtl.) {col(5)/col(2)}*0.25	MSP (Rs/qtl.) at Oil Content given in col. (2)[MSP+{Average of col.(6)* percent points of oil content that is over & above 35%}]/ (0.25)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	35.00	65.00	1066	2034	14.53	3100
2.	35.25	64.75	1062	2038	14.45	3113
3.	35.50	64.50	1058	2042	14.38	3126
4.	35.75	64.25	1054	2046	14.31	3139
5.	36.00	64.00	1050	2050	14.24	3152
6.	42.00	58.00	951	2149	12.79	3463
7.	43.00	57.00	935	2165	12.59	3515
8.	44.00	56.00	918	2182	12.40	3567
9.	45.00	55.00	902	2198	12.21	3619
10.	46.00	54.00	886	2214	12.03	3671
11.	47.00	53.00	869	2231	11.87	3723
12	48.00	52.00	853	2247	11.70	3774
Average increase in MSP with 0.25 percent point increase in oil content					12.97	

Note: This is an abridged version of detailed simulation (Annex Table-5.3)

5.13 The cost per unit of oil content slowly decreases with increase in oil content. To illustrate, it is Rs. 14.53 for every 0.25 percent point when oil content is 35 percent and decreases to Rs.11.70 for every 0.25 percent point when the oil content increases to 48 percent. Taking average over oil content between 35 percent and 48 percent, the average cost for every 0.25 percent point works out to Rs. 12.97/ qtl. The Commission, therefore, recommends that MSP be increased by Rs. 12.97 /qtl. for every 0.25 percent point increase in oil content over and above the base oil content of 35 percent in R&M. It will incentivize not only farmers but also the processors for the cost of processing per unit oil content will come down with increase in oil content in the oilseeds. This will be so as the processing cost depends on the quantity of oilseeds processed and with increase in oil content, the cost of processing a given quantity of oilseeds will spread to larger quantity of oil and hence will lower the processing cost per unit of oil produced. The Commission also recommends that such a dispensation of linking MSP with oil content in other major oilseeds be introduced in a phased manner to augment production of edible oils in the country.

5.14 The next question arises as to how to implement this. One way to do this is to install Fourier Near Infrared (FTNIR) or Near Magnetic Resonance (NMR) apparatus or any other such instrument at procurement centres/ mandis to test oil content of every consignment and arrive at the consignment-specific price of the R&M, based on such test reports (percent oil content), in a calibrated manner (as per Simulation given in Annex Table-5.3). These apparatuses take about five minutes' time to give the result and measure oil content in a sample with a precision upto two decimal places. The Commission, therefore, recommends installation of oil content measurement apparatus in every procurement Centre /mandi. This will induce oilseeds farmers to adopt modern technology and better farming practices.

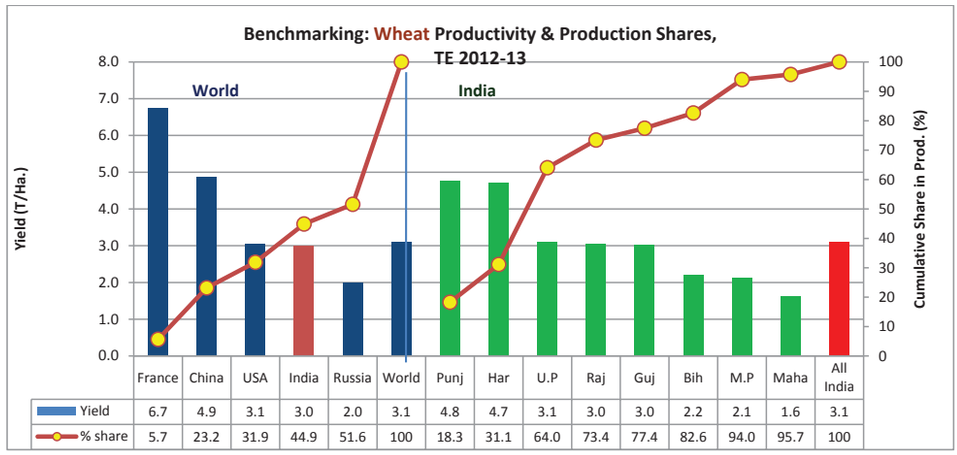
Benchmarking Productivity: Leading Producing Countries *vis-à-vis* All-India and States of India

5.15 Productivity plays an important role in containing the cost of production, enhances the global competitiveness, increases profitability and ultimately may reduce rural

poverty. It is, therefore, imperative to envision India's position *vis-à-vis* other major producing countries in the world on productivity scale. This would enable the country to gain greater competitiveness by setting out the targets in benchmarking productivity standards of those crops. With this end in view, all-India productivity levels of important rabi crops with benchmarking countries across the world and also across states in the country along with efficiency gaps have been worked out and presented in the Annex Table-5.1. Productivity levels of the relevant crops of benchmarking countries and of states along with their shares in production are depicted in Charts-5.4(a) to 5.4(f).

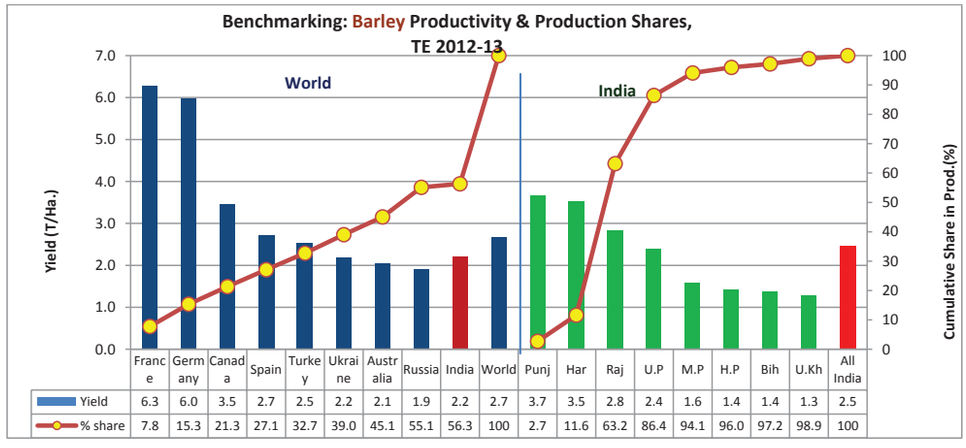
Charts-5.4 (a) to (f): Benchmarking of Productivity Levels across Countries and States in India

Chart 5.4 (a) Wheat



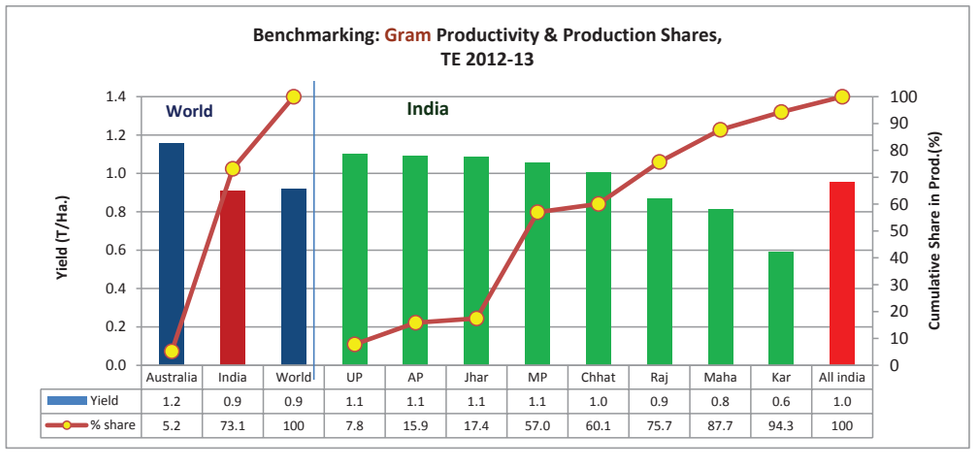
	France	China	USA	India	Russia	World	Punj	Har	U.P	Raj	Guj	Bih	M.P	Maha	All India
Yield	6.7	4.9	3.1	3.0	2.0	3.1	4.8	4.7	3.1	3.0	3.0	2.2	2.1	1.6	3.1
% share	5.7	23.2	31.9	44.9	51.6	100	18.3	31.1	64.0	73.4	77.4	82.6	94.0	95.7	100

Chart 5.4 (b) Barley



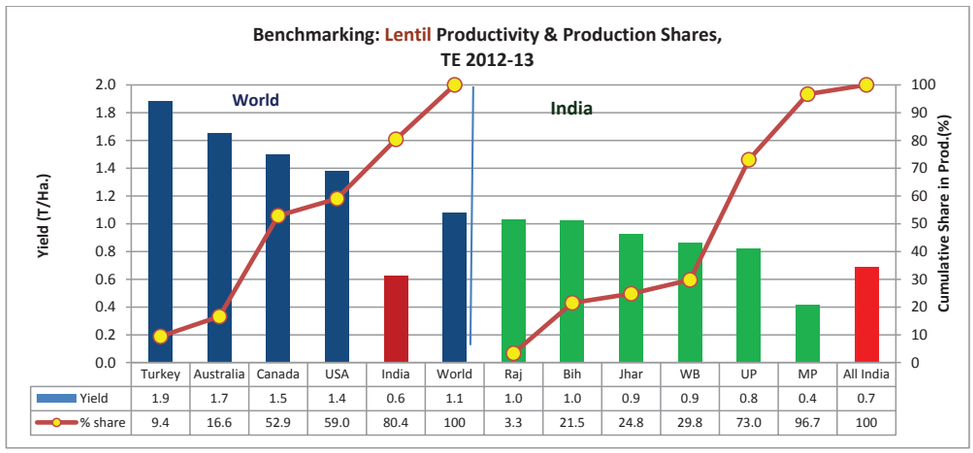
	France	Germany	Canada	Spain	Turkey	Ukraine	Australia	Russia	India	World	Punj	Har	Raj	U.P	M.P	H.P	Bih	U.Kh	All India
Yield	6.3	6.0	3.5	2.7	2.5	2.2	2.1	1.9	2.2	2.7	3.7	3.5	2.8	2.4	1.6	1.4	1.4	1.3	2.5
% share	7.8	15.3	21.3	27.1	32.7	39.0	45.1	55.1	56.3	100	2.7	11.6	63.2	86.4	94.1	96.0	97.2	98.9	100

Chart 5.4 (c) Gram



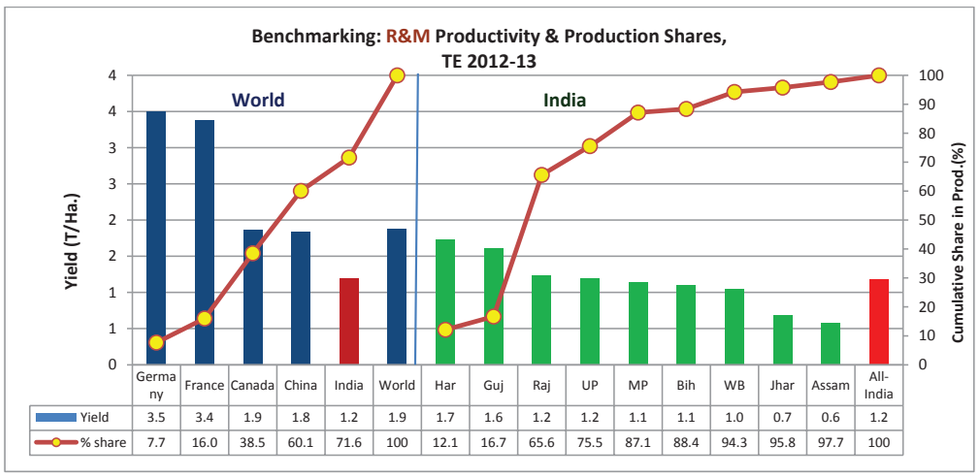
	Australia	India	World	UP	AP	Jhar	MP	Chhat	Raj	Maha	Kar	All india
Yield	1.2	0.9	0.9	1.1	1.1	1.1	1.1	1.0	0.9	0.8	0.6	1.0
% share	5.2	73.1	100	7.8	15.9	17.4	57.0	60.1	75.7	87.7	94.3	100

Chart 5.4 (d) Lentil



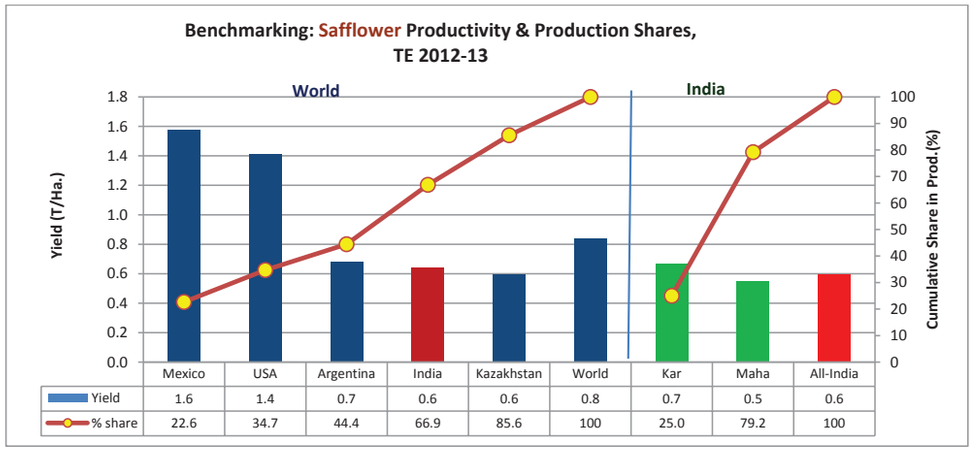
	Turkey	Australia	Canada	USA	India	World	Raj	Bih	Jhar	WB	UP	MP	All India
Yield	1.9	1.7	1.5	1.4	0.6	1.1	1.0	1.0	0.9	0.9	0.8	0.4	0.7
% share	9.4	16.6	52.9	59.0	80.4	100	3.3	21.5	24.8	29.8	73.0	96.7	100

Chart 5.4 (e) R & M



	Germany	France	Canada	China	India	World	Har	Guj	Raj	UP	MP	Bih	WB	Jhar	Assam	All-India
Yield	3.5	3.4	1.9	1.8	1.2	1.9	1.7	1.6	1.2	1.2	1.1	1.1	1.0	0.7	0.6	1.2
% share	7.7	16.0	38.5	60.1	71.6	100	12.1	16.7	65.6	75.5	87.1	88.4	94.3	95.8	97.7	100

Chart 5.4 (f) Safflower



	Mexico	USA	Argentina	India	Kazakhstan	World	Kar	Maha	All-India
Yield	1.6	1.4	0.7	0.6	0.6	0.8	0.7	0.5	0.6
% share	22.6	34.7	44.4	66.9	85.6	100	25.0	79.2	100

Figures for Countries (Source : FAO) pertain to TE 2012 whereas these pertain to Te 2012-13 (Source : DES) in case of States and All-India.

5.16 It may be noted (Annex Table-5.1) that the average productivity at all-India level of various crops discussed in this report are far lower than those of the benchmarking countries. The efficiency gaps[5] in productivity in India are high at 66 percent in case of R&M (Germany[6] being the benchmark country) and 54 percent in case of wheat (France being the benchmark country), though it is relatively low at about 18 percent in case of gram (Australia being the benchmark country). The efficiency gaps are relatively lower at 31 percent, 35 percent and 13 percent in R&M, wheat and gram respectively when all-India average productivity are compared with those of benchmarking states.

Efficiency Gaps: Temporal Movements

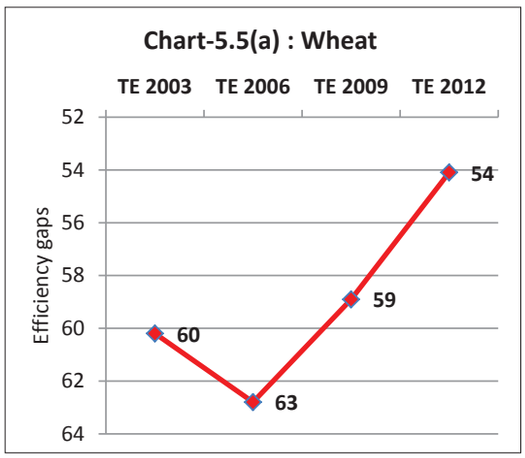
5.17 In a competitive globalized world, it is also important to appraise if the country is catching up with the best performing (benchmark) countries on productivity scale. With this end in view, the efficiency gaps in average yield levels of various rabi crops over time have been assimilated for the last twelve years from 2001 to 2012, partitioned these into four non-overlapping periods viz. TE[7] 2003, TE2006, TE 2009 and TE 2012. While crop-wise temporal efficiency gaps in the yield levels of India and benchmarking countries are presented in the Annex Table-5.2, its movements over time have been depicted in charts-5.5(a) to 5.5(f).

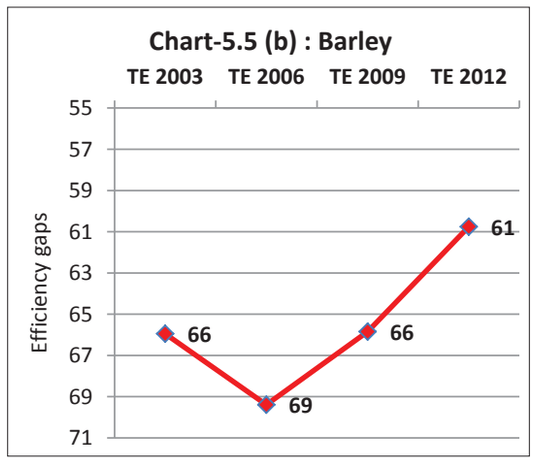
[5]Efficiency gap = (1-e)*100, where e = yield of India/yield of benchmark country.

