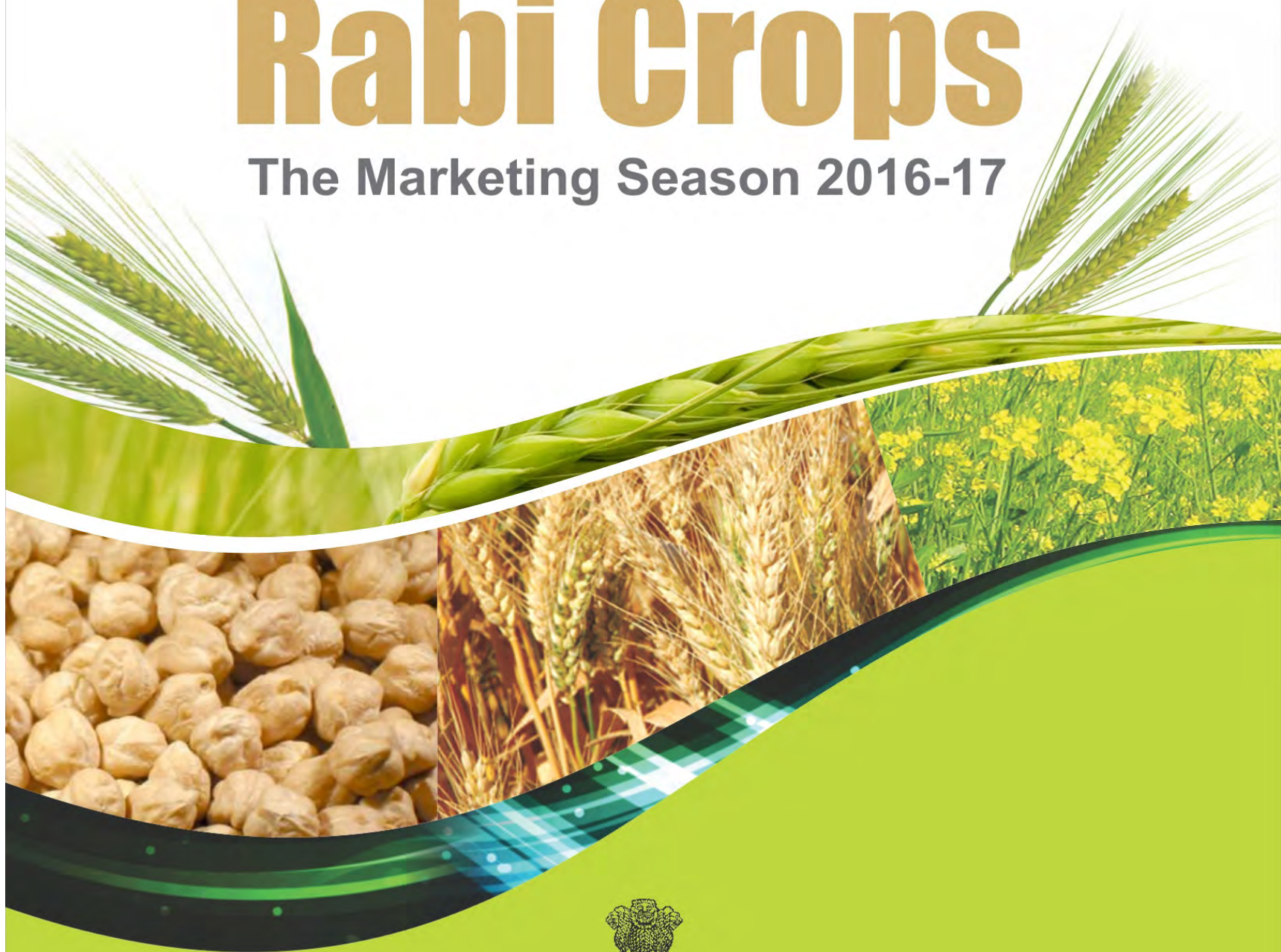


# Price Policy for Rabi Crops

The Marketing Season 2016-17



**Commission for Agricultural Costs and Prices**  
Department of Agriculture and Cooperation  
Ministry of Agriculture  
Government of India  
New Delhi  
July 2015

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## Preface and Acknowledgements

The report 'Price Policy for Rabi Crops: The Marketing Season 2016-17' is brought out in pursuance of the mandate of the Commission for Agricultural Costs and Prices (CACP). While recommending Minimum Support Prices (MSP) of various rabi crops for the ensuing marketing season, the Commission has taken into account several factors, ranging from cost of production to demand and supply, price trends in domestic and international markets, inter-crop price parity, the likely impact of recommended MSPs on consumers and rational utilization of natural resources like land and water. In doing this, the Commission has delved into several inter-related issues such as labour productivity, benchmarking of land productivity and **linking of MSP of oilseeds (Rapeseed & Mustard) to its basic 'oil content' to enhance resource use efficiency**. This will incentivize cultivators to adopt better farming practices and processors to invest in modern technology. In addition, a full Chapter on Crop Insurance, **undertaking a diagnostic analysis of flaws in the design of the existing Crop Insurance Schemes and laying down the policy prescription to remove the bottlenecks**, has been introduced for the first time in this Report to underscore the imperative of providing a 'cover' to farmers.

I take this opportunity to express my gratitude to farmers and also their Associations, millers, senior officers from Central and State Governments who provided valuable insights into various aspects of rabi crops.

This report is the nectar of enormous analyses undertaken by the Commission level officers, ably supported by Advisers, Director, Dy Director, Assistant Directors and other officers/staff. Their contribution to this report is no less than mine.

The Commission is of the considered opinion that the recommendations contained in this report would steer the system towards greater certainty, stability and rationality and will go a long way in putting rabi crops on a higher trajectory of growth.

(Dr. Ashok Vishandass)

27<sup>th</sup> July, 2015





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## Acronyms

A <sub>2</sub>	Includes all expenses in cash and kind on account of hired labour including human, bullock, machine, seed, insecticides, pesticides, manure, fertilizers, irrigation charges and miscellaneous expenses.
A <sub>2</sub> +FL	Actual paid out cost plus imputed value of family labour
C <sub>2</sub>	Includes A <sub>2</sub> +FL cost, rental value of owned land and interest on owned fixed capital.
CACP	Commission for Agricultural Costs and Prices
CCIS	Comprehensive Crop Insurance Scheme
CIP	Central Issue Price
CIPI	Composite Input Price Index
CoP	Cost of Production
CPIS	Coconut Palm Insurance Scheme
CS	Comprehensive Scheme of Studying Cost of Cultivation of Principal Crops in India
CWC	Central Warehousing Corporation
DAC	Department of Agriculture and Cooperation
DAP	Di Ammonium Phosphate
DCP	Decentralized Procurement
DES	Directorate of Economics and Statistics
DFPD	Department of Food and Public Distribution
DGCIS	Directorate General of Commercial Intelligence and Statistics
DIPP	Department of Industrial Policy and Promotion
DTA	Domestic Tariff Area
EDI	Electronic Data Interchange
EOUs	Export Oriented Units
EU	European Union
FAI	Fertilizer Association of India
FCI	Food Corporation of India
GDP	Gross Domestic Product
GOI	Government of India
GR	Gross Returns



GVO	Gross Value of Output
HSD	High Speed Diesel
ID cess	Infrastructure Development cess
IMD	Indian Meteorological Department
JAMS	Jan Dhan Yojana, Aadhar, Mobile technology and Satellite imageries
KVK	Krishi Vigyan Kendra
LCS	Land Custom Stations
MEAS	Modernizing Extension and Advisory Services
MEP	Minimum Export Price
mNAIS	Modified National Agricultural Insurance Scheme
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MoP	Muriate of Potash
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MoP	Muriate of Potash
MRP	Maximum Retail Price
MS	Marketed Surplus
MSP	Minimum Support Price
MSR	Marketed Surplus Ratio
MT	Metric Tonne
mt	million tonne
NAFED	National Agricultural Cooperative Marketing Federation of India Limited
NAIS	National Agricultural Insurance Scheme
NSSO	National Sample Survey Organisation
NWRS	Negotiable Warehouse Receipt System
OEA	Office of Economic Adviser
OGI	Open General License
PCIS	Pilot Crop Insurance Scheme
$Q_1, Q_2, Q_3, Q_4$	Quarters pertaining to Calendar Year (unless otherwise specified)
R&M	Rapeseed and Mustard
RCT	Resource Conservation Technology
RMS	Rabi Marketing Season
SEZs	Special Economic Zones
SUR	Stock to Use Ratio
ToT	Terms of Trade
USDA	United States Department of Agriculture
VLSC	Village Level Support Centre
WBCIS	Weather Based Crop Insurance Scheme
WPI	Wholesale Price Index

## 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, besides ensuring 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 2016-17.