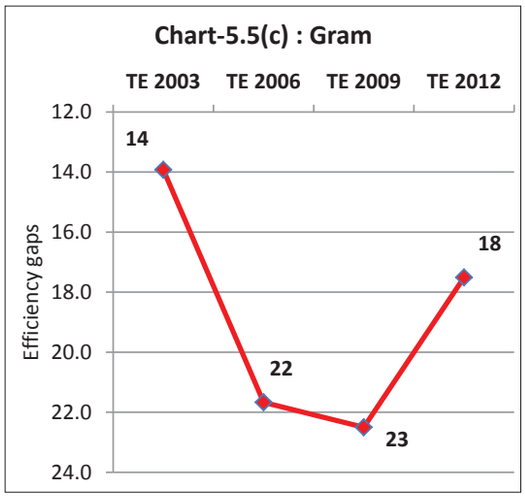
[6]The crop duration of mustard in Germany is about 10 months compared to 5 months in India.

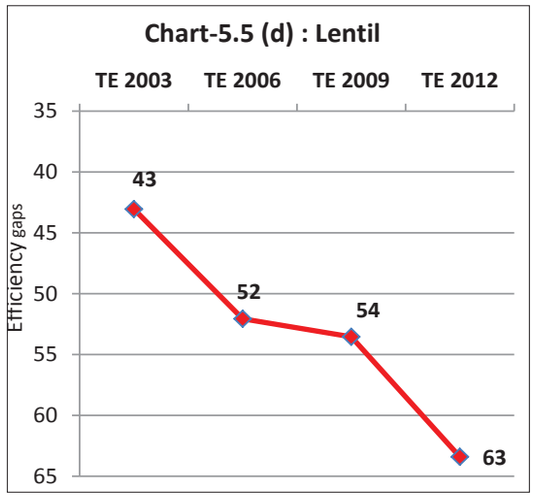
[7]Triennium Ending

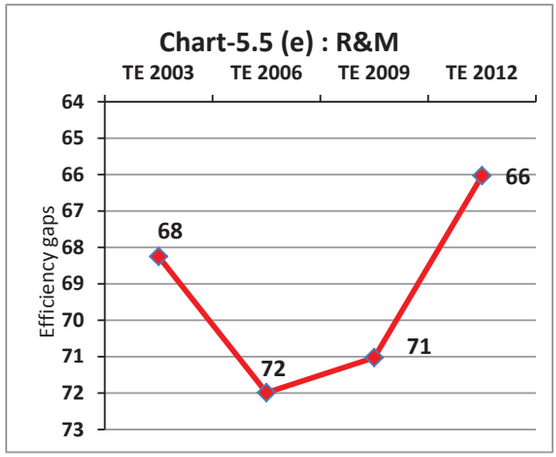
Charts-5.5(a) to 5.5(f) – Temporal Movements in Efficiency Gaps in Productivities of Rabi Cops-India *vis-a-vis* Benchmarking Countries (Percent)

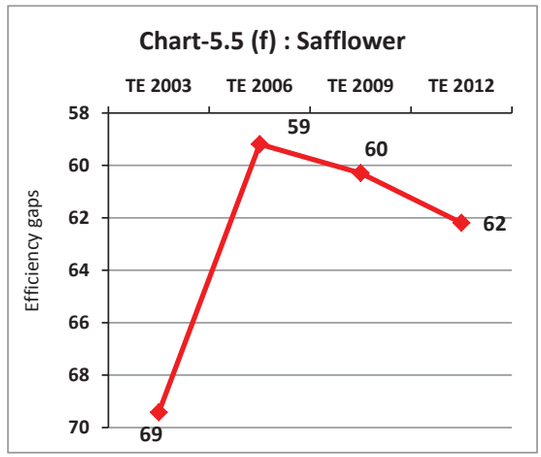












5.18 Based on analysis of temporal efficiency gaps {Annex Table-5.2 and Charts-5.5(a) to (f)}, the following points emerge:

i. Efficiency gaps between the productivity levels of India and those of the benchmark countries have narrowed down in cases of wheat, barley, R&M and safflower in the range of 2 percent points and 7 percent points during post-2001 period.

ii. However, efficiency gaps in case of gram have narrowed down during the recent period viz. TE 2012-13 compared to that prevailed during TE 2009, though it is still higher than the level in TE 2003.

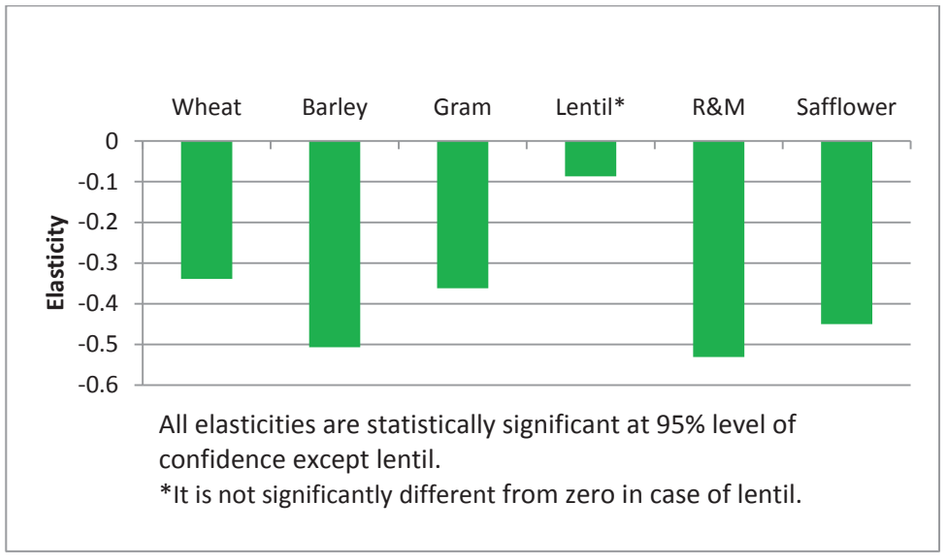
iii. The efficiency gaps in the yield levels of lentil have widened by about 20 percent points during the last decade.

Cost of Production and Productivity Levels

5.19 To deepen the understanding of the relationship between the real cost of production (CoP) and productivity levels, the regression models between the CoP and yield of various crops were fitted on panel data (across states and over time *viz*. 2000-01 to 2012-13). The regression analyses show the existence of an inverse relationship between the CoP and productivity, implying thereby that the cost decreases with

an increase in productivity levels. The impact of the yield on cost of production is depicted in Chart-5.6:

Chart-5.6: Elasticity - Impact of Improvement of Yield on Costs



5.20 It is clear from the Chart-5.6 that the cost of productions of barley, gram, R&M and safflower can be reduced by about 4 percent to 5 percent and 3 percent in case of wheat with an increase of 10 percent in productivity of these crops.

Drivers of Productivity

5.21 Carrying the relationship between productivity and cost to the next level of logical exploration, drivers of productivity are identified by undertaking simple linear regression analyses on panel data for 2000-01 to 2012-13, elasticities of productivity are estimated and presented in Table-5.6:

Table-5.6: Drivers of Productivity of Various Crops

Crop	Elasticity			
	Gross Profit in preceding year at constant prices (2012-13)	Fertilizer	Seed	% Area Irrigated
Wheat	0.307*	0.454*	0.344*	
Barley				0.251*
Gram	0.118*	0.108*	0.591*	
Lentil	0.158*		0.265*	
R & M	0.195*			0.258*
Safflower	0.263**			

(*) and (**) connote that the relevant elasticities are Statistically significant at 95% and 90% level of confidence respectively. Blank cells indicate that the corresponding variable was not found appropriate to explain variability in productivity.

5.22 Besides inputs (fertilizers, seeds and percent area irrigated) impacting the productivity levels, farmers respond to gross returns {GVO over (A_2+FL) cost} in most crops which means that price policy has an important role to play in improvement of productivity and thus total production. The solution to contain the increasing cost of production lies in augmenting productivity levels which are way below what current technology can provide. It is recommended to ensure supply of quality seeds, invest in technology (irrigation infrastructure) and also to propagate good farming practices. This would drive productivity, enhance global competitiveness, increase profitability and ultimately alleviate rural poverty.

Recapitulation

5.23 To recapitulate, the following points emerge from the analysis:

i. Various oilseeds such as R&M are mainly cultivated with a view to extracting oil from it. Yet, its oil content is not taken into consideration while recommending MSP, as per the extant practice. This impinges on efficiency of resources used. Based on sound economic principle, MSPs need to have an explicit relation with oil content in oilseeds. The Commission recommends that the level of MSP of R&M, as determined on the basis of factors enumerated in Chapter-4, be linked to the basic oil content of 35 percent in R&M and farmers be incentivized by giving them an additional

Rs.12.97/qtl. for every 0.25 percent point increase in its oil content. This will induce cultivators to adopt better farming practices and processors to invest in modern technology.

ii. A pre requisite to implement the recommendation of linking MSP of oilseeds with oil content is to install apparatus such as Fourier Near Infrared (FTNIR) or Near Magnetic Resonance (NMR) or any other such instrument at procurement centres /mandis to measure oil content in every consignment and arrive at the consignment-specific MSP of the R&M. The Commission, therefore, recommends installation of oil content measurement apparatus in every procurement centre /mandi.

iii. Based on district level analysis, it emerges that there are certain districts which give significantly higher yield levels compared to their respective state averages. While these districts may have certain advantage in terms of natural endowment, they could be following different farming practices, and applying better inputs which need to be explored separately. Given the fact that there is an increasing pressure on land resources, it becomes important to make optimal utilization of land. In this background, it is imperative to study these districts in greater details so as to propagate /replicate farming practices and inputs used in these districts to other districts. This will go a long way in augmenting productivity levels.

iv. The efficiency gaps in India's productivity levels compared to those of benchmarking countries need to be bridged. Alongside, the variation in yield levels across states also needs to be narrowed down. To get the best out of natural production resource *viz*. land, it is recommended that scheme of mobile soil health testing laboratories and issuance of soil health cards to farmers be propagated on a massive scale on priority so as to increase productivity levels and contain cost.

v. Farmers do respond to price signals. The price policy has an important role to play in improvement of productivity and thus total production.

vi. The solution to contain the increasing cost of production lies in enhancing productivity levels which are way below what current technology can provide. It is recommended to supply quality seeds, invest in technology (irrigation infrastructure) and also to propagate good farming practices. This would increase global competitiveness, augment profitability which will reduce rural poverty.

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Chapter-6

Considerations and Recommendations for Price Policy

6.1 The Commission takes into account the cost of production (CoP), demand and supply, price trends in the domestic and international markets, inter-crop price parity, terms of trade between agricultural and non-agricultural sectors, the likely impact of MSPs on consumers, besides ensuring rational utilization of natural production resources namely land and water before recommending MSPs. Thus, the pricing policy (recommending MSP) is not just rooted in 'cost plus', though cost is an important determinant of MSP. Real cost of production can be contained through yield augmenting measures. As prices impinge on global competitive advantage, higher productivity would help Indian commodities to be globally competitive on a sustainable basis.

Procurement, Taxes and Levies

6.2 Procurement of wheat is concentrated mainly in three states of Punjab, Haryana and MP. Also, Punjab, Haryana impose high statutory levies on procurement for the central pool which add to the costs of procurement for FCI. The economic costs of FCI for acquiring, storing and distributing foodgrains have been more than MSP by 32 to 43 percent during 2008-09 to 2013-14. The revenues received from the taxes/levies accrue to the state governments. Therefore, states have an incentive to keep these levies high. These taxes also drive out the private sector with the result that the entire stock of foodgrains has to be bought by the Government. Given that the Government of India has decided to limit the procurement for Central pool from states which announce state-specific bonus to the extent of requirement of foodgrains for TPDS/OWS allocations of that State and will provide acquisition and distribution subsidy to the State Government accordingly. The Commission recommends that a similar dispensation be put in place in case of states levying statutory taxes in excess of 5 percent. This will induce more private players to participate in procurement process, thereby getting the markets right.

International Trade

6.3 FAO-OECD's latest agriculture outlook (2013-2022) indicates that over the next decade, average prices for cereals and oilseeds are expected to be relatively flat in real terms compared to those prevailed during the previous decade. Global agricultural production is projected to grow at 1.5 percent annually, on average, compared to 2.1 percent in the previous decade. India, one of the top 15 exporters of agri-products, is a net exporter of agri-commodities with agri-exports constituting 13.7 percent of its total exports in 2013-14. The agri-exports and imports as a percent of agri-GDP have risen from 4.9 percent in 1990-91 to 18.7 percent in 2013-14. India is a large importer of pulses and edible oils. Trade Policy can play an effective role in controlling inflation if import and export duties are used in synch with the emerging shortages/surpluses. Tariff rather than quantitative restrictions be employed as a regulatory instrument in a manner that is stable and neutral, both for consumers and producers. For this, both imports and exports be opened with only moderate duty with a provision of special safeguard. The import duty needs to escalate as one moves from raw material to finished product. However, the current import duty on oilseeds, crude oil and refined oil has almost an inverted structure and attracts 30 percent, 2.5 percent and 10 percent respectively on these commodities. The Commission recommends 2.5 percent, 5 percent and 12.5 percent import duty on oilseeds, crude oil and refined oil respectively. This will also provide some protection to domestic producers against blending of relatively cheaper palm oil with R&M oil. It is also recommended to continuously monitor domestic and international price trends and identify the trigger points to tweak tariff rates so that these remain relevant and rational in changing global scenario.

Costs of Production, Returns, Terms of Trade and Inter Crop Price Parity

6.4 Gross rate of returns at all-India level during 2010-11 to 2012-13 were the highest for R&M followed by lentil and wheat. Crop price parity reveals that R&M and lentil are more profitable than wheat. The per quintal (A_2+FL) costs of rabi crops viz., wheat, barley, gram, lentil, R&M and safflower are projected at Rs. 744, Rs. 735, Rs. 1902, Rs. 1866, Rs. 1504, and Rs. 3025 respectively for the 2014-15 crop season. The ratio of agricultural prices to non-agricultural prices (not ToT) has improved

substantially from 100.8 in 2005-06 to 154 in 2013-14 (with base year 2004-05=100). These costs have been factored in while recommending the MSP of the crops.

Productivity and Costs

6.5 District-wise analysis of productivity of wheat, gram and R&M in major producing states reveal that Panipat, Indore, Sangrur, Hapur (for wheat), Singrauli, Amravati, Bharatpur (for gram), Gurgaon, Ratlam, Bharatpur, Aligarh (for R&M) are the benchmark districts (with the highest productivity levels). The efficiency gaps between productivity levels of these districts and their respective states' average of the concerned crops are upto 39 percent in case of wheat, 64 percent in gram and 40 percent in R&M. Given the fact that there is an increasing pressure on land resources, optimal utilization of land is a challenge. The Commission recommends to study these districts in greater details so as to propagate /replicate farming practices and inputs used in these districts to other districts, subject to soil health conditions and climatic suitability. This will go a long way in augmenting productivity levels, production and containing cost of production.

6.6 A plausible way to contain increasing costs of production lies in adopting productivity enhancement measures. Detailed analyses (Chapter-5) show that efficiency gaps between India's productivity levels and those of benchmark countries have reduced during post-2001 era, yet these are still substantial. The efficiency gap in productivity of wheat in India, for instance, was quite high at 54 percent compared to the benchmark country. This indicates considerable scope for enhancing productivity does exist which can be augmented by adopting innovative and modern technology.

6.7 The Commission's study shows a high positive correlation between percent area irrigated and profitability. Given the scarcity of water, propagating drip irrigation will help increasing area under irrigation with the same quantity of water. At the same time, irrigation drives productivity, contains cost, increases global competitiveness and profitability which may reduce rural poverty. Therefore, investment in irrigation will be cost effective.

6.8 The oilseeds like R&M are cultivated mainly with a view to extracting oil from it. Yet, oil content in oilseeds is not taken into consideration while recommending MSP, as per the extant practice. Recommending MSP of oilseeds without any

reference to the oil content impinges on efficiency levels of farmers. Therefore, the MSPs of oilseeds need to have an explicit and direct relation with oil content in oilseeds. Based on the field visits of the Commission, detailed discussions with R&M cultivators, processors, scientists of ICAR and also representatives of the Department of Food, the Commission recommends that the MSP of R&M be linked to the oil content of 35 percent in R&M and farmers be incentivized by giving an additional Rs.12.97/qtl. for every 0.25 percent point increase in the oil content over and above the base oil content of 35 percent. This will induce cultivators to adopt better farming practices and processors to invest in modern technology. The Commission also recommends that such a dispensation of linking MSP with oil content in other major oilseeds be done in a phased manner to augment production of edible oils in the country.

6.9 A pre requisite to implement the recommendation of linking MSP of oilseeds with oil content is to install apparatus such as Fourier Near Infrared (FTNIR) or Near Magnetic Resonance (NMR) or any other such instrument at procurement centres / mandis to measure oil content in every consignment and arrive at the consignment-specific MSP of the R&M (Annex Table-5.3). The Commission, therefore, recommends installation of oil content measurement apparatus in every procurement Centre /mandi. This will induce oilseeds farmers to adopt modern technology and better farming practices.

Recommendations on MSP for Rabi Crops for the Marketing Season 2015-16

6.10 In view of the analyses undertaken in this report, the Commission recommends MSPs of six rabi crops for RMS 2015-16, as given in Table-6.1.

Table-6.1: Recommended MSPs of Rabi Crops (RMS 2015-16)

(Rs/qtl, percent)

Crops	MSP (Marketing season)			Projected Costs		Domestic Average wholesale price	Interna-tional Price	Demand-Supply	MSP Recom-mended by CACP RMS 2015-16	Gross Margins w.r.t. MSP now recommended (Percent)	Net Margins w.r.t. MSP now rec-ommended (Percent)
				A_2+FL	C_2#						
	2014-15	2013-14	2012-13	Crop Season 2014-15		2014-15 (Apr-June)	2014-15 (Apr-June)	Stock to Use Ratio			
Wheat	1400 (3.7)	1350 (5.1)	1285 (9.8)	744	1191	1410	1580	Excess	**1450 (3.6)**	94.9	21.7
Barley	1100 (12.2)	980 (0.0)	980 (25.6)	735	1107	1100	1010	Low	**1150 (4.5)**	56.5	3.9
Gram	3100 (3.3)	3000 (7.1)	2800 (33.3)	1902	3034	2700	3190	Low	**3175 (2.4)**	66.9	4.6
Lentil	2950 (1.7)	2900 (3.6)	2800 (24.4)	1866	3007	4733	4440	Low	**3075 (4.2)**	64.8	2.3
R&M	3050 (1.7)	3000 (20.0)	2500 (35.1)	1504	2510	3045	3315	Comfort-able	**3100* (1.6)**	106.1	23.5
Saf-flower	3000 (7.1)	2800 (12.0)	2500 (38.9)	3025	3732	2400			**3050 (1.7)**	0.8	-18.3

Notes: 1. Figures in parentheses indicate increase over last year.
2. The wholesale price for wheat is for Bulandshahar in UP, for Bengal Gram-Ujjain in MP, for R&M- Sriganganagar in Rajasthan, for lentil –Hapur in UP, for barley-Alwar in Rajasthan, for Safflower- Jalana in Maharashtra taken from AGMARKNET and DES.
3. International prices are taken from World Bank for wheat (US), no. 1, soft red winter, ordinary protein, export price delivered at the US Gulf port, barley (Canada), feed, Western No. 1; NAFED for Landed Prices of Gram & Lentil at Mumbai; USDA for Rapeseed Hamburg CIF. International prices have been converted assuming the exchange rate at 1US$ =Rs 59.8 (Average for Apr-June, 2014 as taken from RBI).
4. #This includes C2 cost, costs of marketing, transportation and insurance premium.
5. Gross margins={MSP/(A2+FL)-1}*100 and Net margins ={MSP/(C2)-1}*100
6. *: corresponding to oil content of 35 percent.

Considerations and Recommendations for Price Policy

6.11 The Commission is of the considered opinion that these recommendations would steer price policy towards incentivizing agro producers to adopt better technologies and earn better returns. It would also contribute to diversification of the crops in line with emerging demand patterns of the consumers.

(Dr. Ashok Vishandass)
Chairman

(D.S. Raghu)
Member (Non-Official)

(Kaibalya Pradhan)
Member (Non-Official)

(Dr. Shailja Sharma)
Member Secretary

28 July, 2014

Annex Tables

Annex Table - 1.1 : All India Estimates of Area of Various Crops

(Million hectares)

Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
1		2	3	4	5	6	7	8	9
Rice	Kharif	39.60	39.45	40.81	37.62	38.05	40.14	38.91	39.56
	Rabi	4.21	4.46	4.73	4.30	4.81	3.87	3.84	4.38
	Total	43.81	43.91	45.54	41.92	42.86	44.01	42.75	43.94
Wheat	Rabi	27.99	28.04	27.75	28.46	29.07	29.86	30.00	31.34
Barley	Rabi	0.65	0.60	0.71	0.62	0.71	0.64	0.70	0.67
Jowar	Kharif	3.74	3.50	2.89	3.24	3.07	2.62	2.43	2.16
	Rabi	4.73	4.26	4.64	4.55	4.31	3.63	3.79	3.59
	Total	8.47	7.76	7.53	7.79	7.38	6.25	6.21	5.75
Bajra	Kharif	9.51	9.57	8.75	8.90	9.61	8.78	7.30	7.91
Maize	Kharif	6.96	7.12	6.89	7.06	7.28	7.38	7.21	7.71
	Rabi	0.93	1.00	1.28	1.20	1.27	1.40	1.46	1.58
	Total	7.89	8.12	8.17	8.26	8.55	8.78	8.67	9.30
Ragi	Kharif	1.18	1.39	1.38	1.27	1.29	1.18	1.13	1.16
Coarse Cereals	Kharif	22.39	22.62	20.83	21.31	22.05	20.75	18.82	19.67
	Rabi	6.31	5.87	6.62	6.37	6.29	5.67	5.94	5.85
	Total	28.71	28.48	27.45	27.68	28.34	26.42	24.76	25.52
Cereals	Kharif	62.00	62.07	61.64	58.92	60.10	60.89	57.73	59.23
	Rabi	38.52	38.36	39.10	39.13	40.17	39.40	39.78	41.56
	Total	100.52	100.43	100.74	98.05	100.27	100.29	97.52	100.79
Tur (Arhar)	Kharif	3.56	3.73	3.38	3.47	4.37	4.01	3.89	3.94
Moong	Kharif	3.19	3.73	2.84	3.07	3.51	3.39	2.72	3.20
Urad	Kharif	3.10	3.23	2.67	2.96	3.25	3.22	3.13	3.01
Gram	Rabi	7.49	7.54	7.89	8.17	9.19	8.30	8.52	10.19
Lentil (Masur)	Rabi	1.47	1.31	1.38	1.48	1.60	1.56	1.42	-
Pulses	Kharif	10.68	11.49	9.81	10.58	12.32	11.19	9.95	10.19
	Rabi	12.52	12.14	12.29	12.70	14.08	13.27	13.30	15.21
	Total	23.19	23.63	22.09	23.28	26.40	24.46	23.26	25.40

(contd...)

Annex Table - 1.1 : All India Estimates of Area of Various Crops

(Million hectares)

Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
1		2	3	4	5	6	7	8	9
Foodgrains	Kharif	72.67	73.58	71.45	69.51	72.42	72.08	67.69	69.42
	Rabi	51.04	50.49	51.39	51.83	54.25	52.67	53.09	56.78
	Total	123.71	124.07	122.83	121.33	126.67	124.75	120.78	126.19
Groundnut	Kharif	4.78	5.31	5.29	4.62	4.98	4.32	3.93	4.46
	Rabi	0.83	0.98	0.88	0.86	0.88	0.95	0.79	1.03
	Total	5.62	6.29	6.16	5.48	5.86	5.26	4.72	5.50
Soyabean	Kharif	8.33	8.88	9.51	9.73	9.60	10.11	10.84	12.20
Sunflower	Kharif	0.86	0.76	0.66	0.57	0.32	0.26	0.30	0.27
	Rabi	1.30	1.15	1.15	0.91	0.61	0.47	0.53	0.44
	Total	2.16	1.91	1.81	1.48	0.93	0.73	0.83	0.71
Sesamum	Kharif	1.70	1.80	1.81	1.94	2.08	1.90	1.71	1.60
Nigerseed	Kharif	0.47	0.41	0.39	0.38	0.37	0.36	0.31	0.27
R&M	Rabi	6.79	5.83	6.30	5.59	6.90	5.89	6.36	6.48
Safflower	Rabi	0.38	0.29	0.29	0.29	0.24	0.25	0.18	0.18
Nine Oilseeds	Kharif	16.77	17.95	18.53	17.97	18.23	18.42	18.32	19.79
	Rabi	9.74	8.74	9.03	7.99	9.00	7.89	8.16	8.42
	Total	26.51	26.69	27.56	25.96	27.22	26.31	26.48	28.21
Cotton		9.14	9.41	9.41	10.13	11.24	12.18	11.98	11.73
Jute		0.79	0.81	0.79	0.81	0.77	0.81	0.78	0.78
Mesta		0.14	0.15	0.12	0.09	0.10	0.10	0.09	0.08
Jute & Mesta		0.94	0.96	0.90	0.91	0.87	0.90	0.86	0.86
Sugarcane		5.15	5.06	4.42	4.17	4.88	5.04	5.00	5.02

Source: Directorate of Economics & Statistics (DES), Ministry of Agriculture.
* Third Advance Estimates

Annex Table -1.2 : All India Estimates of Production of Various Crops

(Million tonnes)

Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
1		2	3	4	5	6	7	8	9
Rice	Kharif	80.17	82.66	84.94	75.95	80.68	92.78	92.36	92.01
	Rabi	13.18	14.03	14.23	13.14	15.29	12.52	12.87	14.28
	Total	93.36	96.69	99.17	89.08	95.97	105.30	105.23	106.29
Wheat	Rabi	75.81	78.57	80.68	80.80	86.87	94.88	93.51	95.85
Barley	Rabi	1.33	1.20	1.69	1.35	1.66	1.62	1.75	1.73
Jowar	Kharif	3.71	4.11	3.05	2.76	3.44	3.29	2.84	2.23
	Rabi	3.44	3.81	4.19	3.94	3.56	2.69	2.44	3.02
	Total	7.15	7.93	7.25	6.70	7.00	5.98	5.28	5.25
Bajra	Kharif	8.42	9.97	8.89	6.51	10.37	10.28	8.74	9.19
Maize	Kharif	11.56	15.11	14.12	12.29	16.64	16.49	16.20	17.51
	Rabi	3.54	3.85	5.61	4.43	5.09	5.27	6.05	6.69
	Total	15.10	18.96	19.73	16.72	21.73	21.76	22.26	24.19
Ragi	Kharif	1.44	2.15	2.04	1.89	2.19	1.93	1.57	1.88
Coarse Cereals	Kharif	25.61	31.89	28.54	23.83	33.08	32.44	29.80	31.24
	Rabi	8.31	8.86	11.49	9.72	10.32	9.58	10.25	11.43
	Total	33.92	40.75	40.04	33.55	43.40	42.01	40.04	42.68
Cereals	Kharif	105.78	114.55	113.49	99.78	113.77	125.22	122.16	123.25
	Rabi	97.30	101.46	106.40	103.65	112.48	116.98	116.63	121.56
	Total	203.08	216.01	219.89	203.44	226.24	242.20	238.78	244.81
Tur (Arhar)	Kharif	2.31	3.08	2.27	2.46	2.86	2.65	3.02	3.38
Moong	Kharif	1.12	1.52	1.03	0.69	1.80	1.63	1.19	1.40
Urad	Kharif	1.47	1.49	1.17	1.24	1.76	1.77	1.95	1.50
Gram	Rabi	6.33	5.75	7.06	7.48	8.22	7.70	8.83	9.93
Lentil (Masur)	Rabi	0.91	0.81	0.95	1.03	0.94	1.06	1.13	-
Pulses	Kharif	4.80	6.40	4.69	4.20	7.12	6.06	5.92	6.12
	Rabi	9.40	8.36	9.88	10.46	11.12	11.03	12.43	13.45
	Total	14.20	14.76	14.57	14.66	18.24	17.09	18.34	19.57

(contd...)

Annex Table -1.2 : All India Estimates of Production of Various Crops

(Million tonnes)

Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
1		2	3	4	5	6	7	8	9
Foodgrains	Kharif	110.58	120.96	118.17	103.99	120.89	131.27	128.07	129.37
	Rabi	106.71	109.82	116.28	114.11	123.60	128.01	129.05	135.01
	Total	217.28	230.78	234.46	218.10	244.48	259.29	257.12	264.38
Groundnut	Kharif	3.29	7.36	5.62	3.85	6.64	5.13	3.19	7.66
	Rabi	1.57	1.82	1.55	1.58	1.62	1.84	1.51	1.82
	Total	4.86	9.18	7.17	5.43	8.26	6.96	4.69	9.47
Soyabean	Kharif	8.85	10.97	9.91	9.96	12.74	12.21	14.67	11.95
Sunflower	Kharif	0.37	0.46	0.36	0.21	0.19	0.15	0.19	0.17
	Rabi	0.86	1.00	0.80	0.64	0.46	0.37	0.36	0.38
	Total	1.23	1.46	1.16	0.85	0.65	0.52	0.54	0.54
Sesamum	Kharif	0.62	0.76	0.64	0.59	0.89	0.81	0.69	0.64
Nigerseed	Kharif	0.12	0.11	0.12	0.10	0.11	0.10	0.10	0.09
R&M	Rabi	7.44	5.83	7.20	6.61	8.18	6.60	8.03	7.83
Safflower	Rabi	0.24	0.19	0.19	0.18	0.15	0.15	0.11	0.12
Nine Oilseeds	Kharif	14.01	20.71	17.81	15.73	21.92	20.69	20.79	22.14
	Rabi	10.28	9.91	9.91	9.15	10.56	9.11	10.15	10.28
	Total	24.29	30.62	27.72	24.88	32.48	29.80	30.94	32.41
Cotton$		28.00	30.70	29.00	30.50	33.91	35.30	33.40	-
Cotton$$		22.63	25.88	22.28	24.02	33.00	35.20	34.22	36.50
Jute##		10.32	10.22	9.63	11.23	10.01	10.74	10.34	10.82
Mesta##		0.96	0.99	0.73	0.59	0.61	0.66	0.59	0.58
Jute & Mesta##		11.27	11.21	10.37	11.82	10.62	11.40	10.93	11.40
Sugarcane		355.52	348.19	285.03	292.30	342.38	361.04	341.20	348.38

Source: DES
* : Third Advance Estimates
: Million Bales of 180 kgs each.
$: CAB Estimates of Million Bales of 170 kgs each.
$$: E&S Estimates of Million Bales of 170 kgs each.

Annex Table - 1.3 : All India Estimates of Yield of Various Crops

(Kgs per hectare)

Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
1		2	3	4	5	6	7	8	9
Rice	Kharif	2024	2095	2081	2019	2121	2311	2373	2326
	Rabi	3130	3147	3010	3055	3176	3238	3353	3263
	Total	2131	2202	2178	2125	2239	2393	2461	2419
Wheat	Rabi	2708	2802	2907	2839	2989	3177	3117	3059
Barley	Rabi	2055	1985	2394	2172	2357	2516	2521	2578
Jowar	Kharif	992	1176	1055	853	1119	1257	1171	1033
	Rabi	727	894	904	865	827	741	644	840
	Total	844	1021	962	860	949	957	850	912
Bajra	Kharif	886	1042	1015	731	1079	1171	1198	1161
Maize	Kharif	1660	2122	2048	1740	2285	2234	2246	2270
	Rabi	3793	3854	4387	3694	4003	3765	4152	4218
	Total	1912	2335	2414	2024	2540	2478	2566	2602
Ragi	Kharif	1226	1552	1477	1489	1705	1641	1396	1615
Coarse Cereals	Kharif	1144	1410	1371	1119	1500	1563	1583	1588
	Rabi	1316	1510	1735	1525	1641	1689	1725	1954
	Total	1182	1431	1459	1212	1531	1590	1617	1672
Cereals	Kharif	1706	1846	1841	1693	1893	2056	2116	2081
	Rabi	2526	2645	2721	2649	2800	2969	2931	2925
	Total	2020	2151	2183	2075	2256	2415	2449	2429
Tur (Arhar)	Kharif	650	826	671	711	655	662	776	857
Moong	Kharif	349	409	364	225	513	483	436	437
Urad	Kharif	473	462	440	418	542	549	622	499
Gram	Rabi	845	762	895	915	895	928	1036	974
Lentil (Masur)	Rabi	621	622	693	697	591	678	797	-
Pulses	Kharif	449	557	478	397	578	541	594	600
	Rabi	751	688	804	823	790	831	934	884
	Total	612	625	659	630	691	699	789	770

(contd...)

Annex Table - 1.3 : All India Estimates of Yield of Various Crops

(Kgs per hectare)

Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
1		2	3	4	5	6	7	8	9
Foodgrains	Kharif	1522	1644	1654	1496	1669	1821	1892	1864
	Rabi	2091	2175	2263	2202	2278	2430	2431	2378
	Total	1756	1860	1909	1798	1930	2078	2129	2095
Groundnut	Kharif	689	1386	1063	835	1335	1188	811	1715
	Rabi	1880	1857	1764	1830	1846	1938	1908	1755
	Total	866	1459	1163	991	1411	1323	994	1723
Soyabean	Kharif	1063	1235	1041	1024	1327	1208	1353	979
Sunflower	Kharif	425	607	540	378	608	566	622	617
	Rabi	661	870	696	700	748	783	674	860
	Total	567	765	639	576	701	706	655	767
Sesamum	Kharif	363	421	354	303	429	426	402	398
Nigerseed	Kharif	258	269	297	266	290	269	325	325
R&M	Rabi	1095	1001	1143	1183	1185	1121	1262	1208
Safflower	Rabi	637	642	642	621	617	580	591	651
Nine Oilseeds	Kharif	836	1154	961	875	1203	1123	1135	1119
	Rabi	1055	1134	1097	1146	1174	1155	1244	1220
	Total	916	1147	1006	958	1193	1133	1168	1149
Cotton $		521	554	524	512	513	493	474	-
Cotton		421	467	403	403	499	491	486	529
Jute		2342	2260	2207	2492	2329	2389	2396	2504
Mesta		1210	1221	1141	1122	1115	1248	1237	1266
Jute & Mesta		2170	2102	2071	2349	2192	2268	2281	2386
Sugarcane		69022	68877	64553	70020	70091	71667	68254	69442

Source: DES

* : Third Advance Estimates, $: CAB estimates

Annex Table - 2.1 : Stock to Use Ratio of Rabi Crops

(Million Tonnes, Percent)

Wheat					Barley				
S. No.		**2011-12**	**2012-13**	**2013-14**	**S. No.**		**2011-12**	**2012-13**	**2013-14**
1	Opening Stocks ^	15.4	20.1	24.6	1	Opening Stocks ^	0.5	0.6	0.4
2	Production #	86.9	94.9	93.5	2	Production #	1.7	1.6	1.8
3	Imports	0.0	0.0	0.0	3	Imports	0.0	0.0	0.0
4	Total Supply (1+2+3)	102.2	115.0	118.1	4	Total Supply (1+2+3)	2.2	2.2	2.2
5	Exports	0.7	6.5	5.6	5	Exports	0.0	0.3	0.4
6	Consumption*	81.4	83.8	86.3	6	Consumption*	1.6	1.5	1.6
7	Total Use (5+6)	82.2	90.3	91.9	7	Total Use (5+6)	1.6	1.8	2.0
8	Ending Stock (4-7)	20.1	24.6	26.3	8	Ending Stock (4-7)	0.6	0.4	0.1
9	Stock to Use Ratio (%) (8/7)	24.4	27.2	28.6	9	Stock to Use Ratio (%) (8/7)	35.4	24.2	6.9

Sources : NCAER, DAC, DFPD and DGCIS
Notes: # : Production figures (taken as previous year's)are from DAC
^ : Opening stock of 2011-12 (Ist April) is as per DFPD
*Consumption figures for 2011-12 and 2012-13 are from NCAER. To arrive at the figure for 2013-14, it has been assumed that consumption of wheat would grow at the same rate as in 2012-13