### Providing Insurance Cover to Farmers

- S.2 Out of every 5 hectares of agri-land, only 1 hectare is covered under crop insurance. Given the fact that probability of occurrence of crop damage is high, once in every three years on an average, coupled with the fact that insurance cover is low indicates some flaws in the design of these schemes. To enhance penetration of the crop insurance as a product, it ought to have five important characteristics viz. **Adequacy** (of sum insured), **Affordability** (of farmers to pay premium), **Suitability** (customised according to needs), **Transparency** (in determining premium & claims) and **Timeliness** (in settlement of claims). A participatory insurance model in which farmers pay Rs. 287 per hectare as premium alongwith subsidy element will increase the coverage upto 50 percent of gross cropped area i.e. about 98 million hectares. The process of settlement of claims in India can be hastened by combination of Jan Dhan Yojana, farmers' Aadhar Cards, Mobile Technology and Satellite Imageries or its variant (JAMS).

### Rationalization of Statutory Levies on Procurement

- S.3 Haryana, Madhya Pradesh and Punjab are major contributors to wheat procurement.

High statutory levies in these states on procurement escalate the food subsidy. These states which account for 90 percent of procurement have realized over Rs.27135 crores by way of statutory levies/taxes during 2004-05 to 2014-15. Out of this, Rs.15052 crores has been realized on account of increasing tax rates as also increasing procurement and Rs.12083 crores on account of increase in MSP alone. Considering the fact that investment by states to augment the facilities relating to grading of grain, dryers, moisture meters, sieves and their mandi infrastructure does not increase with increase in MSP, there is a need to restructure taxes/levies on foodgrains/oilseeds in such a manner that its incidence in absolute terms on per quintal basis does not increase with increase in MSP. The Commission, therefore, recommends that states should levy the taxes in next five years on the level of MSP fixed for RMS 2015-16 (for the purpose of taxation only). This dispensation should be implemented from RMS 2016-17 and be reviewed after five years.

#### Direct Payment to Farmers for Produce

S.4 There are two distinct practices prevailing in two major wheat procuring states namely Madhya Pradesh and Punjab in so far as remitting payment to farmers is concerned. The state of MP remits the amount of the produce sold by farmers directly through cheque/RTGS into farmers account under e-uparjan (computerization of foodgrain procurement system in MP) which is transparent and funds get transferred on real time basis. In Punjab though procurement is computerized yet farmers get payment through Arhatiya. Also, such an arrangement takes 10 to 15 days for flow of funds to farmers. This arrangement not only increases farmers' dependence on Arhatiya but also leads to delays in remitting the amount due to farmers. Based on the discussions of the Commission with farmers and their Associations, it emerged that their interest will be better served if the system of direct payment to them through RTGS is institutionalized with no option of remittance being routed through Arhatiya.

#### Registration of Landless Cultivators

S.5 A good percentage of farmers are landless cultivators who face a variety of problems ranging from selling their produce at MSP to procurement agencies to getting crop loan and insurance cover. It is imperative to maintain a credible database of such cultivators which will enable them to avail the benefits of various Schemes. For instance, the Government of Andhra Pradesh maintains a record of cultivators under the Land Licensed Cultivators Act, 2011 who do not have ownership right on the land.

The state has already issued over 4 lakh cards at the cost of Rs.10 per card. Though the main purpose of this Act is to issue landless cultivators a 'Loan Eligibility Card', it may be extended for the purpose of direct cash transfer of subsidy in lieu of fertilizer and similar other benefits. The Commission recommends that such a Scheme be implemented in all other states in the larger interest of landless cultivators.

### Modernizing Extension and Advisory Services (MEAS)

- S.6 Extension services (including KVKs) in India leave much to be desired and need to undergo significant change if they are to effectively serve the food security and economic welfare of resource poor farmers. Focus of the extension system should be on supporting small and marginal framers. Modernization of Extension and Advisory Services to disseminate efficient, effective and financially sustainable services should be taken up on priority which will go a long way in increasing farm incomes.

### Labour Productivity and Farm Mechanisation

- S.7 Agri-work force which constitutes 49 percent of the total work force, contributes just 14 percent of National income (GDP). This is a reflection of large gap in agri-labour productivity compared to that of non-agriculture. The share of agri-work force has declined by 11 percent points compared to 9 percent points fall in the share of agri-GDP during 1999-2000 to 2011-12. However, the decline in agri-workforce is not fast enough to significantly augment agri-labour productivity. In order to respond to this situation and make agriculture more profitable, a two pronged strategy needs to be adopted. Firstly, traditional farming occupations ought to be replaced by widespread adoption of farm mechanization. For this purpose, a Scheme to develop a cooperative based 'Custom Hiring Model' under which a variety of machines for different farming operations be offered on rent. Secondly, a strategy for alternative avenues of employment for underemployed rural youth from agriculture to non-agriculture sector be formulated.

### National Farm Market

- S.8 The Government of India has recently approved the creation of a portal that will integrate 585 APMCs across the country. Out of these, 250 APMCs would be integrated through online platform during 2015-16, 200 in 2016-17 and the remaining 135 in 2017-18. This is a step in the right direction. However, the prices that National Agriculture portal will throw up are not clear. This assumes importance because the prices vary a great deal depending upon grading of the produce of the



same commodity. For instance, the price differential between the most and the least expensive markets for Jowar was 282 percent. Also inter-state variation in the rates of taxes/levies and commissions add to the price differential across states, even for a commodity of the same grade. Unless the centre sensitizes the states to agree to inter-state movement of agri-commodities without tax and also de-lists cereals, pulses and oilseeds from APMCs, it is unlikely that a pan-India market will emerge. It is, therefore, recommended that centre should persuade the states to allow free movement of agri-commodities without taxes/levies, besides emphasizing grading of agriculture produce, so as to enable a truly PAN India National Farm Market to emerge and take roots.

#### Right to Sell at MSP

S.9 Two most important procurement agencies of Government of India namely FCI and NAFED were set up with the main objective of procuring notified commodities at MSP. These agencies have been in existence for over 50 years and 30 years respectively. Yet, the benefits of MSP bypass a large section of farmers, rendering the entire dispensation of pricing policy and procurement operations ineffective. To instill confidence among farmers for procurement of their produce, a legislation conferring on farmers the right to sell at MSP be brought out.

#### Import-Dependence Reduction: A Way Forward

S.10 India has been importing edible oils and pulses to meet its domestic demand. For example edible oils worth over Rs. 64000 crore were imported in 2014-15 alone. In the backdrop of high import-dependence on Indonesia and Malaysia for palm oil, promoting oil palm in the country would benefit domestic farmers instead of those of Indonesia and Malaysia. In addition, this would be a land saving strategy, as through the current mix of oilseeds, 4 million MT of domestic production of edible oils is being produced by using about 15.80 million hectares of land. This quantity of palm oil could be produced from just 1 million hectares. It is recommended that CACP's Report on 'Oil Palm: Pricing for Growth, Efficiency & Equity, Towards a Rational Pricing Policy for Fresh Fruit Bunches and Potential Solution for India's Burgeoning Edible Oil Imports' be implemented in the medium to long term interest of the country.

#### Price Policy Recommendations

S.11 Taking its terms of reference into consideration, the Commission recommends the MSPs for six rabi crops for the RMS 2016-17 as given in the Table-S.1.

**Table-S.1: MSPs Recommended for RMS 2016-17**

(Rs./quintal, percent)

S.No.	Crops	Projected Costs 2015 - 16		MSP (Marketing Season)		Recommended MSP for RMS 2016-17	Gross Margin over (A <sub>2</sub> +FL) w.r.t. MSP now being recommended (percent)
		A <sub>2</sub> +FL	C <sub>2</sub>	2014-15	2015-16		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Wheat	785	1163	1400 (3.70)	1450 (3.57)	1525 (5.17)	94.27
2	Barley	776	1089	1100 (12.24)	1150 (4.55)	1225 (6.52)	57.86
3	Gram	2124	3102	3100 (3.33)	3175 (2.42)	3425 (7.87)	61.25
4	Lentil	2015	3098	2950 (1.72)	3075 (4.24)	3325 (8.13)	65.01
5	R & M	1702	2605	3050 (1.67)	3100 (1.64)	3350 # (8.06)	96.83
6	Safflower	3057	3734	3000 (7.14)	3050 (1.67)	3300 (8.20)	7.95

#: Corresponding to oil content of 35 percent.

Note: Figures in parentheses represent increases in MSP over the previous year.

### Incentivising Efficiency: Linking MSP of R&M with Oil Content

S.12 In order to augment resource use efficiency, MSP of R&M be linked to the basic 'oil content' of 35 percent. For every 0.25 percent point increase beyond this level, the MSP be increased by Rs.13.27/ quintal so as to incentivise the farmers to invest in technology. In two previous reports submitted in July 2014 and March 2015, the Commission had recommended linking of MSP of certain oilseeds with its oil content. This recommendation, based on sound economic principle, was not accepted on the ground of non-availability of equipment that measures oil content. The Commission recommends that the Government ought to explore the possibility of supplying of equipment by reputed manufacturers and lend initial 'hand holding' to FCI/NAFED /procurement centres to enable them to acquire/purchase the equipment so as to ensure that MSP of R&M seeds is linked to its 'oil content' from ensuing Rabi season. This will go a long way in augmenting resource use efficiency.

\*\*\*\*\*



# Overview

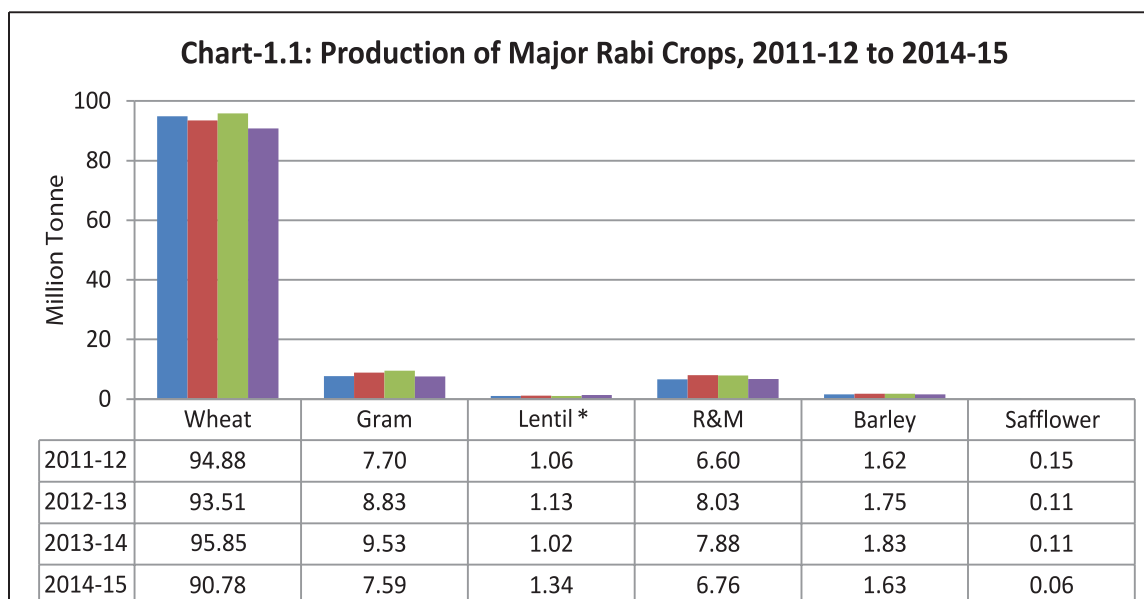
## Agricultural Performance

1.1 Agriculture in India is highly dependent on weather conditions and performance of monsoon. As per IMD, there has been a deficit monsoon of 12 percent in 2014-15. Three meteorological divisions out of four, where major wheat producing states are located, recorded excess rainfall during the period 01.03.2015 to 27.05.2015. North West India (Punjab, Haryana and U.P.) and Central India (M.P.) have recorded 95 percent and 100 percent excess rainfall respectively while at all India level excess rainfall of 42 percent during the same period has been recorded.

## Chapter-1

1.2 India's foodgrains production is estimated to have ebbed to 251.12 million tonnes in 2014-15, a decline of 13.92 million tonnes or 5.25 per cent from the previous year's record production of 265.04 million tonnes. The production loss is largely in rabi foodgrains which have recorded a decline of almost 10 million tonnes to 126.52 million tonnes in 2014-15 from 136.35 million tonnes in 2013-14. The production of cereals fell from 245.79 million tonnes to 233.74 million tonnes, a decline of 12.05 million tonnes mainly due to a fall of 8.44 million tonnes in rabi cereals. Coarse cereals output is estimated at 40.42 million tonnes, down by 2.87 million tonnes as compared to the previous year, out of which rabi cereals have recorded a fall of 1.13 million tonnes to 10.96 million tonnes in 2014-15. Pulses production has dipped by 1.87 million tonnes to 17.38 million tonnes, the major contributor being rabi pulses which recorded a decline of 1.38 million tonnes in 2014-15. Out of the total oilseeds production of 27.38 million tonnes in 2014-15, rabi oilseeds accounts for 8.84 million tonnes, a decline of 13 percent.

- 1.3 Wheat output is estimated to have declined to 90.78 million tonnes in 2014-15 against a record 95.85 million tonnes achieved in 2013-14. Likewise, production of barley, gram, R&M and safflower are down to 1.63 million tonnes, 7.59 million tonnes, 6.76 million tonnes, 0.06 million tonnes respectively during the corresponding period (Chart-1.1). This represents a fall of 11 percent, 20 percent, 14 percent and 43 percent respectively.

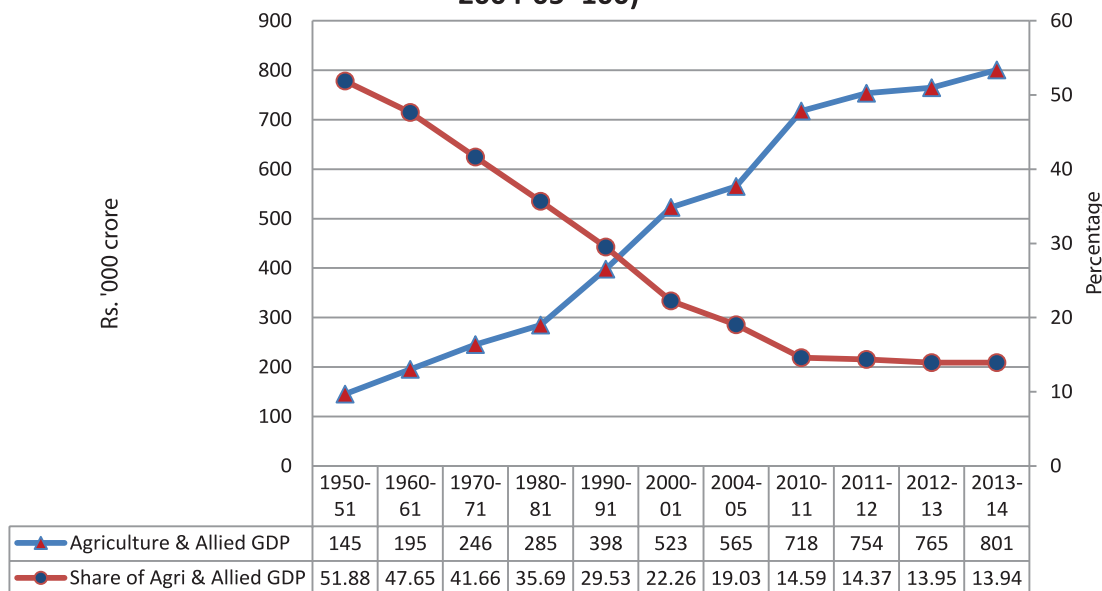


Source: DES

\*Lentil production for 2014-15 is calculated by multiplying average share of lentil for the last two years in "other rabi pulses" by current production of "other rabi pulses"