Sources : DAC, DGCIS and USDA
Notes: # : Production figures (taken as previous year's)are from DAC
^ Opening Stock is taken from last year's Rabi report
* : Consumption figures are as per USDA

Gram (Chickpeas)					Lentils				
S. No.		**2011-12**	**2012-13**	**2013-14**	**S. No.**		**2011-12**	**2012-13**	**2013-14**
1	Opening Stocks	0.5	0.2	0.3	1	Opening Stock	0.1	0.1	0.1
2	Production	5.6	8.8	9.9	2	Production	0.9	0.5	0.8
3	Imports	0.6	0.7	0.2	3	Imports	0.1	0.5	0.4
4	Total Supply (1+2+3)	6.6	9.8	10.4	4	Total Supply (1+2+3)	1.1	1.1	1.2
5	Exports	0.0	0.0	0.0	5	Exports	0.0	0.0	0.0
6	Consumption	6.4	9.5	9.9	6	Consumption	1.0	1.0	1.1
7	Total Use (5+6)	6.4	9.5	9.9	7	Total Use (5+6)	1.0	1.0	1.1
8	Ending Stock (4-7)	0.2	0.3	0.5	8	Ending Stock (4-7)	0.1	0.1	0.1
9	Stock to Use Ratio (%) (8/7)	3.6	3.0	5.2	9	Stock to Use Ratio (%) (8/7)	8.9	6.7	7.9

Source : IPGA
Note: Opening stock and other data for 2011-12 have been taken from previous year's Rabi Report

Source : IPGA
Note: Opening stock and other data for 2011-12 have been taken from previous year's Rabi Report

Annex Table - 2.1 : Stock to Use Ratio of Rabi Crops

(Million Tonnes, Percent)

Rabi Pulses					Rapeseed/ Mustard Seed				
S. No.		2011-12	2012-13	2013-14	S. No.		2011-12	2012-13	2013-14
1	Opening Stock	0.6	0.3	0.3	1	Opening Stocks ^	1.9	3.4	3.0
2	Production	6.5	9.4	10.7	2	Production #	8.2	6.6	8.0
3	Imports	0.7	1.2	0.6	3	Imports	0.0	0.0	0.0
4	Total Supply (1+2+3)	7.7	10.9	11.6	4	Total Supply (1+2+3)	10.0	10.0	11.0
5	Exports	0.0	0.0	0.0	5	Exports	0.0	0.0	0.0
6	Consumption	7.4	10.5	11.0	6	Consumption*	6.6	7.0	7.4
7	Total Use (5+6)	7.4	10.5	11.0	7	Total Use (5+6)	6.6	7.0	7.4
8	Ending Stock (4-7)	0.3	0.3	0.6	8	Ending Stock (4-7)	3.4	3.0	3.6
9	Stock to Use Ratio (%) (8/7)	4.3	3.3	5.4	9	Stock to Use Ratio (%) (8/7)	51.4	43.2	48.5

Source : IPGA
Note : Total Rabi Pulses data for production and consumption has been taken as summation of Lentil and Gram

Source : DAC, DGCIS
Notes: # : Production figures (taken as previous year's)are from DAC
^ : Opening Stock is taken from last year's Rabi report
* : Consumption are taken from USDA

Annex Table - 3.1 : Quarterly International and Domestic Prices of Rabi Crops

(Rs/Tonne)

Quarter	Wheat		Barley		Gram		Lentil		R&M Oilseed		R&M Oil	
	I	D	I	D	I	D	I	D	I	D	I	D
2006 Q1	6609	7870	4516	8350	17847	18558	19855	17250	11945	15057	32533	36819
2006 Q2	6676	7200	4798	7517	23881	21217	20982	18667	13869	14922	37226	38951
2006 Q3	6883	8197	5287	7167	30549	27133	20166	18417	15195	15042	37376	41630
2006 Q4	8548	9633	6532	8167	27753	30338	20245	18417	15805	16323	36752	44113
2007 Q1	7160	9200	6777	7483	23982	23567	22402	20292	15402	16937	34808	44092
2007 Q2	7580	8627	6912	6933	23339	22792	24014	25583	14748	19783	34142	46837
2007 Q3	10555	9250	7042	9000	22722	22625	24663	26792	17952	21517	39539	49267
2007 Q4	12988	9550	7678	11267	23494	22758	24888	28167	22100	21550	50699	52067
2008 Q1	16000	9900	8642	11533	27079	25208	27704	31375	27741	26175	58151	59715
2008 Q2	12160	10000	9952	10960	28092	23933	30281	31667	29827	25342	63264	60751
2008 Q3	11777	9925	9462	10833	30841	24867	43884	35868	26341	26917	60314	65158
2008 Q4	9095	9930	6312	9433	19493	23500	44586	34877	19765	26175	46812	61236
2009 Q1	9143	10800	5791	8050	20614	21525	33137	41625	18296	21560	37919	49527
2009 Q2	9471	10800	6314	8167	22031	21817	36719	41875	20362	22767	43260	47456
2009 Q3	7706	10733	5904	7550	22815	23483	46135	44667	18447	23560	41800	49491
2009 Q4	8984	11867	6787	8733	23616	24017	39385	44917	18765	25240	43033	52898
2010 Q1	8830	12500	6595	8783	23842	22125	41637	39750	18571	22737	41428	48312
2010 Q2	8682	11167	6697	9317	23148	21733	40179	36667	18006	21993	40346	46960
2010 Q3	11368	11167	7524	10483	21570	22283	33533	35417	22113	23673	46426	53735
2010 Q4	12900	10967	8119	12517	23546	24242	41356	31583	26603	24540	56841	56642
2011 Q1	14342	11617	8964	13217	24032	25650	38004	31500	30514	24473	64334	60667
2011 Q2	13821	11200	9353	12183	27354	23867	37387	29333	30417	24400	63665	60551
2011 Q3	13777	11400	9660	11150	35311	30158	31661	28667	29374	25917	62090	65761
2011 Q4	12591	11200	10720	9933	34100	33625	31084	28000	30231	28093	64791	68630
2012 Q1	13958	12200	10827	11667	36704	36083	34682	30958	30837	32087	64422	76867

Annex Table - 3.1 : Quarterly International and Domestic Prices of Rabi Crops

(Rs/Tonne)

Quarter	Wheat		Barley		Gram		Lentil		R&M Oilseed		R&M Oil	
	I	D	I	D	I	D	I	D	I	D	I	D
2012 Q2	13752	12930	12773	13183	38955	39508	35724	33750	33832	34063	67177	78219
2012 Q3	18221	13270	13911	11533	42354	47742	34794	33571	34899	37463	68381	84231
2012 Q4	18248	13571	13476	11817	38141	44208	31739	34877	33645	36806	64889	79901
2013 Q1	16118	13838	12964	11867	36448	35883	31368	39750	34088	32333	65016	73693
2013 Q2	15392	13773	12941	11800	37612	37417	41458	51750	32065	30165	62080	66537
2013 Q3	16042	14317	12241	11417	30693	31167	47231	49000	30500	31071	62308	67559
2013 Q4	17151	15317	9769	12033	35703	29517	43633	49333	31730	34144	63046	71523
2014 Q1	16310	15575	10053	12083	34273	30000	46506	48333	33341	30756	60690	68326

I: International and D: Domestic

Notes: 1. Wheat (US), no. 2, soft red winter, export price delivered at the US Gulf port for prompt or 30 days shipment

2. Barley Canadian, No 1 Western Barley, spot price.

3. R&M Oil, Rotterdam Dutch, EX-Mill, Oil world

4. R&M Oilseed, Hamburg CIF

5. Domestic Price of Wheat at Punjab, Barley at Jaipur, Lentil at Maharashtra, Gram at Delhi, R&M oilseed at Rajasthan, R&M oil at Mumbai

Sources: Agmarknet, DES, NAFED, SEAI, USDA, UNCOMTRADE, World Bank

Annex Table - 4.1 : State-wise Gross and Net Returns of Rabi crops (Average of 2010-11 to 2012-13)

State	Cost A2+FL (Rs./ha.)	Cost C2 (Rs./ha.)	GVO (Rs./ha.)	Gross Returns (Rs./ha)	Rate of Gross Returns (Percent)	Net Returns (Rs./ha)	Net Rate of Returns (Percent)
Wheat							
Bihar	19463	26794	36780	17317	89	9986	37
Chhattisgarh	15568	23438	25084	9516	61	1645	7
Gujarat	23823	33770	50847	27024	113	17076	51
Haryana	27528	49068	70340	42812	156	21272	43
Himachal Pradesh	14053	21839	21207	7154	51	-632	-3
Jharkhand	19335	25116	27777	8442	44	2662	11
Maharashtra	29982	41164	44700	14718	49	3536	9
Madhya Pradesh	18116	32683	49470	31354	173	16787	51
Punjab	25111	47118	65819	40708	162	18701	40
Rajasthan	25621	39495	62394	36773	144	22898	58
Uttrakhand	21844	34462	43764	21920	100	9302	27
Uttar Pradesh	25457	40689	51447	25990	102	10758	26
West Bengal	30710	40004	33098	2388	8	-6906	-17
All India Wt.Average	23914	39096	53356	29442	123	14260	36
Barley							
Rajasthan	24540	36433	50711	26171	107	14278	39
Uttar Pradesh	22930	35788	44845	21914	96	9056	25
All India Wt.Average	23970	36233	48652	24682	103	12419	34
Gram							
Andhra Pradesh	19670	30989	35903	16233	83	4914	16
Bihar	12373	19964	31224	18851	152	11260	56
Chhattisgarh	13700	21285	25709	12009	88	4424	21
Haryana	12116	21746	25206	13089	108	3460	16
Jharkhand	9759	14379	22286	12527	128	7907	55
Karnataka	14410	20739	24618	10208	71	3879	19
Maharashtra	20594	29197	34073	13478	65	4876	17
Madhya Pradesh	15786	26737	37001	21215	134	10264	38
Rajasthan	13492	20880	29137	15645	116	8257	40
Uttar Pradesh	18029	29179	35273	17244	96	6094	21
All India Wt.Average	16291	25664	33143	16852	103	7479	29

Annex Table - 4.1 : State-wise Gross and Net Returns of Rabi crops (Average of 2010-11 to 2012-13)

State	Cost A2+FL (Rs./ha.)	Cost C2 (Rs./ha.)	GVO (Rs./ha.)	Gross Returns (Rs./ha)	Rate of Gross Returns (Percent)	Net Returns (Rs./ha)	Net Rate of Returns (Percent)
Lentil							
Bihar	10195	18186	28374	18179	178	10188	56
Jharkhand	5377	11545	19975	14598	271	8430	73
Madhya Pradesh	10957	18378	25849	14892	136	7471	41
Uttar Pradesh	13560	24232	33439	19878	147	9207	38
West Bengal	17811	25989	29884	12073	68	3895	15
All India Wt.Average	12114	20878	29276	17162	142	8399	40
R&M							
Assam	17190	22184	18321	1131	7	-3863	-17
Bihar	16782	24605	28151	11369	68	3547	14
Gujarat	18298	28856	49192	30894	169	20336	70
Haryana	18539	38883	60683	42144	227	21800	56
Madhya Pradesh	14086	28021	45535	31449	223	17514	63
Rajasthan	16273	26709	43819	27546	169	17110	64
Uttar Pradesh	17419	31250	41711	24291	139	10461	33
West Bengal	23144	33051	37046	13902	60	3995	12
All India Wt.Average	16934	28796	43755	26821	158	14960	52
Safflower							
Maharashtra	15774	21351	23091	7317	46	1740	8
Karnataka	6443	8749	8460	2016	31	-289	-3
All India Wt.Average	15300	20636	22016	6715	44	1380	7

Source: DES

Annex Table - 4.2 : Month-wise Average Daily Wage Rates for Agricultural Labour (Man)

(Rupees)

Daily Wage Rates	A. P.	Assam	Bihar	Gujarat	Haryana	H. P.	Karnataka	Kerala	M. P.	Maharashtra	Odisha	Punjab	Rajasthan	T. N.	U. P.	W. B.
January, 2010	136.03	96.74	88.76	83.98	171.21	178.17	88.12	258.96	69.49	96.37	86.55	143.26	129.15	136.00	96.42	101.16
February	140.28	94.92	89.72	84.06	176.23	178.83	89.58	257.71	70.92	97.29	92.38	141.35	129.05	148.01	97.54	105.12
March	131.78	98.19	89.99	85.22	177.27	178.56	90.15	297.77	72.65	97.58	92.79	141.35	119.58	145.03	98.33	105.41
April	143.43	97.36	90.30	85.77	177.62	180.78	92.76	297.77	74.25	97.38	95.32	146.99	127.59	145.38	104.03	106.50
May	135.41	99.77	92.17	85.96	179.09	177.54	92.68	297.77	74.94	99.09	95.33	147.44	145.71	145.38	101.82	106.44
June	125.90	102.23	92.10	85.96	176.35	178.87	92.80	299.16	76.40	106.26	115.39	163.59	126.25	148.01	103.21	106.12
July	141.17	104.73	96.71	88.07	181.29	185.78	95.17	307.27	79.33	109.78	105.29	182.24	136.37	158.33	109.05	109.56
August	137.66	111.56	97.90	88.37	187.85	189.67	99.21	307.27	80.45	109.18	105.74	176.86	132.17	153.03	110.93	110.64
September	136.33	112.60	98.06	87.05	185.35	193.33	103.11	317.77	80.32	110.00	109.21	172.42	192.37	163.06	112.23	114.89
October	139.76	112.39	98.69	89.14	187.65	185.71	105.67	329.87	81.27	114.63	117.52	178.37	144.36	166.73	114.63	114.81
November	153.21	112.89	99.26	90.23	188.07	184.83	108.99	329.87	83.62	116.61	120.96	176.86	144.79	178.20	115.26	115.28
December	176.29	114.10	101.85	91.36	195.02	195.22	111.76	319.13	84.43	119.36	123.96	176.21	145.69	174.08	116.53	118.47
January, 2011	171.15	117.46	101.07	92.19	196.93	195.22	116.44	334.76	85.68	124.18	125.88	172.49	139.58	175.37	115.37	122.45
February	171.26	118.36	99.78	93.67	201.61	206.78	118.42	334.76	86.89	127.40	132.63	165.15	141.13	180.82	118.11	125.85
March	174.29	123.28	101.36	93.40	201.94	206.78	119.09	341.13	89.25	131.12	127.52	168.57	148.92	183.94	115.67	126.06
April	173.70	122.48	100.95	94.33	203.06	217.44	120.22	341.13	89.08	131.32	133.01	170.24	163.06	185.84	116.08	125.53
May	170.79	122.44	101.89	95.06	202.98	211.39	124.99	341.13	89.59	134.93	134.85	211.35	179.20	177.58	116.98	128.77
June	174.12	122.63	103.22	96.20	202.95	218.33	126.57	350.22	89.90	139.62	132.64	188.77	171.87	199.02	119.25	129.93
July	173.87	127.21	107.86	111.84	205.36	219.22	127.62	359.95	94.20	155.95	132.98	215.13	207.55	199.57	123.03	133.11
August	171.33	127.90	110.16	111.87	205.50	231.67	132.62	372.33	97.84	155.04	134.07	211.42	190.91	207.55	121.88	139.39
September	176.03	115.45	112.83	113.48	205.75	232.22	136.36	375.84	97.88	151.86	137.24	188.57	154.33	205.94	122.51	140.94
October	176.55	127.45	112.82	113.30	205.46	230.40	136.67	391.65	98.96	153.35	135.05	219.14	162.22	208.53	125.97	141.60
November	190.57	131.04	119.19	113.30	214.29	232.22	137.72	453.74	98.61	154.71	138.34	222.81	203.06	212.64	129.79	143.33
December	176.03	127.04	112.83	113.48	205.75	232.22	135.76	375.84	97.88	151.86	137.08	188.57	154.33	205.94	122.51	140.94
January, 2012	176.55	127.45	112.82	113.30	205.46	236.74	136.66	391.65	98.96	153.35	135.05	219.14	162.22	208.73	125.97	141.60
February	202.74	131.27	123.76	114.99	211.76	240.56	145.43	419.56	100.29	153.34	139.90	235.42	171.87	231.27	136.24	151.41
March	194.67	132.19	126.25	115.86	213.01	240.56	146.57	412.89	105.61	155.66	140.46	233.24	197.96	226.33	135.02	151.75
April	206.72	132.23	126.85	117.12	209.97	240.56	146.32	417.33	109.85	156.01	144.75	256.36	194.16	230.87	136.06	159.38

Annex Table - 4.2 : Month-wise Average Daily Wage Rates for Agricultural Labour (Man)

(Rupees)