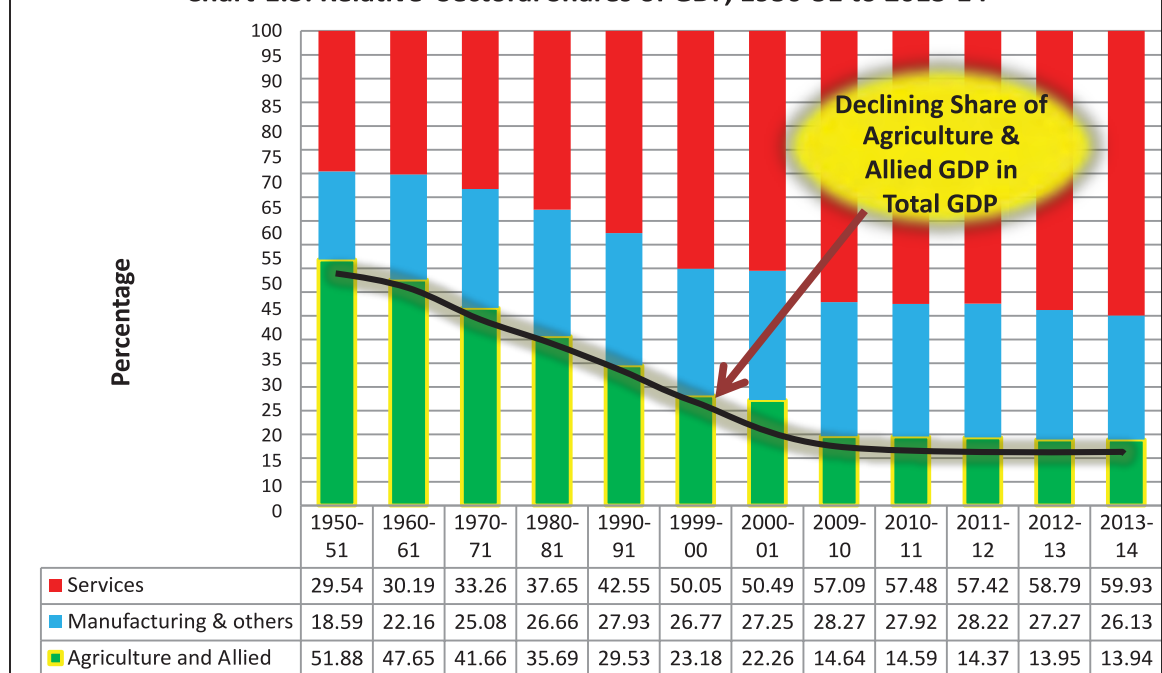
- 1.4 The GDP of Agriculture and Allied sector has increased from Rs.1.45 lakh crore in 1950-51 to over Rs.8 lakh crore in 2013-14 at constant prices 2004-05=100 (Chart-1.2). However, its share in the total GDP has shown a downward trend. Its share in total GDP declined from 51.88 percent in 1950-51 to 13.94 percent in 2013-14. This is mainly due to the faster growth of tertiary sector (Chart-1.3), a feature experienced by most developing economies of yesteryears which are now developed.

**Chart-1.2 Trends in Agriculture GDP, 1950-51 to 2013-14 (Constant Price 2004-05=100)**



Source: CACP, using National Accounts Statistics, CSO data

**Chart-1.3: Relative Sectoral Shares of GDP, 1950-51 to 2013-14**



Source: CACP, using National Accounts Statistics, CSO data

### Loss in Value Terms of Foodgrains Production

- 1.5 The loss in total foodgrains production during 2014-15 is 13.92 million tonnes which is valued at Rs.31540 crore at weighted average current wholesale prices. Of this, loss in pulses accounts for Rs.9569 crore. Similarly the loss due to fall in production of oilseeds is Rs.20932 crore. Thus the total loss due to damage in foodgrains and oilseeds alone works out to Rs. 52472 crore.

### Agricultural Trade

- 1.6 Agri-imports have generally shown an upward trend during 2003-04 to 2014-15 while exports have been increasing at much faster pace. As a result, agri-trade surplus has increased from Rs.13757 crore in 2003-04 to Rs.144658 crore in 2014-15 before ebbing to Rs.100571 crore, a decline of 30 percent due to subdued prices in 2014-15.

### Central Pool Stocks

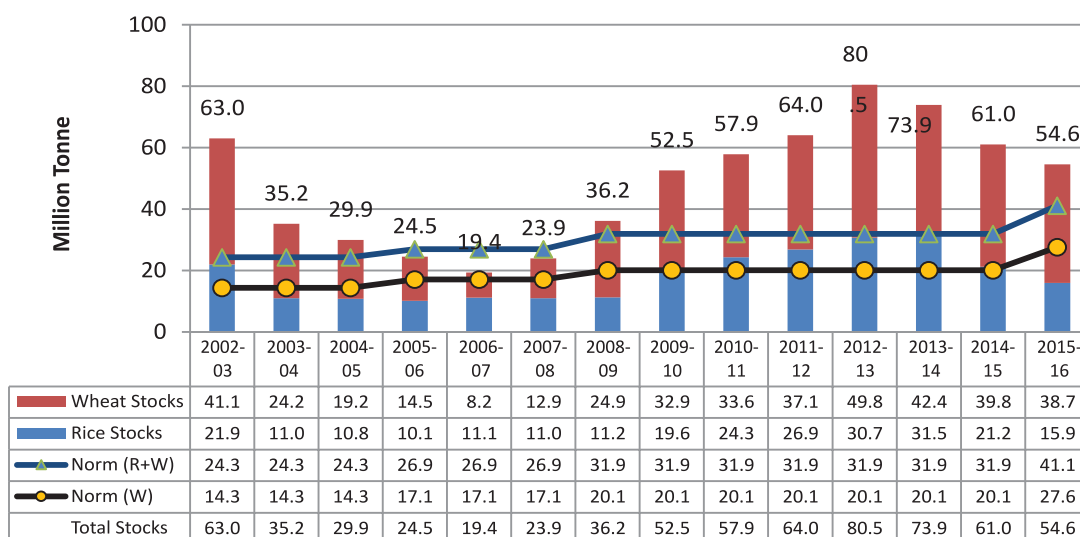
- 1.7 As against the revised buffer stock norm of 41.12 million tonnes (13.54 million tonnes of rice and 27.58 million tonnes of wheat as on 1<sup>st</sup> July (Table-1.1), total Central Pool stocks were 54.57 million tonnes (15.89 million tonnes of rice and 38.68 million tonnes of wheat) as on 1<sup>st</sup> July, 2015 (Chart-1.4).

**Table-1.1: Buffer Norms of Foodgrains in Central Pool**

S.No	As on	Total Stocks	Of which, Wheat
(1)	(2)	(3)	(4)
1	1 <sup>st</sup> July	41.12	27.58
2	1 <sup>st</sup> October	30.77	20.52
3	1 <sup>st</sup> January	21.41	13.80
4	1 <sup>st</sup> April	21.04	07.46

Source: DFPD

**Chart-1.4: Total Central Pool Stocks, 2002-03 to 2015-16**



Source: FCI and DFPD

- 1.8 The FCI has stocks in excess of buffer norms for both rice and wheat. For instance, it held 13.5 million tonnes of rice and wheat in excess of norms. These stocks if liquidated will fetch around Rs.20062 crore at current prices. The financial resources thus realized can be utilized for augmenting productivity by investing in irrigation and strengthening extension services. This will go a long way in improving profitability in agriculture eventually reducing rural poverty. Some of the measures to augment productivity have been discussed in following paragraphs.

#### Land Availability and Soil Health

- 1.9 Given the fact that land is a scarce resource, it is imperative to increase the land productivity. For raising awareness of the importance of soils for sustainable agriculture, the year 2015 has been declared as the “International Year of Soil”. This is an initiative to sensitize decision-makers about the need for robust investment in sustainable soil management activities aiming at healthy soils for different land users and population groups. The government has adopted measures like issuance of soil health card which would assist the farmers in identifying deficiencies in the soil and taking corrective measures which would eventually enhance the productivity levels.

### Cash Transfer of Fertilizer Subsidies

1.10 Urea, the only controlled fertilizer, is sold at statutory notified uniform sale price (currently at a low of Rs.5360 per tonne, without coating of neem) and decontrolled Phosphatic and Potassic fertilizers are sold at indicative maximum retail prices (MRPs). The prices per tonne of DAP and MoP at about Rs.24000 and Rs.17000 respectively are high in relation of that of urea at Rs.5360 per tonne. As the price of urea has remained fixed while those of P & K have increased faster, the differential between the prices of urea and P & K fertilizers has widened leading to excess use of N at the cost of P&K fertilizers. As against recommended doses of N: P: K in the ratio of 4:2:1, the actual consumption is highly skewed (Table-1.2). This has led to imbalanced use of soil nutrients which adversely affects productivity levels.

**Table-1.2: Relative Consumption of Three Fertilizer Nutrients**

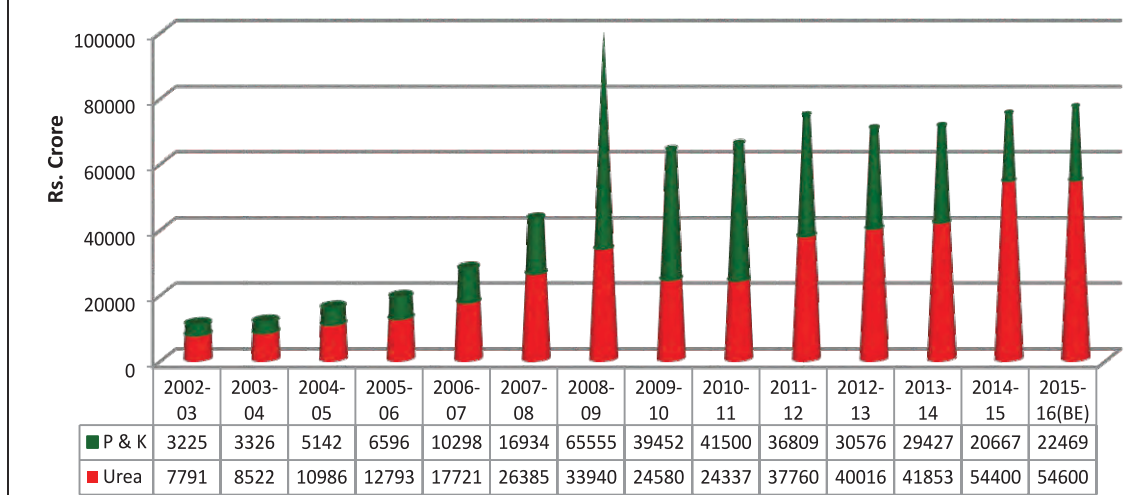
S.No.	Year	AP	Haryana	Punjab	Rajasthan	All India
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	2000-01	7:3:1	74:21:1	43:12:1	92:31:1	7:3:1
2	2007-08	4:2:1	40:11:1	34:09:1	34:13:1	6:2:1
3	2008-09	4:2:1	32:11:1	24:07:1	30:14:1	5:2:1
4	2010-11	4:2:1	21:07:1	19:06:1	25:12:1	5:2:1
5	2011-12	6:3:1	27:09:1	27:09:1	35:16:1	7:3:1
6	2012-13	7:3:1	61:19:1	62:19:1	45:17:1	10:3:1

Source: IFFCO and FAI

1.11 Fertilizer subsidy has increased to around seven times in the last 14 years from Rs.11016 crore in 2002-03 to over Rs.77069 crore (Chart-1.5) in 2015-16, registering a compound average annual growth of 14.9 percent per annum. Increase in the fertilizer subsidy has primarily been due to increased consumption of fertilizers and sharp increase in prices of finished fertilizers.



**Chart-1.5: Subsidy on Fertilizers, 2002-03 to 2015-16**



Source: Department of Fertilizers, Govt. of India

## Overview

- 1.12 Lower prices of urea in relation to those of other two nutrients has not only caused distortion in its usage but also lead to black marketing and smuggling to neighbouring countries simply because of subsidized prices of urea in the country. Though the recent decision of the Government to coat 100 percent of urea with neem may help contain its diversion to non-agricultural use to an extent, the issues relating to its over use and smuggling to neighbouring countries would remain.
- 1.13 Within the existing framework, all farmers irrespective of their land holding sizes are entitled to subsidy on fertilizers. Given the inequity in the land distribution, a uniformly applicable subsidy is biased towards large land owners. To address the issue of non-availability of urea at administered prices to small and marginal farmers and also its skewed distribution, a more efficient method is to provide direct subsidy to the farmers. Given the gross cropped area (GCA) of 195.1 million hectares and that the Government spends over Rs. 77,069 crores this year on account of fertilizers subsidy, annual per hectare subsidy works out to Rs.3947. In other words, the poorest farmer who has the smallest holding gets no more than Rs.4000/ha. per annum. If cash amount @ Rs. 4000/ha. is transferred in lieu of fertilizer subsidy to marginal farmers and to others in a graded system as indicated in Table-1.3, the total bill on account of subsidy can be contained to Rs. 60822 crores

during 2015-16. Thus, a saving of Rs. 16247 crores would be made if we switch over to direct cash transfer to farmers in lieu of fertilizer subsidy.

**Table-1.3: Cash Transfer in Lieu of Fertiliser Subsidy**

S.No.	Size-class	Area Operated ('000 ha.)	Gross Cropped Area ('000 ha.)	Cash transfer proposed (Rs. /ha.)	Total cash transfer proposed {Col(4)*col.(5)} (Rs. Crores)
(1)	(2)	(3)	(4)	(5)	(6)
1	Marginal Farmers (< 1 ha.)	35410	43400	4000	17360
2	Small Farmers(1-2 ha)	35136	43064	3500	15072
3	Semi Medium Farmers(2- ha)	37547	46019	3000	13806
4	Medium Farmers (4-10 ha)	33709	41315	2500	10329
5	Large Farmers (> 10 ha)	17379	21301	2000	4260
6	Total	159181	195100	-----	60822

Source: Agriculture Census, 2010-11 (Oct, 2012), Ministry of Agriculture, New Delhi {for col. (2) to (4)}

- 1.14 Cash transfer directly to the farmer in lieu of fertilizers will benefit them as they would be empowered to choose the fertilizer combination best suited to their soil texture without the influence of the distorted price relatives of NPK (Table-1.2). This is a win-win situation where Government would be saving about Rs.16247 crores and farmers' would be empowered to decide for themselves as to which fertilizer to use as per requirement. However, this Scheme can be effective only after complete computerization of land records in the states. In this context, Andhra Pradesh Land Licensed Cultivators Act, 2011 (Act No.18 of 2011) dated 23-12-2011 could be emulated. Under this, a record of cultivators is maintained, even if he has no ownership right on the land. Though the main purpose of this Act is to issue landless cultivators a 'Loan Eligibility Card', it can be extended /used for direct cash transfer of subsidy in lieu of fertilizers.