Daily Wage Rates	A. P.	Assam	Bihar	Gujarat	Haryana	H. P.	Karnataka	Kerala	M. P.	Maharashtra	Odisha	Punjab	Rajasthan	T. N.	U. P.	W. B.
May	197.71	134.12	128.69	118.44	210.38	241.43	147.73	417.33	108.45	154.18	148.45	243.35	201.89	232.34	138.23	161.18
June	184.60	134.26	133.95	118.44	214.71	246.11	156.42	419.56	112.60	164.96	136.59	223.04	203.74	237.82	137.97	159.83
July	190.66	137.86	138.41	125.21	219.48	270.08	162.92	453.22	116.34	171.15	139.82	246.34	222.61	244.17	146.09	168.72
August	193.09	137.58	142.71	125.52	228.61	246.11	167.98	453.22	118.78	170.45	152.29	241.22	213.30	252.75	149.14	167.43
September	205.01	140.22	144.02	125.80	229.31	246.11	169.99	454.89	120.57	172.50	143.50	240.37	213.59	252.36	152.82	164.92
October	198.55	145.43	146.81	126.22	237.84	246.11	173.17	461.29	119.46	173.81	134.70	278.22	215.86	250.58	156.24	165.46
November	209.65	147.74	147.89	126.24	233.39	251.11	178.39	461.29	119.51	173.05	136.89	273.83	217.11	246.07	158.14	170.51
December	224.43	144.62	150.74	126.75	227.57	260.32	177.23	461.29	120.37	181.56	138.11	272.50	221.45	247.21	159.65	172.92
January, 2013	224.26	146.42	161.97	129.99	245.55	272.62	183.94	464.62	125.98	186.26	136.32	257.00	218.59	253.30	162.62	178.46
February	227.65	156.95	164.48	129.99	245.40	259.44	188.46	464.62	125.96	192.02	133.65	260.00	204.32	259.05	164.78	180.34
March	221.04	153.73	166.36	133.29	245.40	259.44	189.41	461.29	129.92	194.17	136.46	260.00	207.64	264.83	165.99	181.05
April	229.93	153.47	166.82	130.44	247.27	263.89	191.98	478.49	135.17	195.08	136.90	283.75	216.93	264.88	168.32	182.33
May	222.85	150.01	167.22	130.93	244.86	266.25	192.39	489.16	137.83	197.24	141.25	272.78	243.76	265.94	169.44	184.85
June	222.49	161.60	168.20	132.37	244.08	262.08	195.90	483.38	133.58	188.88	142.89	289.67	235.19	271.17	173.03	185.29
July	220.65	178.20	174.73	136.24	258.41	263.29	203.31	485.38	132.06	201.20	150.42	290.71	220.31	272.10	173.80	197.76
August	210.11	182.83	176.74	136.95	316.60	283.89	209.85	486.98	133.33	200.22	156.81	279.00	214.75	274.73	180.69	199.55
September	212.88	177.53	175.73	138.19	312.05	289.72	211.94	490.15	137.61	196.04	149.82		219.08	284.48	180.58	200.43
October	211.95	174.84	175.32	138.80	311.78	297.50	212.64	487.42	143.97	199.04	155.72	282.50	228.83	293.65	179.78	199.43
November	246.95	183.60	205.40	141.53	328.19	337.28	235.15	584.90	140.30	220.62	196.40		248.47	330.03	191.90	224.35
December	241.57	180.72	190.60	164.65	324.54	355.89	227.97	580.47	150.89	215.90	179.45	277.90	246.96	352.07	185.82	228.95
January, 2014	229.41	182.19	194.48	171.76	319.82	335.55	236.94	580.47	154.87	214.86	177.92	276.48	262.19	355.05	191.31	229.22
February	225.90	187.58	200.32	172.46	329.44	335.55	240.24	628.84	158.03	213.94	179.74	275.36	250.74	362.46	191.35	229.73
% change of Feb.,2014 over Feb.,2013	-0.77	19.51	21.79	32.67	34.25	29.34	27.47	35.34	25.46	11.42	34.49	5.91	22.72	39.92	16.13	27.39

Source: Labour Bureau, Ministry of Labour, Govt. Of India

Note: Daily Wage rate - average of five operations i.e. Ploughing, Sowing, Weeding, Transplanting and Harvesting

Annex Table - 4.3 : Farm Inputs - Wholesale Prices Index (Base 2004-05=100)

Month/Year	Fertil-isers	Electrici-ty (Irriga-tion)	Pesti-cides	Non-elec-tical Ma-chinery	Tractors	Lubri-cants	High Speed Diesel (HSD)	Light Diesel Oil (LDO)	Fodder	Cattle Feed
Annual Average (July - June)										
2011-12	137.2	136.8	116.0	123.7	137.9	235.3	167.8	259.2	195.9	190.3
2012-13	151.1	170.9	122.2	123.0	142.7	248.3	192.7	272.7	237.8	220.0
2013-14*	152.6	204.0	127.1	124.1	146.4	261.8	223.1	314.3	280.2	243.6
2010										
January	108.9	117.4	110.2	117.7	123.5	174.5	133.9	184.3	182.3	173.1
February	109.0	117.4	110.2	118.0	123.5	174.5	136.6	185.3	176.5	175.6
March	109.8	117.4	111.8	118.6	123.7	174.5	144.6	180.1	199.1	175.8
April	114.6	117.4	114.6	118.8	123.5	174.5	145.6	187.1	182.2	177.0
May	115.2	126.2	113.6	117.6	123.9	194.2	145.6	187.3	165.2	177.0
June	115.3	126.2	113.6	117.8	124.0	194.2	147.4	174.9	171.3	177.0
July	115.3	126.2	113.4	117.9	124.0	194.2	153.5	174.7	173.4	177.6
August	116.5	126.2	113.3	117.9	124.0	194.2	153.5	170.6	180.7	177.8
September	116.5	126.2	113.4	118.0	124.2	194.2	153.5	174.3	186.5	178.0
October	116.3	126.2	113.7	118.0	125.0	194.2	153.5	182.3	192.7	178.2
November	116.6	126.2	114.0	118.2	125.6	194.2	153.6	190.9	190.7	178.6
December	116.3	126.2	113.9	118.1	125.6	194.2	153.6	203.0	190.1	178.5
2011										
January	117.8	128.1	112.9	121.0	128.0	194.2	153.6	217.1	193.9	181.3
February	120.3	128.1	113.1	122.9	128.3	194.2	153.6	218.6	198.5	181.4
March	120.7	128.1	113.9	123.2	128.9	194.2	153.6	228.3	205.8	180.5
April	122.9	128.1	114.1	123.6	131.4	214.0	153.6	246.3	200.6	183.8
May	125.2	128.1	113.9	123.1	134.8	220.8	153.6	256.8	176.8	181.2
June	125.7	128.1	113.8	123.5	134.8	220.8	157.1	240.2	179.5	180.0
July	127.0	128.1	114.5	123.5	136.0	221.8	167.8	232.6	182.7	184.9
August	127.9	128.1	114.6	123.5	136.4	231.2	167.8	240.4	188.2	186.3
September	130.4	133.8	114.8	123.8	137.2	236.6	167.8	241.4	189.8	186.4
October	134.9	135.7	114.6	124.2	137.5	236.6	167.8	245.8	191.2	186.4
November	137.6	135.7	114.6	125.9	137.8	236.6	167.8	243.1	196.9	186.2
December	138.7	135.7	115.3	125.8	137.8	236.6	167.8	253.0	198.9	186.2
2012										
January	139.5	135.7	115.9	123.6	137.9	236.6	167.8	267.9	198.5	187.3
February	140.1	135.7	115.9	124.0	138.0	236.6	167.8	267.5	197.4	191.8
March	141.1	135.7	116.2	122.8	138.4	236.6	167.8	289.3	202.2	197.3

Annex Table - 4.3 : Farm Inputs - Wholesale Prices Index (Base 2004-05=100)

Month/Year	Fertil-isers	Electrici-ty (Irriga-tion)	Pesti-cides	Non-elec-tical Ma-chinery	Tractors	Lubri-cants	High Speed Diesel (HSD)	Light Diesel Oil (LDO)	Fodder	Cattle Feed
April	142.3	135.7	118.9	122.1	138.3	236.6	167.8	296.1	205.7	195.4
May	142.4	135.7	118.7	122.6	138.3	236.6	167.8	284.4	203.4	195.6
June	144.3	166.3	117.9	122.6	140.7	241.4	167.8	249.4	196.0	199.7
July	148.3	166.3	120.4	122.7	140.7	241.4	167.8	236.5	208.4	199.7
August	149.1	166.3	121.0	122.9	140.9	241.4	168.6	257.9	217.8	199.7
September	150.5	166.3	122.1	122.9	141.2	241.4	182.8	287.7	228.1	201.8
October	150.7	166.3	122.1	123.0	141.5	241.4	192.3	282.6	236.1	209.3
November	151.0	166.3	122.1	123.1	142.4	241.4	192.3	276.6	239.6	214.3
December	152.1	166.3	122.3	123.0	143.7	253.3	192.3	278.4	237.5	225.2
2013										
January	152.6	166.3	123	123	143.7	253.3	198.8	283.3	241.9	225.2
February	152.5	166.3	122.9	123.5	143.7	253.3	202.7	286.3	246.2	231.1
March	152.3	166.3	122.5	123.1	143.7	253.3	201.7	289.6	250.4	232.2
April	152.4	184.8	122	123	143.7	253.3	202.3	271.5	246	233.8
May	151.5	184.8	123	122.9	143.7	253.3	203.4	253.7	244.2	233.3
June	150.5	184.8	123.5	122.9	143.7	253.3	207	268.7	257.1	234.1
July	151.5	184.8	123.6	123.1	143.7	253.3	212	286.3	265.3	238.2
August	152	203	124.5	123.8	143.8	253.3	215.4	299.2	267.6	237.7
September	152.4	206.9	125.7	123.9	144.3	263.9	219.8	330.9	270.1	238.8
October	152.7	209.1	127.7	124.1	144.7	263.9	220.4	312.3	270.7	238.4
November	152.8	209.1	127.9	124.1	144.7	263.9	222.4	314.7	274.1	239
December	152.6	205.5	127.5	124.3	145	263.9	225	325.6	278.3	246.6
2014										
January	153	205.5	127.2	124.3	149	263.9	226.6	329.1	285.5	244.9
February	152.9	205.5	128.2	124.4	149.6	263.9	228.6	319.9	299	251.4
March	152.9	205.5	128.3	124.2	149	263.9	231.2	317.5	304	245.7
April	153.2	205.5	130.2	124.5	150.1	263.9	230	307.8	287.2	255.6
% change in April, 2014 over April, 2013	0.5	11.2	6.7	1.2	4.5	4.2	13.7	13.4	16.7	9.3

* For the year 2013-14 average is from July,2013 to April,2014

Source : Office of the Economic Adviser, Ministry of Commerce and Industry

Annex Table - 4.4 : Projected Cost of Production (C_2 & A_2+FL) for Rabi 2014-15 and Production Shares

States	Cost of Production (Rs./qtl.)		Shares in Production(%)
	A_2+FL	C_2	
Wheat			
Rajasthan	700	1018	10
Punjab	620	1083	18
Bihar	843	1118	5
M.P.	700	1135	14
Haryana	694	1138	13
U.P.	753	1146	31
Uttarakhand	838	1193	1
Gujarat	864	1228	4
Jharkhand	1160	1495	1
Chhattisgarh	1189	1652	1
H.P.	1318	1809	1
MAH	1386	1840	1
W.B.	1781	2158	1
All India Wtd. Avg.	744	1147	
Barley			
Rajasthan	745	1044	66
U.P.	714	1105	34
All India Wtd. Avg.	735	1065	
Gram			
Rajasthan	1626	2559	16
Chhattisgarh	1600	2614	3
M.P.	1650	2793	44
Bihar	1811	2804	1
U.P.	2024	3184	8
Maharashtra	2521	3416	13
Haryana	1919	3420	1
A.P.	2301	3500	8
Karnataka	2487	3612	7
All India Wtd. Avg.	1902	2981	

Annex Table - 4.4 : Projected Cost of Production (C_2 & A_2+FL) for Rabi 2014-15 and Production Shares

States	Cost of Production (Rs./qtl.)		Shares in Production(%)
	A_2+FL	C_2	
Lentil			
Bihar	1671	2750	20
M.P.	1765	2756	26
W.B.	1952	3115	6
U.P.	1994	3125	48
All India Wtd. Avg.	1866	2952	
R&M			
Gujarat	1418	2107	5
M.P.	1133	2125	13
Haryana	1161	2339	13
Rajasthan	1497	2369	49
U.P.	1597	2759	11
Bihar	1915	2807	1
W.B.	2275	3236	6
Assam	3085	3835	2
All India Wtd. Avg.	1504	2455	
Safflower			
Maharashtra	3025	3685	100
All India Wtd. Avg.	3025	3685	

Note:- Projected cost is exclusive of cost of marketing, transportation and crop insurance premium

Annex Table - 4.5(a): Wheat - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Bihar		Chhattisgarh		Gujarat		Haryana	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	21315.0	18355.5	17067.0	15223.2	27866.7	22926.4	31487.8	27402.5
Human Labour								
Casual	3271.7	2167.8	1380.6	277.6	4704.0	3140.2	4676.3	3112.4
Attached	24.4	16.0	45.9	30.6	25.5	8.8	229.6	261.9
Family	3745.3	4179.5	4002.4	3891.8	5306.4	4436.7	6753.2	5988.9
Total	7041.3	6363.3	5429.0	4200.0	10035.8	7585.6	11659.1	9363.2
Bullock Labour								
Hired	69.5	135.2	0.0	17.1	80.5	55.8	0.2	0.1
Owned	712.3	384.4	1532.7	1519.3	539.0	423.6	193.5	211.3
Total	781.8	519.6	1532.7	1536.4	619.5	479.4	193.7	211.4
Machine Labour								
Hired	4135.5	3866.7	2563.6	2124.4	3739.1	3595.5	6290.2	5707.4
Owned	23.5	44.3	156.5	244.8	416.4	440.2	1671.7	1073.5
Total	4159.1	3911.0	2720.1	2369.2	4155.5	4035.7	7962.0	6780.9
Seed	2525.7	2237.4	1955.1	1637.2	2975.3	2873.8	2025.2	1813.6
Fertilisers and Manure								
Fertilisers	3476.2	2550.0	2046.2	2193.4	4221.6	3261.0	4364.9	3867.8
Manure	69.4	27.6	0.0	0.0	242.3	98.5	15.5	2.4
Total	3545.6	2577.6	2046.2	2193.4	4463.9	3359.6	4380.4	3870.2
Insecticides	0.0	0.0	22.6	7.6	276.5	176.4	683.7	647.1
Irrigation charges	2729.1	2317.0	2965.5	2936.1	4656.5	3855.6	3819.7	4066.9
Interest on working capital	532.4	429.6	395.9	343.4	683.7	560.3	749.5	648.9
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	14.5	0.5
Fixed Cost	8268.6	8095.3	8824.4	7887.9	12306.4	10914.9	22223.0	23768.0
Rental value of owned land	6463.1	6208.1	6789.8	5817.6	8559.9	8006.9	18419.9	20073.4
Rent paid for leased-in land	0.0	0.0	0.0	0.0	1046.7	506.8	0.0	21.9
Land revenue,cesses & taxes	25.2	24.0	3.0	3.7	6.3	7.5	0.2	0.0
Depreciation on implements & Farm buildings	352.7	519.5	405.6	277.8	200.2	182.3	407.9	320.7
Interest on fixed capital	1427.7	1343.6	1626.1	1788.8	2493.3	2211.5	3395.1	3351.9
Total Cost	**29583.7**	**26450.8**	**25891.4**	**23111.1**	**40173.1**	**33841.3**	**53710.8**	**51170.5**

Source: DES

(Contd..)

Annex Table - 4.5(a): Wheat - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Himachal Pradesh		Jharkhand		Madhya Pradesh		Maharashtra	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	16288.1	13071.0	20275.9	18417.9	20620.7	17459.7	32790.6	29946.1
Human Labour								
Casual	592.3	764.1	3215.0	3312.2	1695.9	1654.4	4557.9	4931.5
Attached	18.4	16.2	0.0	0.0	111.3	107.8	919.2	944.8
Family	7046.8	4864.1	1151.1	1301.6	4591.8	3706.9	6175.0	4889.6
Total	7657.4	5644.3	4366.1	4613.8	6398.9	5469.0	11652.0	10765.9
Bullock Labour								
Hired	345.5	357.1	0.0	0.0	22.0	49.6	375.5	205.3
Owned	142.5	196.7	0.0	0.0	346.2	273.4	662.9	978.4
Total	487.9	553.7	0.0	0.0	368.1	323.0	1038.4	1183.7
Machine Labour								
Hired	3515.5	2822.5	8131.1	6698.6	5015.5	4289.3	7294.3	5189.4
Owned	25.3	51.8	165.3	8.2	270.4	233.9	181.5	1641.2
Total	3540.7	2874.3	8296.5	6706.7	5285.8	4523.2	7475.8	6830.5
Seed	1434.6	1472.4	2504.6	2326.5	2281.4	1911.6	3036.6	2781.1
Fertilisers and Manure								
Fertilisers	875.1	769.7	3083.9	2559.8	2823.9	2225.0	4299.5	3217.7
Manure	1863.0	1369.4	0.0	0.0	20.8	2.8	0.0	0.0
Total	2738.1	2139.1	3083.9	2559.8	2844.8	2227.8	4299.5	3217.7
Insecticides	75.2	26.6	0.0	0.0	6.2	11.7	427.9	180.1
Irrigation charges	74.1	111.9	1445.3	1692.5	2949.4	2575.4	4053.9	4227.8
Interest on working capital	280.0	248.7	579.5	518.7	0.3	416.8	806.5	759.3
Miscellaneous	0.0	0.0	0.0	0.0	485.7	1.2	0.0	0.0
Fixed Cost	9593.2	8701.1	6476.2	6444.5	16499.3	15936.4	11962.4	12304.9
Rental value of owned land	5826.6	4705.1	5045.3	4967.4	13853.9	12816.5	7973.2	7467.6
Rent paid for leased-in land	49.9	30.1	0.0	0.0	0.0	0.0	0.0	0.0
Land revenue,cesses & taxes	9.1	13.2	9.9	9.9	5.2	5.4	14.3	16.5
Depreciation on implements & Farm buildings	700.9	708.4	345.1	430.4	347.4	406.1	386.2	613.1
Interest on fixed capital	3006.7	3244.3	1075.9	1036.9	2292.8	2708.5	3588.8	4207.7
Total Cost	**25881.2**	**21772.1**	**26752.1**	**24862.4**	**37119.9**	**33396.2**	**44753.1**	**42251.0**

Source: DES

(Contd..)