### Investment in Irrigation and Water Conservation

- 1.15 Out of 195 million hectares of gross sown area only 92 million hectares are irrigated i.e. almost 53 percent of land is dependent on rain. According to NSSO Survey, among the farmers with irrigated lands, 71 percent use ground water and only 17 percent use canals. This is because canals need public investment whereas pumps

can be used to draw ground water by farmers themselves. The country's farm sector alone accounts for 83 percent of all water use. Therefore, judicious use of water in agriculture by investing in drip and sprinkler irrigation will have significant impact on agriculture sector. As per prevailing dispensation domestic resource use cost is not recovered from farmers (due to subsidies) which leads to inefficiency in consumption of water. To promote economy in water consumption in agriculture, water and electricity should be metered and some quantitative ceiling should be fixed. Farmers who use water/electricity less than the ceilings fixed for them should be rewarded by cash incentive equivalent to unused units of water/power at the rates of their domestic resource costs. This would encourage farmers to use drip irrigation and would enhance production per drop of water. The need for economical use of water has to sink in the consciousness of policy makers.

## Overview

### Labour Productivity and Farm Mechanization

- 1.16 Agri-work force which constitutes 49 percent of the total work force, contributes just 14 percent of National income (GDP). This is a reflection of large gap between labour productivity of agricultural and non-agricultural sectors. The share of agri-work force has declined by 11 percent points compared to 9 percent points fall in share of agri-GDP during 1999-2000 to 2011-12. However, this decline in agri-workforce is not fast enough to augment agri-labour productivity significantly. Low productivity of agriculture work force at 17 percent compared to that of non-agriculture places a stress on returns and overall well-being of farmers. In order to respond to this situation and make agriculture profitable, a two pronged strategy needs to be adopted. Firstly, traditional farming occupations ought to be replaced by widespread adoption of farm mechanization. For this purpose, a Scheme to develop a cooperative based 'Custom Hiring Model' under which a variety of machines for different farming operations be offered on rent. While doing this, care should be taken to customize the machines according to domestic requirement because imported machinery is not always suited for Indian crop architecture. Secondly, a strategy for alternative avenues of employment for underemployed rural youth from agriculture to non-agriculture sector be formulated.

### Modernizing Extension and Advisory Services (MEAS)

- 1.17 Extension service plays a key role in carrying research findings from lab to land. However, existing extension services (including KVKs) leave much to be desired. Therefore, extension system needs to undergo significant change if they are to effectively serve the food security and economic welfare of resource poor farmers. Focus of the extension system should be on supporting small and marginal framers. To identify and disseminate efficient, effective and financially sustainable extension advisory services, MEAS be put in place which will go a long way in increasing farm incomes.

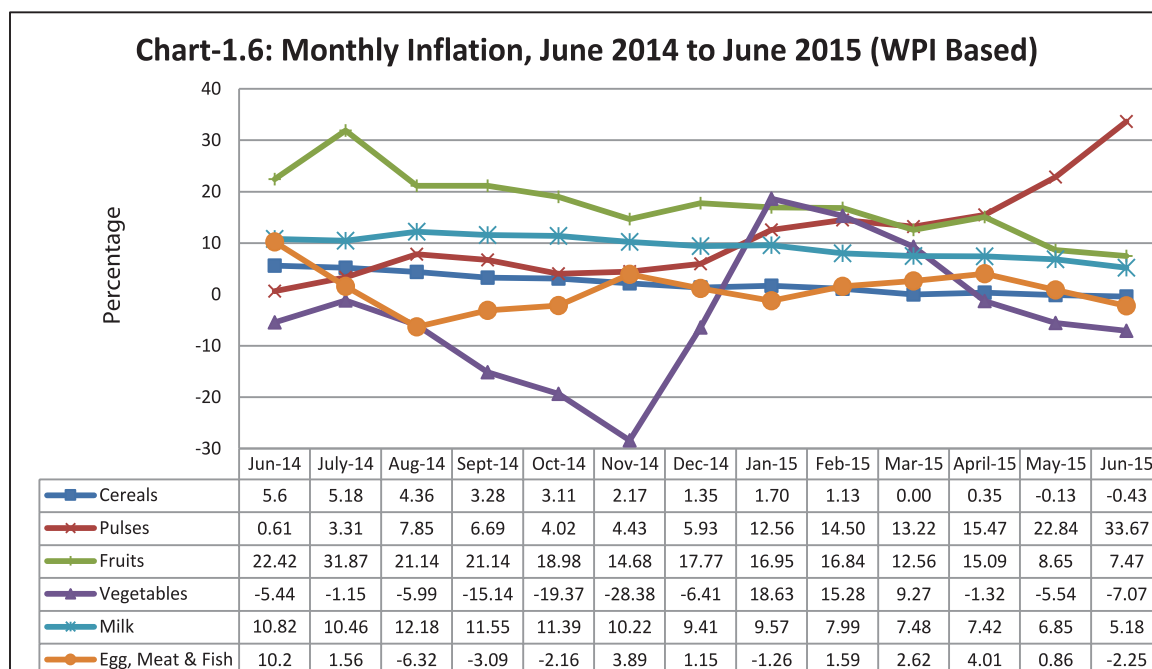
### National Farm Market

- 1.18 The Government of India has recently approved the creation of a portal that will integrate 585 APMCs across the country. Out of these, 250 APMCs would be integrated through online platform during 2015-16, 200 in 2016-17 and the remaining 135 in 2017-18. This is a step in the right direction. However, the prices that National Agriculture portal will throw up are not clear. This assumes importance because the prices vary a great deal depending upon grading of the produce of the same commodity. For instance, the price differential between the most and the least expensive markets for Jowar was 282 percent. Also inter-state variation in the rates of taxes/levies and commissions add to the price differential across states, even for a commodity of the same grade. Unless the centre sensitizes the states to agree to inter-state movement of agri-commodities without tax and also de-lists cereals, pulses and oilseeds from APMCs, it is unlikely that a pan-India market will emerge. It is, therefore, recommended that centre should persuade the states to allow free movement of agri-commodities without taxes/levies, besides emphasizing grading of agriculture produce, so as to enable a truly PAN India National Farm Market to emerge and take roots.



### Food inflation

1.19 There has been a reversal in price trends from June 2014 to June 2015 (Chart-1.6). The cereal inflation which was at 5.6 percent in June 2014 has been persistently coming down and recorded a negative inflation of (-) 0.43 percent in June 2015, whereas for pulses it has moved up from 0.61 percent in June 2014 to 33.67 percent in June 2015. Soaring prices of pulses in recent months are triggered by decline in production of pulses at 17.39 million tonnes in 2014-15 compared to 19.78 million tonnes in 2013-14. In addition, fruits and milk have registered an inflation of 7.47 percent and 5.18 percent respectively in June 2015 as compared to 22.42 percent and 10.82 percent respectively in June 2014. Inflation in prices of vegetables have shown a steep rise from -28.38 percent in November 2014 to 18.63 percent in January 2015 before falling to -7.07 percent in June 2015. In case of egg, meat and fish, it has ebbed from 10.20 percent in June 2014 to -2.25 percent in June 2015.



Source: DIPP

## Structure of the Report

1.20 Chapter-2 of the Report delineates the demand-supply situation for major rabi crops, its price trends and factors impacting procurement operations. Chapter-3 analyzes the status of crop insurance and identifies the reasons of its low coverage. Chapter-4 analyses productivity levels of major rabi crops, compares India's productivity with benchmark countries, appraises movement in efficiency gaps over time and identifies the drivers of productivity. Chapter-5 analyzes domestic and international prices and trade policies with a view to fostering international competitiveness. Chapter-6 presents the costs, returns and inter-crop price parity. Major highlights of all the chapters, leading to the key price and non-price policy recommendations are presented in Chapter-7.

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# Demand-Supply and Procurement Operations

## Stock to Use Ratio (SUR)

2.1 Stock to Use Ratio (SUR) of wheat fluctuated between 16 to 27 percent during the last four years, being 16 percent in 2014-15 (Table-2.1).

**Table-2.1: Stock to Use Ratio of Wheat**

(Million Tonne, Percent)

S.No.	Particulars	2011 - 12	2012 - 13	2013 - 14	2014 - 15
(1)	(2)	(3)	(4)	(5)	(6)
1	Opening Stocks ^	15.36	20.08	24.63	18.70
2	Production #	86.87	94.88	93.51	95.85
3	Imports	0.00	0.00	0.01	0.03
4	Total Supply (1+2+3)	102.23	114.96	118.15	114.58
5	Exports	0.74	6.51	5.57	2.92
6	Consumption*	81.41	83.83	93.88	95.74
7	Total Use (5+6)	82.15	90.34	99.45	98.66
8	Ending Stock (4-7)	20.08	24.63	18.70	15.91
9	Stock to Use Ratio (%) (8/7)	24.44	27.26	18.80	16.13

Notes: # Production is of previous years

^ Opening stock of 2011-12 (1<sup>st</sup> April) is as per DFPD

\*Consumption figures are from NCAER

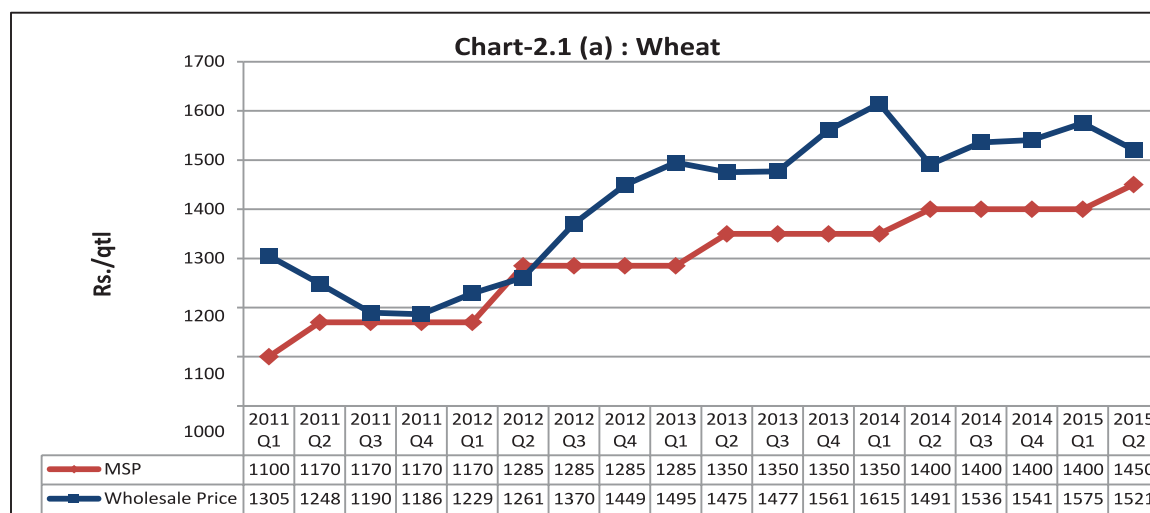
Source: NCAER, DES, DFPD and DGCIS

## Wholesale Prices and MSP

2.2. Wholesale prices of major rabi crops are generally ruling above their respective

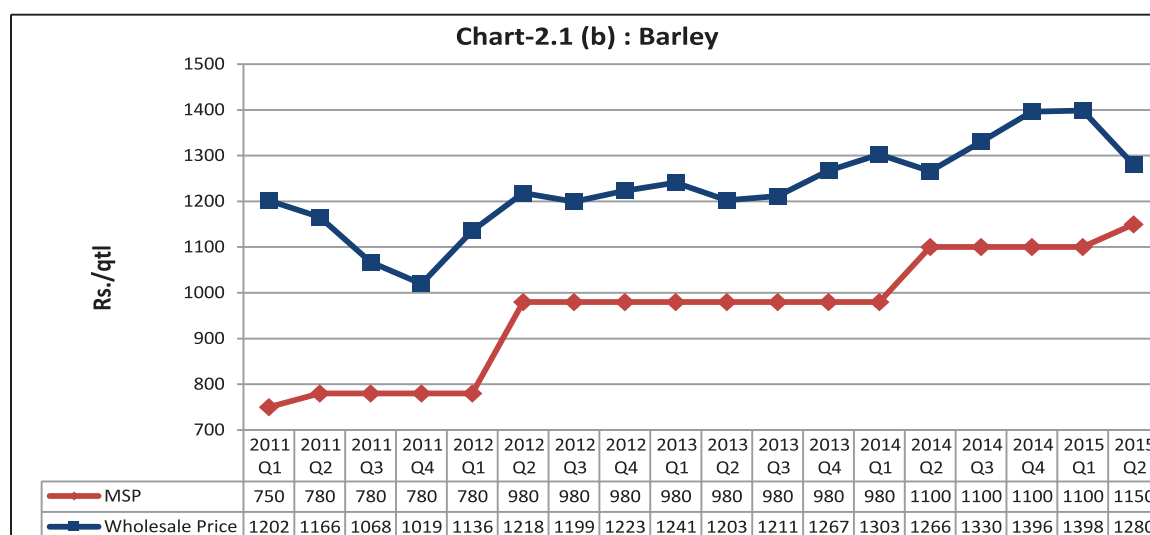
MSPs except gram for some specific periods and safflower in recent years {Charts-2.1 (a) to (f)}. The FAO's Food Price Index fell by almost one fifth from 210.4 in May 2014 to 166.8 in May 2015 indicating that the price behavior is showing a subdued pattern world over.

**Chart-2.1 (a) to (f): Wholesale Prices vis-à-vis MSPs of Rabi Crops {2011(Q<sub>1</sub>) - 2015 (Q<sub>2</sub>)}**



Source: DES

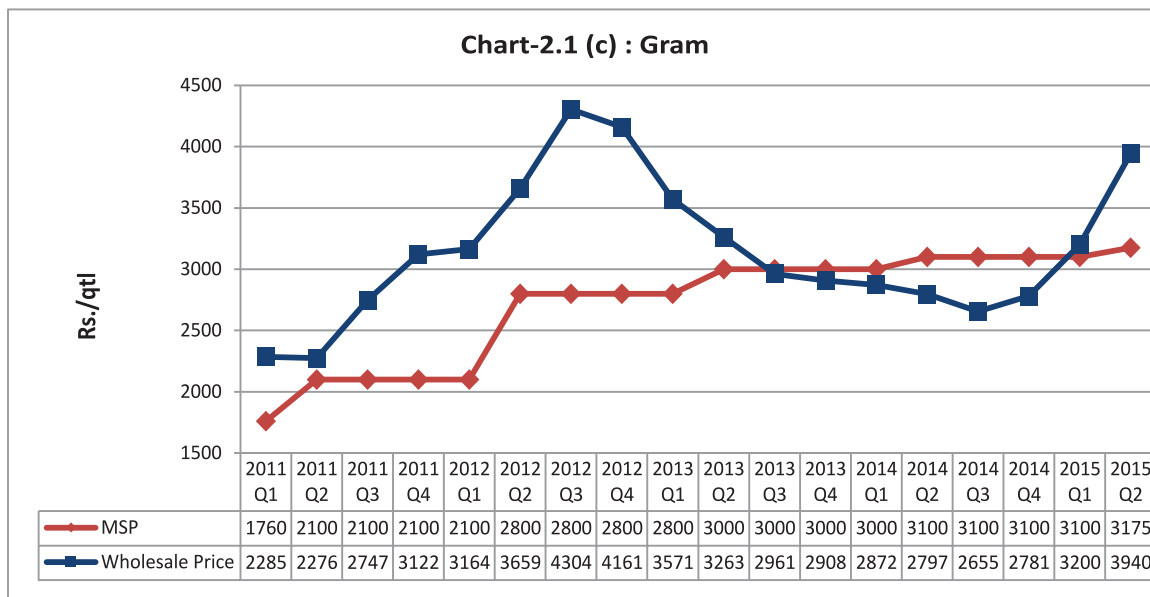
Note: Average wholesale price of Bihar, Haryana, MP, Punjab, Rajasthan and UP (These state cover 91 percent of production)