Annex Table - 4.5(a): Wheat - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Punjab		Rajasthan		Uttar Pradesh		Uttarakhand		West Bengal	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	22032.7	21054.8	29256.8	26389.1	26527.8	24770.0	22956.2	21440.4	31668.6	31115.1
Human Labour										
Casual	1934.1	2400.3	2754.1	2133.7	3004.8	3134.1	3258.5	2793.3	7809.6	8009.4
Attached	603.0	498.8	171.4	171.9	31.4	52.7	4.6	8.4	272.2	242.8
Family	2292.5	2432.5	10217.9	10087.8	5325.3	5103.5	7356.7	7744.9	6535.3	6001.5
Total	4829.6	5331.5	13143.4	12393.3	8361.5	8290.3	10619.8	10546.5	14617.0	14253.6
Bullock Labour										
Hired	0.1	12.3	46.6	17.9	8.9	15.7	2298.2	506.7	671.1	475.0
Owned	78.3	59.5	246.8	187.3	570.0	502.0	68.1	337.1	1192.4	1465.4
Total	78.4	71.8	293.3	205.2	578.9	517.7	2366.3	843.9	1863.6	1940.5
Machine Labour										
Hired	5240.3	5197.0	4612.1	4249.8	5475.4	4793.3	2093.4	2256.3	2929.8	2461.0
Owned	2109.2	1539.5	387.0	303.0	434.8	367.2	374.3	749.6	11.8	93.1
Total	7349.5	6736.6	4999.1	4552.7	5910.2	5160.5	2467.6	3005.9	2941.6	2554.1
Seed	1869.4	1812.8	2868.3	2185.6	2664.5	2330.5	2021.3	1683.7	2758.0	2578.1
Fertilisers and Manure										
Fertilisers	5247.0	4417.9	3112.8	2528.7	4392.5	3658.4	2955.4	2705.1	5261.0	4854.1
Manure	7.2	52.6	405.0	308.3	2.0	63.6	1278.1	1100.4	431.7	741.2
Total	5254.2	4470.5	3517.8	2836.9	4394.5	3722.0	4233.5	3805.5	5692.8	5595.3
Insecticides	1624.1	1468.1	56.2	32.8	152.5	37.7	21.9	252.0	168.1	283.3
Irrigation charges	378.2	495.8	3801.8	3688.5	3822.1	4114.8	753.1	882.7	2862.5	3145.8
Interest on working capital	598.2	564.3	576.9	494.0	642.5	596.0	472.7	415.0	761.6	761.0
Miscellaneous	51.1	103.4	0.0	0.0	1.2	0.5	0.0	5.3	3.4	3.5
Fixed Cost	27037.7	28244.1	17312.3	13897.1	17170.6	17613.6	13093.5	12655.4	10597.2	9463.4
Rental value of owned land	19114.2	19952.3	12066.1	9781.2	13059.4	12939.2	9284.7	10261.2	9198.8	7700.5
Rent paid for leased-in land	4189.4	4202.3	704.1	168.7	890.1	467.6	2086.6	0.0	0.0	0.0
Land revenue,cesses & taxes	0.0	0.0	10.6	10.9	21.0	5.7	1.6	2.9	36.8	27.6
Depreciation on implements & Farm buildings	337.2	454.0	374.1	351.9	623.2	758.0	654.3	510.0	317.8	396.3
Interest on fixed capital	3396.9	3635.5	4157.4	3584.5	2576.8	3443.1	1066.4	1881.2	1043.8	1339.0
Total Cost	49070.4	49298.8	46569.1	40286.2	43698.4	42383.6	36049.6	34095.7	42265.8	40578.5

Source: DES

Annex Tale - 4.5(b): Barley - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Rajasthan		Uttar Pradesh	
	2012-13	2011-12	2012-13	2011-12
Operational Cost	28872.0	26448.5	25816.4	21690.5
Human Labour				
Casual	2475.3	1952.0	3361.7	3432.4
Attached	124.2	108.1	156.3	0.0
Family	12530.3	12038.0	5957.5	5532.1
Total	15129.7	14098.0	9475.5	8964.4
Bullock Labour				
Hired	31.3	31.2	0.0	0.0
Owned	849.6	397.0	850.6	452.5
Total	880.9	428.2	850.6	452.5
Machine Labour				
Hired	3738.0	3655.8	3554.7	4014.5
Owned	261.6	463.9	1603.6	492.1
Total	3999.6	4119.7	5158.2	4506.6
Seed	2332.3	2154.9	2919.8	1991.2
Fertilisers and Manure				
Fertilisers	1990.7	1493.5	3700.3	2989.0
Manure	121.3	1063.1	0.0	0.0
Total	2111.9	2556.5	3700.3	2989.0
Insecticides	35.7	41.9	0.0	0.0
Irrigation charges	3886.6	2582.2	3110.2	2297.1
Interest on working capital	495.2	467.0	601.8	489.7
Miscellaneous	0.0	0.0	0.0	0.0
Fixed Cost	15381.5	13503.8	14719.2	13565.1
Rental value of owned land	10108.0	9234.8	11929.1	10298.1
Rent paid for leased-in land	22.0	63.9	133.7	0.0
Land revenue,cesses & taxes	13.0	12.8	12.8	14.2
Depreciation on implements & Farm buildings	411.8	384.6	381.4	549.1
Interest on fixed capital	4826.7	3807.7	2262.1	2703.6
Total Cost	**44253.5**	**39952.4**	**40535.5**	**35255.5**

Source: DES

Annex Table - 4.5 (c): Gram - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Andhra Pradesh		Bihar		Chhattisgarh		Haryana	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	21683.5	16711.2	14672.8	11108.2	17194.7	13002.8	15592.9	11118.8
Human Labour								
Casual	6086.8	4724.3	3009.8	2302.9	1351.9	815.5	4802.6	246.7
Attached	75.0	281.7	84.3	131.4	0.0	60.4	0.0	0.0
Family	1864.4	1328.4	2151.2	1309.5	2648.6	2479.1	4109.4	4626.1
Total	8026.2	6334.4	5245.3	3743.8	4000.5	3355.0	8912.1	4872.8
Bullock Labour								
Hired	460.3	128.7	103.0	0.0	30.1	0.0	14.7	113.0
Owned	479.4	616.8	526.4	0.0	665.9	1893.9	0.0	394.9
Total	939.7	745.5	629.4	0.0	696.0	1893.9	14.7	507.9
Machine Labour								
Hired	3254.5	2117.5	4156.1	3636.9	3583.1	1407.2	2704.8	899.9
Owned	376.8	323.7	7.0	41.1	0.0	179.9	784.1	1133.7
Total	3631.3	2441.2	4163.1	3678.0	3583.1	1587.1	3488.8	2033.6
Seed	4441.6	3365.8	2983.0	2215.0	3634.4	2640.5	1779.2	1309.6
Fertilisers and Manure								
Fertilisers	1236.4	1497.4	1257.3	739.3	1990.7	924.3	492.4	679.2
Manure	1182.7	556.8	0.0	0.0	0.0	0.0	0.0	0.0
Total	2419.1	2054.2	1257.3	739.3	1990.7	924.3	492.4	679.2
Insecticides	1618.3	1287.4	11.9	267.3	1345.3	769.6	0.0	0.0
Irrigation charges	5.0	12.6	3.5	168.0	1496.6	1513.5	557.8	1519.0
Interest on working capital	600.6	466.2	379.4	296.9	440.8	318.9	348.0	196.8
Miscellaneous	1.7	3.9	0.0	0.0	7.4	0.0	0.0	0.0
Fixed Cost	15667.0	11897.4	7072.8	8514.6	8498.6	8484.3	13735.9	9555.3
Rental value of owned land	13301.6	9305.4	5850.4	7584.8	7706.5	6249.2	9925.9	6979.7
Rent paid for leased-in land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land revenue,cesses & taxes	0.2	0.3	29.3	22.5	2.1	1.8	0.0	0.0
Depreciation on implements & Farm buildings	292.2	265.3	281.8	174.9	200.2	354.0	197.3	185.3
Interest on fixed capital	2073.0	2326.4	911.3	732.3	589.7	1879.4	3612.7	2390.4
Total Cost	**37350.5**	**28608.6**	**21745.6**	**19622.8**	**25693.2**	**21487.1**	**29328.8**	**20674.2**

Source: DES

(Contd..)

Annex Table - 4.5 (c): Gram - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Karnataka		Madhya Pradesh		Maharashtra		Rajasthan		Uttar Pradesh	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	17080.3	13924.8	19279.4	15831.0	24721.9	21323.6	16873.2	13809.5	18708.9	18428.1
Human Labour										
Casual	3631.8	3716.2	2365.0	1971.3	5197.6	3210.0	1769.2	1443.9	2997.4	2165.9
Attached	0.0	0.8	121.4	160.6	712.8	653.2	103.5	157.3	3.3	1.8
Family	1781.6	1370.9	3249.1	2700.5	4154.4	3743.5	5997.1	5014.3	4143.1	5493.2
Total	5413.3	5087.9	5735.4	4832.3	10064.8	7606.6	7869.8	6615.4	7143.8	7660.9
Bullock Labour										
Hired	493.4	256.7	32.3	40.0	86.5	339.3	6.7	9.0	28.9	27.6
Owned	987.6	980.9	361.4	284.5	1370.4	1567.3	74.4	256.7	212.2	153.5
Total	1481.1	1237.6	393.7	324.5	1456.9	1906.6	81.0	265.7	241.1	181.0
Machine Labour										
Hired	1943.4	1759.0	3325.8	2888.6	3826.3	2880.3	2602.9	2424.1	3266.2	4507.7
Owned	254.5	173.0	300.1	196.5	128.4	464.3	200.3	147.4	178.6	83.5
Total	2197.9	1932.0	3625.9	3085.0	3954.7	3344.6	2803.2	2571.5	3444.8	4591.2
Seed	3855.8	2598.9	4893.9	3994.9	4031.9	3426.5	2905.5	2120.0	4991.2	3745.1
Fertilisers and Manure										
Fertilisers	1803.5	1127.2	1691.4	1243.2	1878.1	1717.8	877.6	340.3	1105.5	842.2
Manure	566.5	110.3	0.0	9.4	158.9	206.0	2.8	0.9	0.0	0.0
Total	2370.0	1237.5	1691.4	1252.5	2036.9	1923.7	880.4	341.1	1105.5	842.2
Insecticides	1235.1	1405.7	740.0	709.4	764.5	321.5	516.0	61.5	6.9	4.2
Irrigation charges	63.5	44.8	1669.0	1211.7	1789.0	2261.3	1487.7	1567.8	1334.2	1011.5
Interest on working capital	463.6	380.4	485.8	397.9	623.3	532.7	329.6	266.5	441.4	392.0
Miscellaneous	0.0	0.0	44.4	22.8	0.0	0.0	0.0	0.0	0.0	0.0
Fixed Cost	6867.8	7869.8	12325.3	14117.1	10247.8	10230.6	8895.6	8416.8	11969.6	12318.8
Rental value of owned land	5521.2	6305.8	10385.0	11510.5	6612.3	6368.4	5899.1	5209.6	8852.4	10278.6
Rent paid for leased-in land	0.0	0.0	0.0	0.0	0.0	0.0	26.2	0.0	386.8	0.0
Land revenue,cesses & taxes	6.9	7.7	5.6	6.3	17.0	20.5	3.3	5.9	7.2	5.6
Depreciation on implements & Farm buildings	179.7	107.6	344.4	442.8	414.6	431.5	266.1	253.2	438.8	413.2
Interest on fixed capital	1159.9	1448.7	1590.4	2157.5	3203.9	3410.2	2701.0	2948.1	2284.5	1621.4
Total Cost	**23948.0**	**21794.6**	**31604.7**	**29948.1**	**34969.7**	**31554.1**	**25768.8**	**22226.3**	**30678.6**	**30746.9**

Source: DES

Annex Table - 4.5(d): Lentil (Masur) - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Bihar		Madhya Pradesh		Uttar Pradesh		West Bengal	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	11571.5	9813.3	12374.5	11138.0	15470.7	12266.5	20504.0	16466.3
Human Labour								
Casual	2828.1	2223.2	2543.1	2145.2	2710.3	2193.6	6277.0	4504.5
Attached	93.9	81.3	206.7	137.3	96.7	7.5	87.8	23.4
Family	2272.4	2145.3	1922.2	1809.0	3587.5	3364.9	4736.7	4418.3
Total	5194.3	4449.8	4672.0	4091.5	6394.5	5566.0	11101.4	8946.3
Bullock Labour								
Hired	103.5	0.0	207.5	35.2	170.2	15.5	666.7	331.0
Owned	910.4	737.5	146.1	157.5	1311.5	833.2	517.3	271.4
Total	1013.8	737.5	353.6	192.7	1481.7	848.6	1184.0	602.4
Machine Labour								
Hired	2506.0	2332.4	2792.3	2928.0	2784.3	1949.3	1733.7	1881.2
Owned	20.8	17.0	204.7	94.3	504.2	539.6	157.9	18.6
Total	2526.8	2349.4	2997.0	3022.3	3288.5	2488.9	1891.6	1899.8
Seed	1339.9	1257.3	1866.5	1554.0	2335.1	1991.5	2795.9	2025.7
Fertilisers and Manure								
Fertilisers	1211.6	719.6	808.2	737.8	559.2	756.7	2996.1	2349.2
Manure	0.0	0.0	0.0	39.6	0.0	0.0	10.7	0.0
Total	1211.6	719.6	808.2	777.4	559.2	756.7	3006.8	2349.2
Insecticides	0.0	66.3	165.0	247.0	1.3	0.0	15.6	71.7
Irrigation charges	3.2	1.1	1128.7	967.3	1050.4	345.0	28.6	195.1
Interest on working capital	281.8	232.4	316.7	282.7	360.1	269.8	477.8	365.1
Miscellaneous	0.0	0.0	66.9	3.2	0.0	0.0	2.3	11.1
Fixed Cost	8937.9	8653.8	10064.7	8398.4	11457.4	10886.4	9904.7	7427.1
Rental value of owned land	7110.8	7346.1	8913.3	6636.9	7762.5	7935.6	8848.0	6402.9
Rent paid for leased-in land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land revenue,cesses & taxes	27.5	22.4	6.9	7.4	10.4	9.4	79.5	21.5
Depreciation on implements & Farm buildings	221.2	180.0	236.9	389.1	671.6	401.8	382.5	255.7
Interest on fixed capital	1578.4	1105.4	907.6	1365.0	3013.0	2539.7	594.7	747.2
Total Cost	**20509.4**	**18467.1**	**22439.2**	**19536.5**	**26928.1**	**23152.9**	**30408.7**	**23893.5**

Source: DES

Annex Table - 4.5(e): R&M - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Assam		Bihar		Gujarat		Haryana	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	19490.4	16228.5	19262.0	17224.2	19701.1	17619.5	22555.6	18138.5
Human Labour								
Casual	1272.2	821.3	4723.6	5441.6	2507.7	2407.5	3367.0	2505.0
Attached	678.7	981.0	159.1	219.7	33.7	28.4	94.9	42.8
Family	9327.1	8241.9	3758.9	3609.4	5257.4	4262.2	5729.7	5032.6
Total	11278.0	10044.2	8641.6	9270.7	7798.8	6698.1	9191.6	7580.3
Bullock Labour								
Hired	17.8	6.2	0.0	0.0	103.8	135.1	0.0	17.6
Owned	4216.7	3939.8	915.5	1121.9	214.9	260.7	43.4	141.4
Total	4234.5	3946.1	915.5	1121.9	318.7	395.8	43.4	159.1
Machine Labour								
Hired	1161.4	341.1	2040.5	1445.8	2874.6	3041.6	4234.2	2992.3
Owned	72.1	41.5	97.5	101.2	133.9	108.0	1574.8	1441.5
Total	1233.6	382.6	2138.0	1546.9	3008.5	3149.5	5808.9	4433.7
Seed	434.9	342.2	891.2	647.3	631.4	417.8	720.8	573.6
Fertilisers and Manure								
Fertilisers	1300.5	733.3	3140.9	2311.8	3358.2	2786.5	3638.3	2848.3
Manure	686.7	521.0	969.0	513.3	271.5	0.0	20.3	0.0
Total	1987.2	1254.3	4109.8	2825.1	3629.7	2786.5	3658.6	2848.3
Insecticides	3.4	9.7	434.0	286.4	138.3	73.4	26.4	92.5
Irrigation charges	10.9	7.6	1662.2	1113.3	3738.2	3693.6	2589.3	2053.7
Interest on working capital	308.0	242.0	469.8	412.6	437.7	404.8	509.9	397.2
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0
Fixed Cost	6192.6	5946.2	7377.8	8220.4	10651.0	13185.4	22573.7	23796.8
Rental value of owned land	4269.3	3798.3	6035.7	6878.3	7147.8	9846.7	17068.5	19276.5
Rent paid for leased-in land	6.3	0.0	0.0	0.0	326.7	0.0	0.0	0.0
Land revenue,cesses & taxes	37.7	36.7	23.9	26.0	4.2	7.2	0.0	0.0
Depreciation on implements & Farm buildings	482.6	594.7	154.8	179.8	278.5	297.2	501.5	301.5
Interest on fixed capital	1396.8	1516.5	1163.4	1136.3	2893.8	3034.3	5003.8	4218.8
Total Cost	**25683.1**	**22174.7**	**26639.7**	**25444.6**	**30352.1**	**30804.9**	**45129.3**	**41935.3**

Source: DES

(Contd..)

Annex Table - 4.5(e): R&M - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Madhya Pradesh		Rajasthan		Uttar Pradesh		West Bengal	
	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12
Operational Cost	16335.7	14880.9	19416.5	16471.6	19808.5	16847.7	26160.3	21056.6
Human Labour								
Casual	1680.2	1759.4	1489.7	1226.2	2767.6	1692.9	8430.0	5377.8
Attached	0.0	0.0	110.4	139.9	55.3	59.7	52.1	13.4
Family	3927.1	3539.3	7706.1	6933.3	5693.8	5328.9	6069.3	6329.9
Total	5607.3	5298.7	9306.2	8299.4	8516.7	7081.5	14551.4	11721.1
Bullock Labour								
Hired	129.8	139.6	20.2	21.1	267.1	6.4	332.0	331.8
Owned	0.0	62.0	141.3	98.1	698.6	934.4	1011.0	1239.9
Total	129.8	201.6	161.5	119.3	965.7	940.9	1343.0	1571.7
Machine Labour								
Hired	5143.1	4334.0	3224.2	3217.0	3331.2	3255.5	2124.6	1882.5
Owned	11.1	84.5	518.6	471.3	1137.6	680.9	91.8	12.3
Total	5154.2	4418.5	3742.8	3688.4	4468.8	3936.4	2216.3	1894.8
Seed	287.5	282.3	717.8	613.0	703.2	483.4	470.2	397.3
Fertilisers and Manure								
Fertilisers	2682.5	2228.6	2300.8	1720.4	3049.7	2593.9	4948.9	3194.5
Manure	0.0	90.5	15.0	55.9	28.9	34.3	136.0	130.4
Total	2682.5	2319.1	2315.8	1776.3	3078.6	2628.2	5084.9	3324.9
Insecticides	202.2	451.9	86.9	33.3	18.0	6.2	289.5	182.1
Irrigation charges	1896.2	1526.0	2730.5	1652.9	1596.7	1422.2	1592.7	1513.8
Interest on working capital	376.0	343.7	354.9	289.0	427.7	349.1	608.8	446.3
Miscellaneous	0.0	39.2	0.0	0.0	33.1	0.0	3.5	4.6
Fixed Cost	16184.9	14011.4	11839.8	11569.8	15922.6	14405.2	11669.4	9833.7
Rental value of owned land	12713.8	11879.0	7697.6	7721.3	11328.4	10654.8	10497.1	8527.3
Rent paid for leased-in land	0.0	0.0	440.8	52.5	748.4	95.3	61.8	2.1
Land revenue,cesses & taxes	8.4	8.6	9.5	10.5	11.4	7.0	30.6	32.3
Depreciation on implements & Farm buildings	274.3	195.1	339.1	312.3	461.8	610.3	282.6	287.5
Interest on fixed capital	3188.4	1928.8	3352.8	3473.2	3372.7	3037.9	797.3	984.5
Total Cost	**32520.6**	**28892.3**	**31256.3**	**28041.4**	**35731.1**	**31253.0**	**37829.6**	**30890.3**

Source: DES

Annex Table - 4.5(f): Safflower - Break-up of Cost of Cultivation

(Rs/Ha)

Cost Items	Maharashtra	
	2012-13	2011-12
Operational Cost	20031.4	14834.9
Human Labour		
Casual	5694.3	1050.0
Attached	2927.2	1833.3
Family	3770.7	4976.1
Total	12392.2	7859.4
Bullock Labour		
Hired	0.0	0.0
Owned	4017.1	2483.6
Total	4017.1	2483.6
Machine Labour		
Hired	222.3	800.0
Owned	46.9	125.0
Total	269.2	925.0
Seed	633.6	1125.0
Fertilisers and Manure		
Fertilisers	1168.7	1600.0
Manure	0.0	0.0
Total	1168.7	1600.0
Insecticides	58.9	110.0
Irrigation charges	999.0	433.2
Interest on working capital	492.8	298.8
Miscellaneous	0.0	0.0
Fixed Cost	6030.4	6273.2
Rental value of owned land	3855.9	4242.5
Rent paid for leased-in land	0.0	0.0
Land revenue,cesses & taxes	14.7	22.9
Depreciation on implements & Farm buildings	265.9	319.1
Interest on fixed capital	1893.8	1688.7
Total Cost	26061.8	21108.1

Source: DES

Annex Table - 4.6: Index of Terms of Trade Between Agricultural and Non-Agricultural Sectors

Triennium Ending 1990-91=100

Year	Index of Prices Received (IPR)	Index of Prices Paid (IPP) for				Index of Terms of Trade (ITT)
		Final Consumption	Intermediate Consumption	Capital Formation	Combined Index	
Weights		73.54	21.63	4.83	100	
1981-82	54.9	54.4	88.5	56.9	61.9	88.7
1982-83	60.3	58.8	91.1	62.6	66.0	91.4
1983-84	64.2	64.2	91.0	67.4	70.1	91.6
1984-85	68.0	66.6	92.3	72.5	72.4	93.9
1985-86	70.4	69.5	94.3	76.4	75.2	93.6
1986-87	76.7	74.8	98.7	78.8	80.2	95.6
1987-88	86.0	84.6	102.3	82.5	88.3	97.4
1988-89	90.3	90.4	96.9	90.9	91.8	98.4
1989-90	97.5	97.6	99.2	100.6	98.1	99.4
1990-91	112.3	112.1	104.0	108.5	110.2	101.9
1991-92	130.8	124.9	119.4	127.2	123.8	105.7
1992-93	138.7	131.5	139.5	137.5	133.5	103.9
1993-94	151.4	143.9	152.9	147.3	146.1	103.6
1994-95	171.1	159.0	166.1	158.4	160.5	106.6
1995-96	182.9	173.4	174.2	176.1	173.7	105.3
1996-97	190.6	185.6	181.5	188.8	184.9	103.1
1997-98	205.9	195.7	192.0	196.7	194.9	105.6
1998-99	220.8	213.8	197.1	206.8	209.8	105.2
1999-2000	219.8	217.1	203.9	212.6	214.0	102.7
2000-01	225.0	220.5	230.4	227.0	223.0	100.9
2001-02	235.3	226.4	235.2	240.4	229.0	102.8
2002-03	247.9	234.9	252.7	245.2	239.2	103.6
2003-04	251.2	245.2	259.1	255.7	248.7	101.0
2004-05	258.2	252.3	264.5	305.6	257.5	100.3
2005-06	275.8	266.0	277.1	310.5	270.6	101.9
2006-07	291.2	283.4	284.6	327.8	285.8	101.9
2007-08	324.3	323.2	301.5	356.1	320.1	101.3
2008-09	350.9	350.8	332.8	380.1	348.3	100.7
2009-10	411.6	415.1	355.0	394.0	401.1	102.6

Source: DES

Annex Table - 5.1: Benchmarking Productivity of Rabi Crops

S. No	Crop	Yield (TE 2012-13) (Average All-India) (Tonne/ Ha)	Benchmarking States TE 2012-13	Benchmarking Countries TE 2012	Efficiency gap[1] in India's Yield level w.r.t benchmark Country (%)	Efficiency Gap in India's Yield level w.r.t benchmark State (%)
1	2	3	4	5	6	7
1	Wheat	3.09	Punjab (4.77, 18.3%), Haryana (4.70, 12.9%), UP (3.11, 32.9%), Rajasthan (3.04, 9.4%)	France (6.74, 5.7%), China (4.86, 17.5%), USA (3.06, 8.7%), India (3.00, 13.0%)	54.1	35.1
2	Barley	2.46	Punjab (3.68, 2.7%) Haryana (3.54, 8.9%) Rajasthan (2.84, 51.6%) UP (2.39, 23.2%)	France (6.27, 7.8%), Germany (5.99, 7.6%), Canada (3.45, 6.0%), India (2.20, 1.2%)	60.8	33.2
3	Gram	0.95	UP (1.10, 7.8%), AP (1.09, 8.1%), Jharkhand (1.09, 1.6%), MP (1.05, 39.5%)	Australia (1.16, 5.2%), India (0.91, 67.9%)	17.8	13.3
4	Lentil	0.69	Rajasthan (1.03, 3.3%), Bihar (1.02, 18.2%) Jharkhand (0.93, 3.3%), WB (0.86, 5.0%)	Turkey (1.88, 9.4%), Australia (1.65, 7.2%), Canada (1.50, 36.3%), India (0.63, 21.3%)	63.4	33.2
5	Rapeseed	1.19	Haryana (1.73, 12.1%) Gujarat (1.61, 4.6%) Raj (1.24, 48.9%) UP (1.19, 10.0%)	Germany (3.50, 7.7%), France (3.38, 8.3%), Canada (1.87, 22.5%), India (1.20, 11.5%)	66	31.3
6	Safflower	0.6	Karnataka (0.67, 25.0%) Maharashtra (0.55, 54.2%)	Mexico (1.58, 22.6%), USA (1.41, 12.1%), Argentina (0.68, 9.7%), India (0.64, 22.4%)	62.3	11
[1] Efficiency gap = (1-e)*100, where e = yield of India/yield of benchmark country.						

Sources: DES, FAO

Annex Table - 5.2 : Efficiency Gaps in Productivity levels in India vis-a-vis Benchmarking Countries

(TE 2003 to TE 2012)

CROP	Efficiency Gaps In Productivity Levels			
	TE 2003	TE 2006	TE 2009	TE 2012
Wheat	60	63	59	54
Barley	66	69	66	61
Gram	14	22	22	18
Lentil	43	52	54	63
Rapeseed	68	72	71	66
Safflower	69	59	60	62

Sources: FAO & DES

Note : (1) Benchmarking countries which have less than 5% share on World's production of concerned crop have not been considered. (2) the productivity of rabi crops is based on DES data.

Annex Table-5.3 : Simulation - Impact of Oil Content on MSP of R&M

S.N.	Oil Content (%)	Oil Cake(%) {100-col(2)}	Realisation from oil cake on processing of 1 quinal of oilseeds, assuming price of cake/qtl= Rs. 1640 {col(3)*Price of Oil cake}/100	Cost of Oil Content i.e. oil-seeds without cake (Rs/qtl.), assuming MSP/ qtl.= 3100 MSP-Col(4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (Rs/qtl.) {col(5)/ col(2)}*0.25	MSP at Oil Content given in col.(2) [MSP+{Average of col.(6)* per-cent points of oil content that is over & above 35%}]/(0.25)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	35.00	65.00	1066	2034	14.53	3100
2	35.25	64.75	1062	2038	14.45	3113
3	35.50	64.50	1058	2042	14.38	3126
4	35.75	64.25	1054	2046	14.31	3139
5	36.00	64.00	1050	2050	14.24	3152
6	36.25	63.75	1046	2055	14.17	3165
7	36.50	63.50	1041	2059	14.10	3178
8	36.75	63.25	1037	2063	14.03	3191
9	37.00	63.00	1033	2067	13.96	3204
10	37.25	62.75	1029	2071	13.90	3217
11	37.50	62.50	1025	2075	13.83	3230
12	37.75	62.25	1021	2079	13.77	3243
13	38.00	62.00	1017	2083	13.71	3256
14	38.25	61.75	1013	2087	13.64	3269
15	38.50	61.50	1009	2091	13.58	3282
16	38.75	61.25	1005	2096	13.52	3295
17	39.00	61.00	1000	2100	13.46	3308
18	39.25	60.75	996	2104	13.40	3321
19	39.50	60.50	992	2108	13.34	3333
20	39.75	60.25	988	2112	13.28	3346
21	40.00	60.00	984	2116	13.23	3359
22	40.25	59.75	980	2120	13.17	3372
23	40.50	59.50	976	2124	13.11	3385
24	40.75	59.25	972	2128	13.06	3398
25	41.00	59.00	968	2132	13.00	3411
26	41.25	58.75	964	2137	12.95	3424
27	41.50	58.50	959	2141	12.90	3437
28	41.75	58.25	955	2145	12.84	3450

(Contd...)

Annex Table-5.3 : Simulation - Impact of Oil Content on MSP of R&M

S.N.	Oil Content (%)	Oil Cake(%) {100-col(2)}	Realisation from oil cake on processing of 1 quinal of oilseeds, assuming price of cake/qtl= Rs. 1640 {col(3)*Price of Oil cake}/100	Cost of Oil Content i.e. oil-seeds without cake (Rs/qtl.), assuming MSP/ qtl.= 3100 MSP-Col(4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (Rs/qtl.) {col(5)/ col(2)}*0.25	MSP at Oil Content given in col.(2) [MSP+{Average of col.(6)* per-cent points of oil content that is over & above 35%}]/(0.25)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
29	42.00	58.00	951	2149	12.79	3463
30	42.25	57.75	947	2153	12.74	3476
31	42.50	57.50	943	2157	12.69	3489
32	42.75	57.25	939	2161	12.64	3502
33	43.00	57.00	935	2165	12.59	3515
34	43.25	56.75	931	2169	12.54	3528
35	43.50	56.50	927	2173	12.49	3541
36	43.75	56.25	923	2178	12.44	3554
37	44.00	56.00	918	2182	12.40	3567
38	44.25	55.75	914	2186	12.35	3580
39	44.50	55.50	910	2190	12.30	3593
40	44.75	55.25	906	2194	12.26	3606
41	45.00	55.00	902	2198	12.21	3619
42	45.25	54.75	898	2202	12.17	3632
43	45.50	54.50	894	2206	12.12	3645
44	45.75	54.25	890	2210	12.08	3658
45	46.00	54.00	886	2214	12.03	3671
46	46.25	53.75	882	2219	11.99	3684
47	46.50	53.50	877	2223	11.95	3697
48	46.75	53.25	873	2227	11.91	3710
49	47.00	53.00	869	2231	11.87	3723
50	47.25	52.75	865	2235	11.82	3736
51	47.50	52.50	861	2239	11.78	3749
52	47.75	52.25	857	2243	11.74	3762
53	48.00	52.00	853	2247	11.70	3774
Average increase in MSP with 0.25 percent point increase in oil content					12.97	

(Concluded)

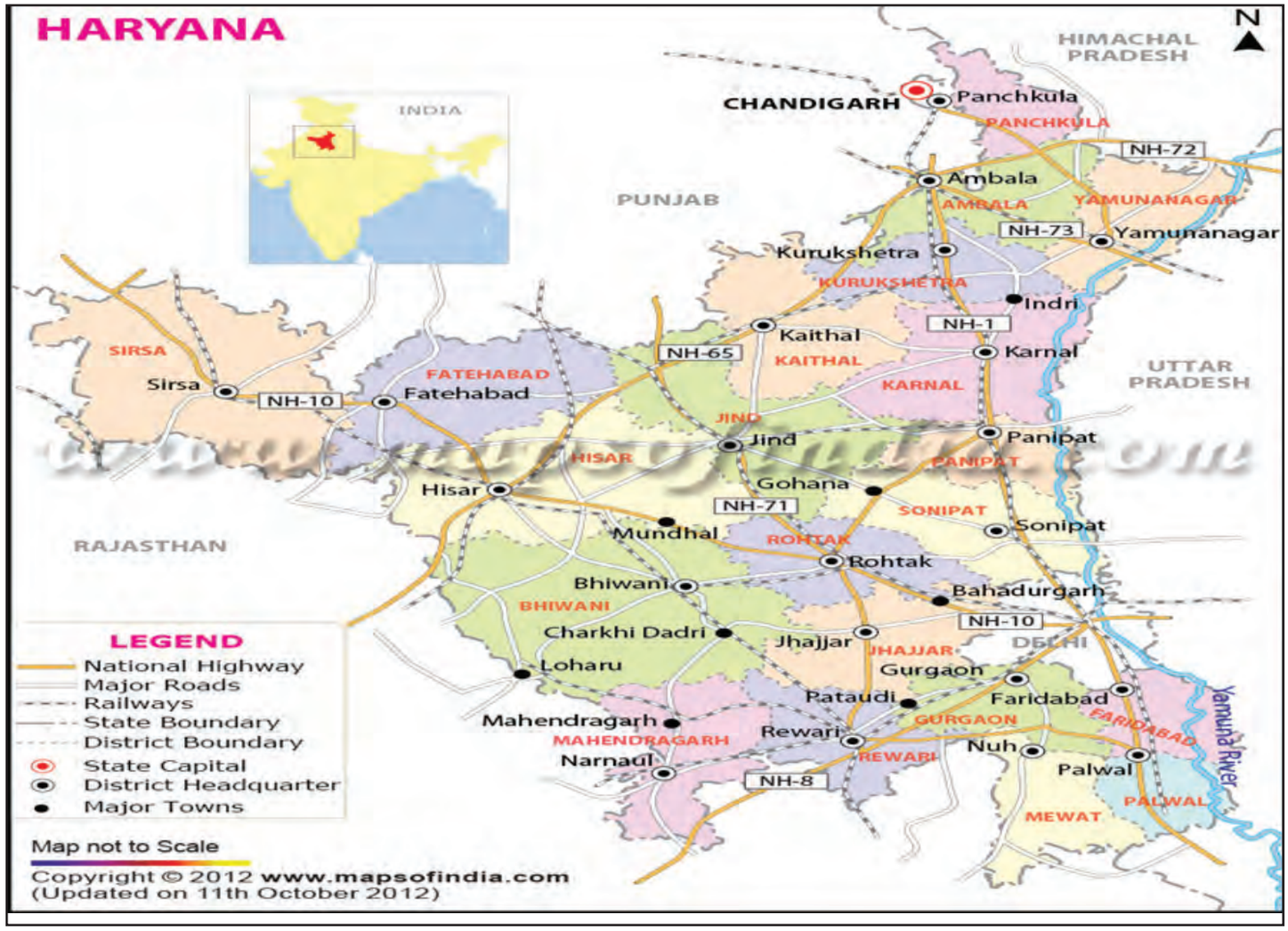
Annex Table - 6.1 : MSP Suggested by State Governments for RMS 2015-16

(Rs per quintal)

State	Wheat (Common)	Wheat (Sharbati /Durum)	Wheat (Irrigated)	Wheat (Unirrigat-ed)	Barley	Gram	Lentil/ Masur	R&M	Safflower
Andhra Pd.	3612	-	-	-	-	5679	-	4683	4667
Bihar	1766	-	-	-	-	3542	3398	4107	-
Chhattisgarh	2000	-	-	-	1200	3400	3400	3200	3200
Gujarat	-	-	1900	2000	-	3350	-	3300	-
Haryana	2000	-	-	-	1800	4700	-	4100	-
Himachal Pd.	1400	-	-	-	1100	3100	2950	3050	3000
Jammu & Kashmir	1600	-	-	-	1300	3500	1600	3200	-
Jharkhand	1850-2000	-	-	-	1300-1350	3100-3300	3400-3550	3300-3500	3000-3300
Karnataka	3300	-	-	-	-	4600	-	-	4000
Madhya Pd.	2600	2800	-	-	-	3950	3550	3750	-
Punjab	1900	-	-	-	1517	3627	-	3484	-
Rajasthan	1750	-	-	-	1600	3800	-	3500	-
West Bengal	2300	-	-	-	-	-	-	4260	-

Source: State Governments

Maps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PUNJAB
NH-73
Yamunanagar
Kurukshetra
KURUKSHETRA
Indri
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Kaithal
KAITHAL
Karnal
KARNAL
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SIRSA
Sirsa
NH-10
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Fatehabad
UTTAR PRADESH
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Jind
Panipat
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Hisar
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SONIPAT
Sonipat
Mundhal
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Rohtak
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Jhajjar
JHAJJAR
DELHI
Loharu
Gurgaon
Pataudi
Faridabad
GURGAON
FARIDABAD
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Rewari
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Nuh
Yamuna River
Narnaul
REWARI
Palwal
NH-8
PALWAL
MEWAT
LEGEND
National Highway
Major Roads
Railways
State Boundary
District Boundary
State Capital
District Headquarter
Major Towns
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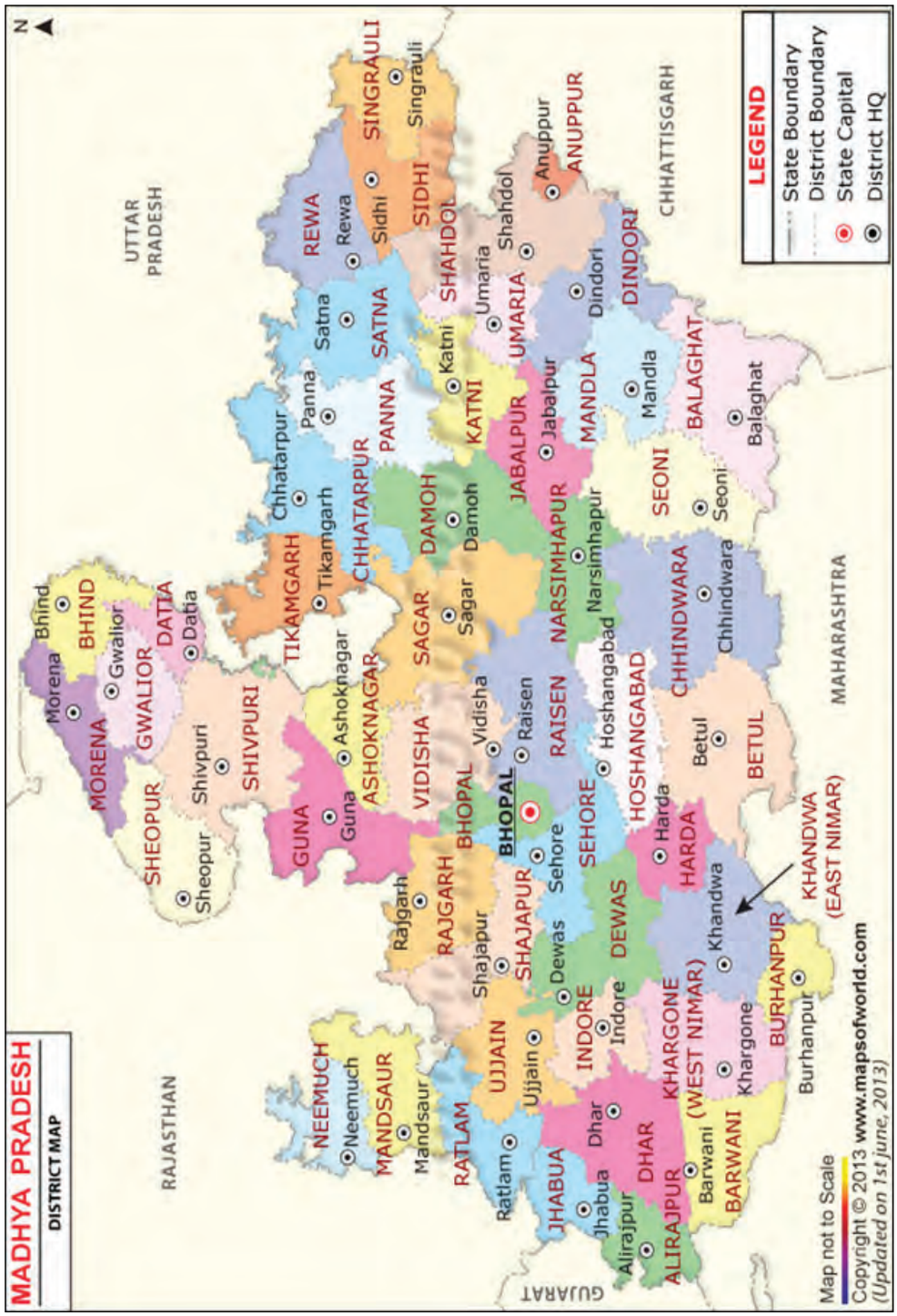
MADHYA PRADESH
DISTRICT MAP
N
UTTAR PRADESH
RAJASTHAN
GUJARAT
CHHATTISGARH
MAHARASHTRA
LEGEND
State Boundary
District Boundary
State Capital
District HQ
MORENA
Morena
BHIND
Bhind
GWALIOR
Gwalior
DATIA
Datia
SHEOPUR
Sheopur
SHIVPURI
Shivpuri
GUNA
Guna
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Ashoknagar
CHHATARPUR
Chhatarpur
PANNA
Panna
SATNA
Satna
REWA
Rewa
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Singrauli
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Sidhi
SHAHDOL
Shahdol
ANUPPUR
Anuppur
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Umaria
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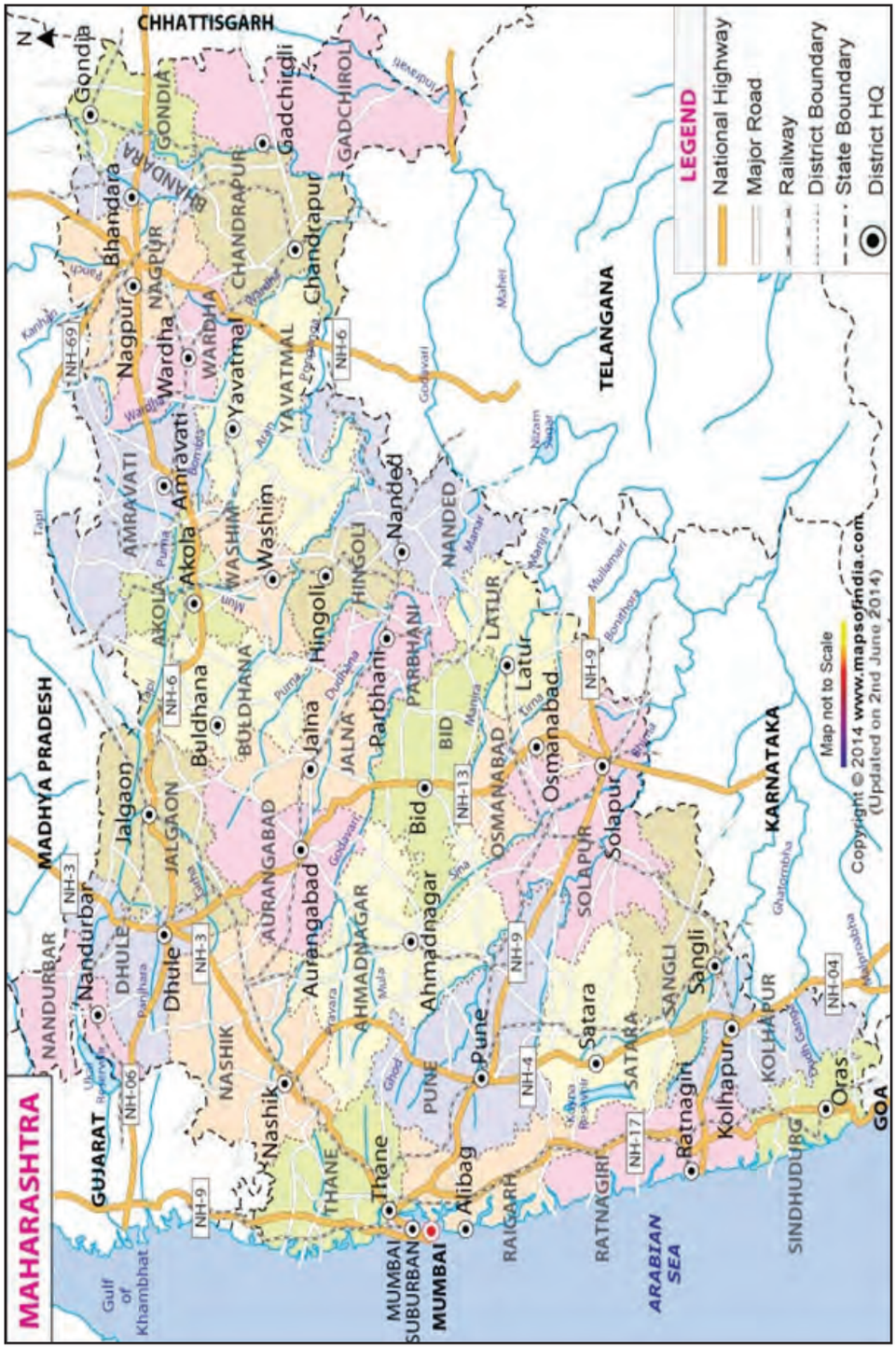
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TELANGANA
KARNATAKA
GOA
ARABIAN SEA
Gulf of Khambhat
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Major Road
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District Boundary
State Boundary
District HQ
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Hingoli
Parbhani
Latur
Jalna
Aurangabad
Bid
Osmanabad
Nandurbar
Dhule
Ahmadnagar
Solapur
Nashik
Pune
Satara
Sangli
Thane
Alibag
Ratnagiri
Kolhapur
Oras
MUMBAI SUBURBAN
MUMBAI
GONDIA
BHANDARA
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GADCHIROLI
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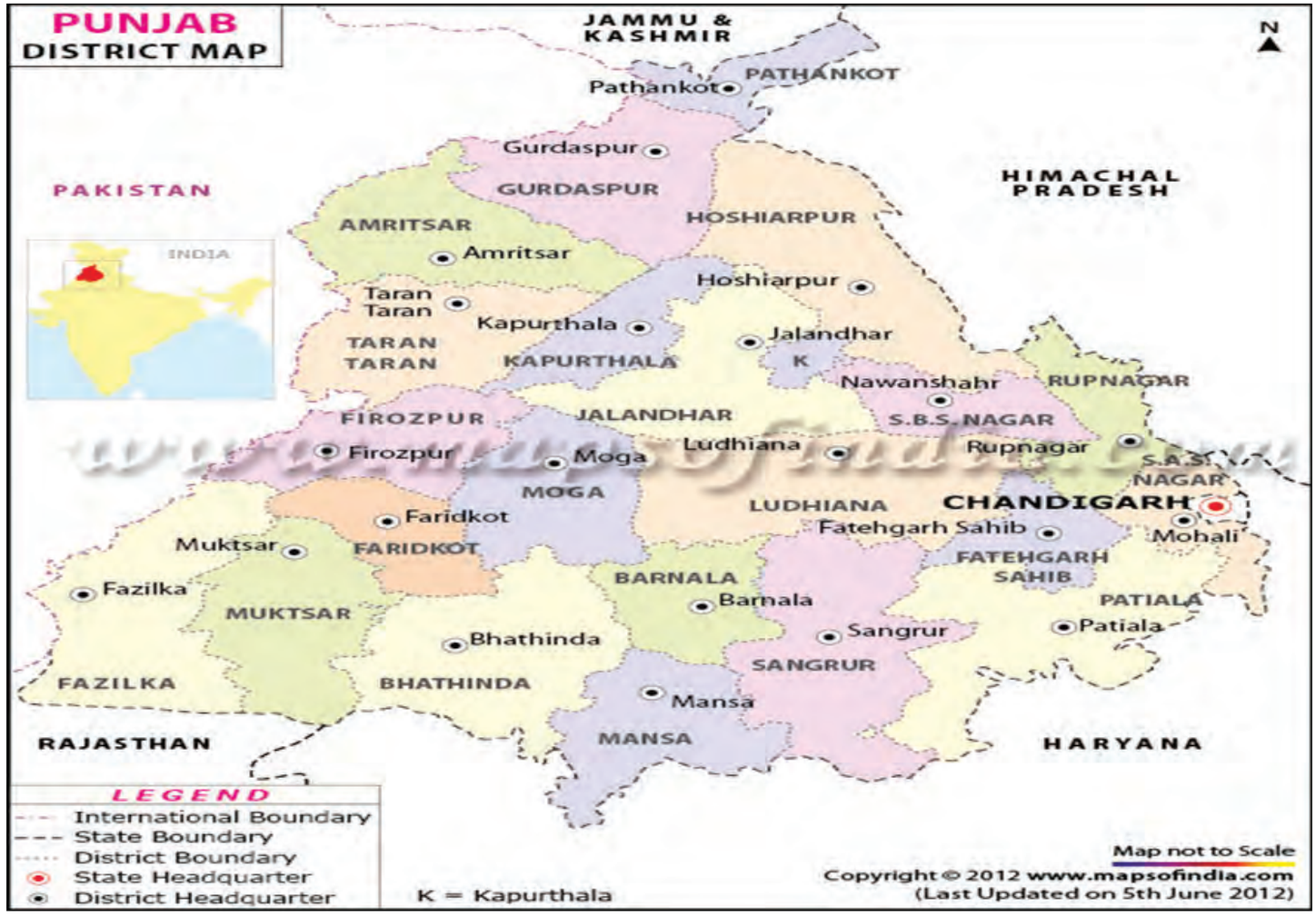
PUNJAB
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FATEHGARH SAHIB
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Barnala
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MUKTSAR
Sangrur
Patiala
Bhathinda
SANGRUR
FAZILKA
BHATHINDA
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District Headquarter
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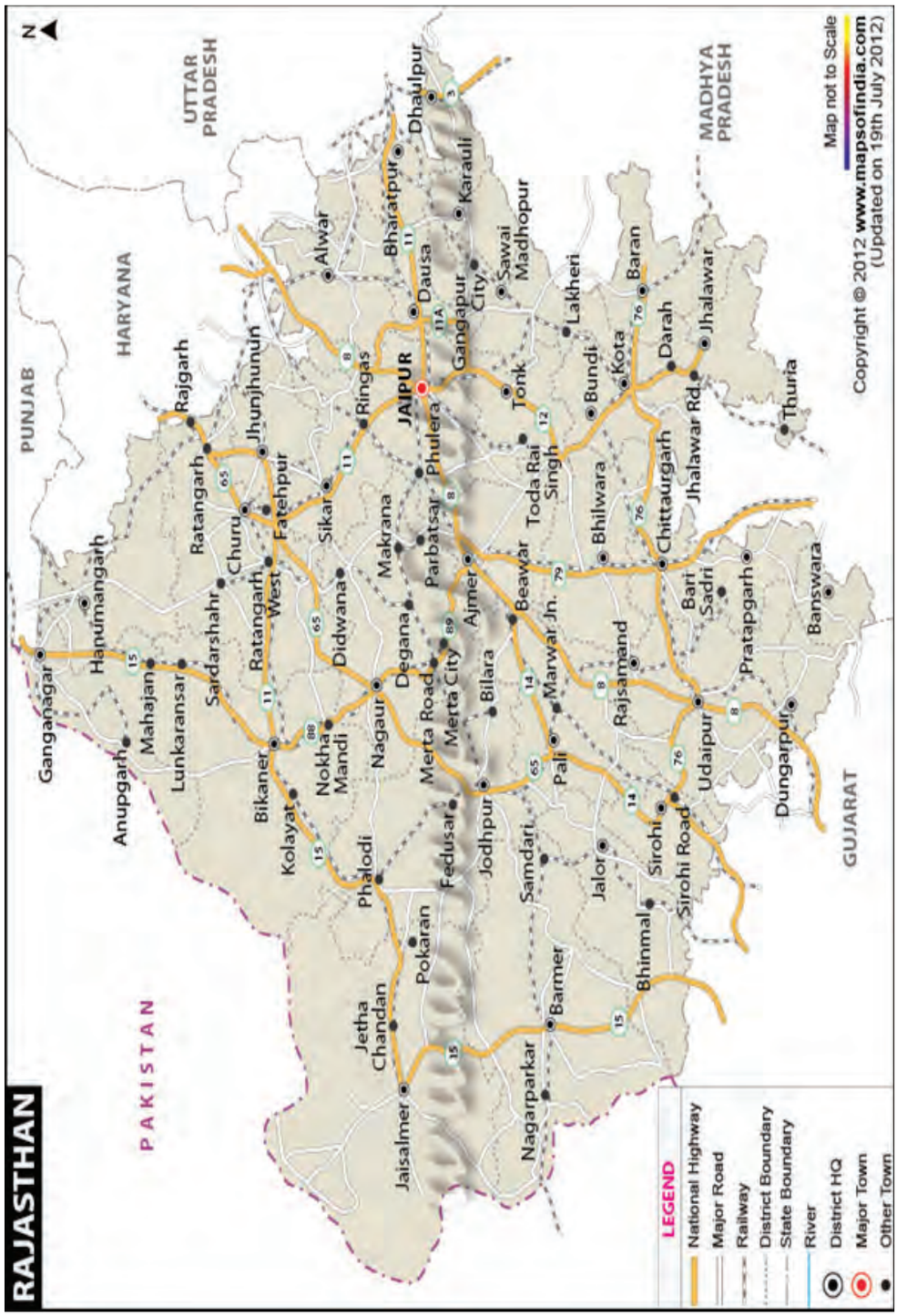
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Sirohi
Sirohi Road
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Barmer
Jetha Chandan
Jaisalmer
Nagarparkar
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State Boundary
River
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Major Town
Other Town
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SAHARANPUR
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SHAMLI
Muzaffarnagar
Bijnor
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BIJNOR
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Baghpat
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Meerut
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Pilibhit
PILIBHIT
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Bahraich
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Sravasti
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Agra
Firozabad
MAINPURI
AGRA
FIROZABAD
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KANNAUJ
ETAWAH
Etawah
LUCKNOW
Bara Banki
BARA BANKI
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Naugarh
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Amethi
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Azamgarh
MAU
Mau
BALLIA
Ballia
Fatehpur
FATEHPUR
Pratapgarh
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