Source: DES

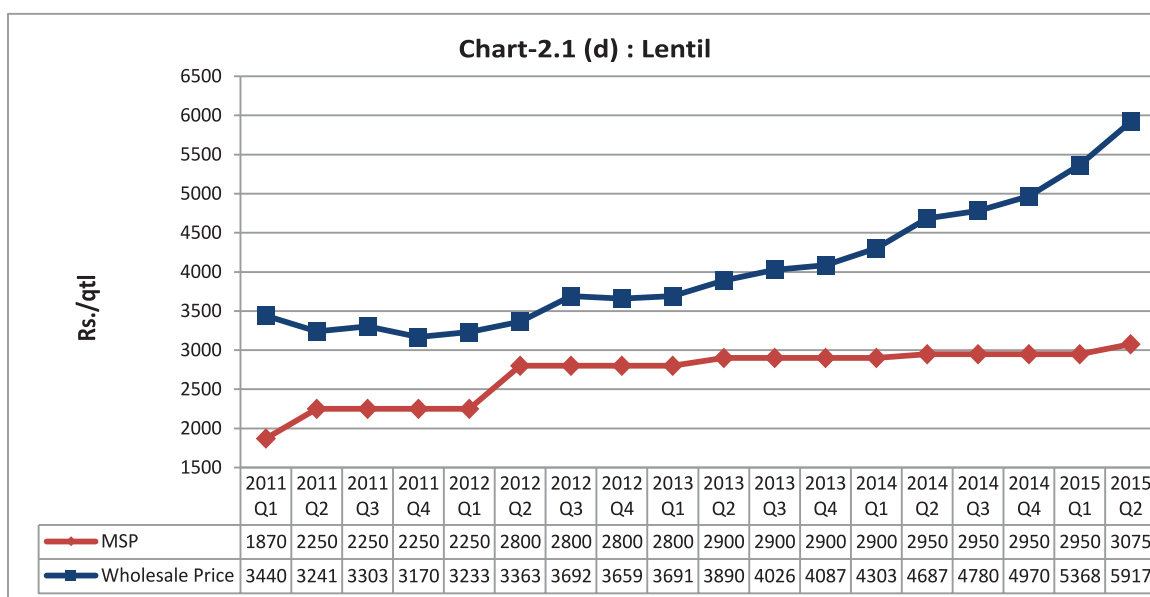
Note: Average wholesale price of Haryana, Rajasthan and UP (These state cover 85 percent of production)





Source: DES

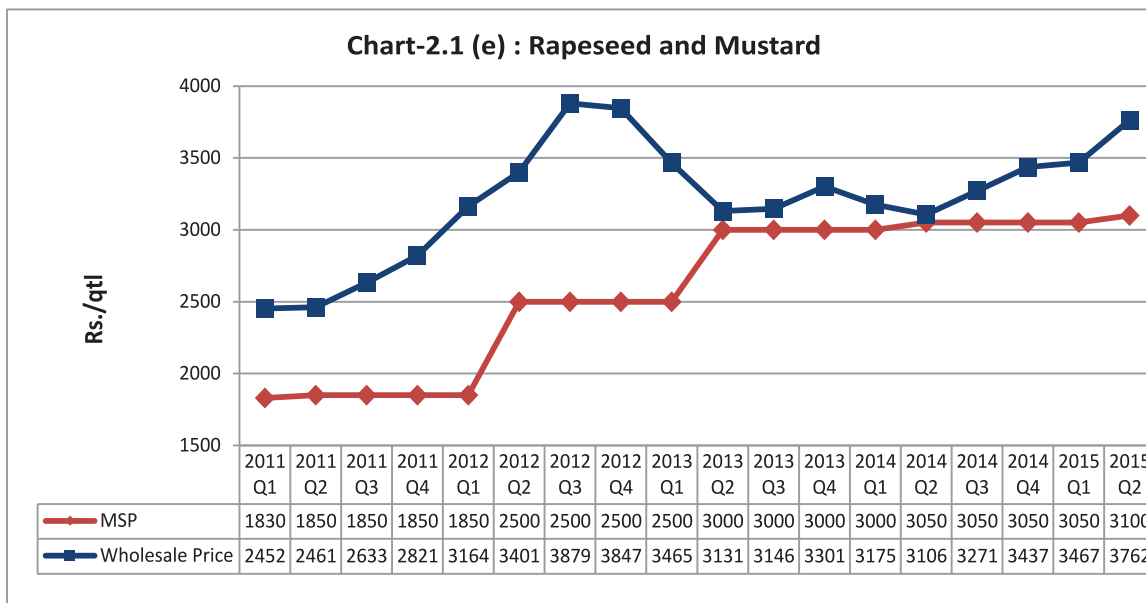
Note: Average wholesale price of Karnataka, MH, MP, Rajasthan and UP (These state cover 82 percent of production)



Source: DES

Note: Average wholesale price of Bihar, MP, UP and WB (These state cover 89 percent of production)

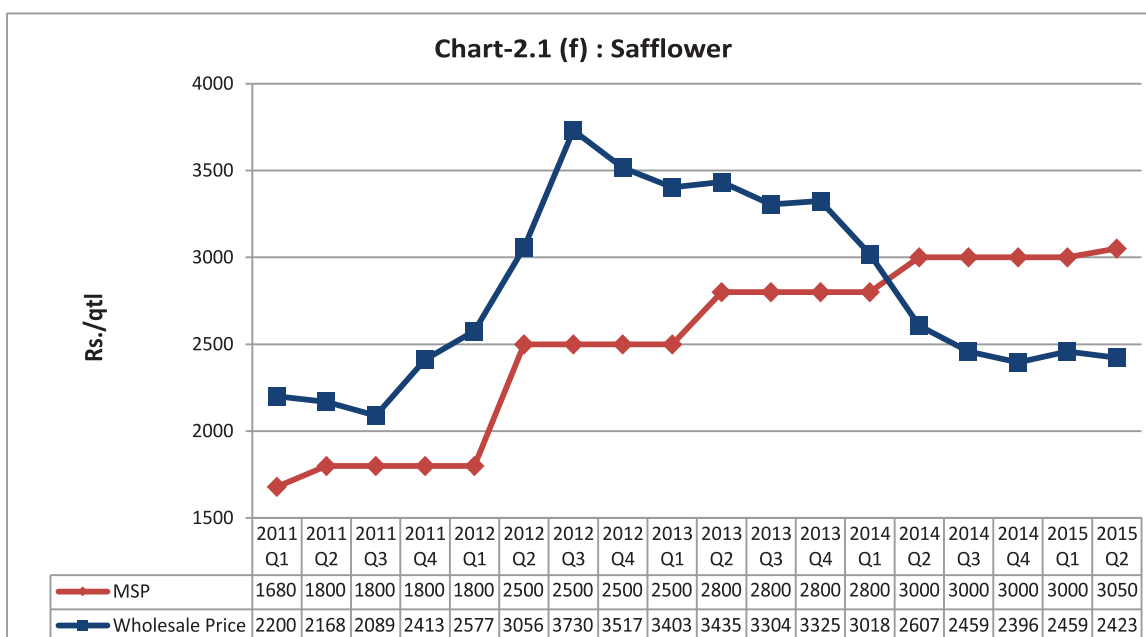
**Chart-2.1 (e) : Rapeseed and Mustard**



Source: DES

Note: Average wholesale price of Gujarat, Haryana, Rajasthan, UP and WB (These state cover 76 percent of production)

**Chart-2.1 (f) : Safflower**

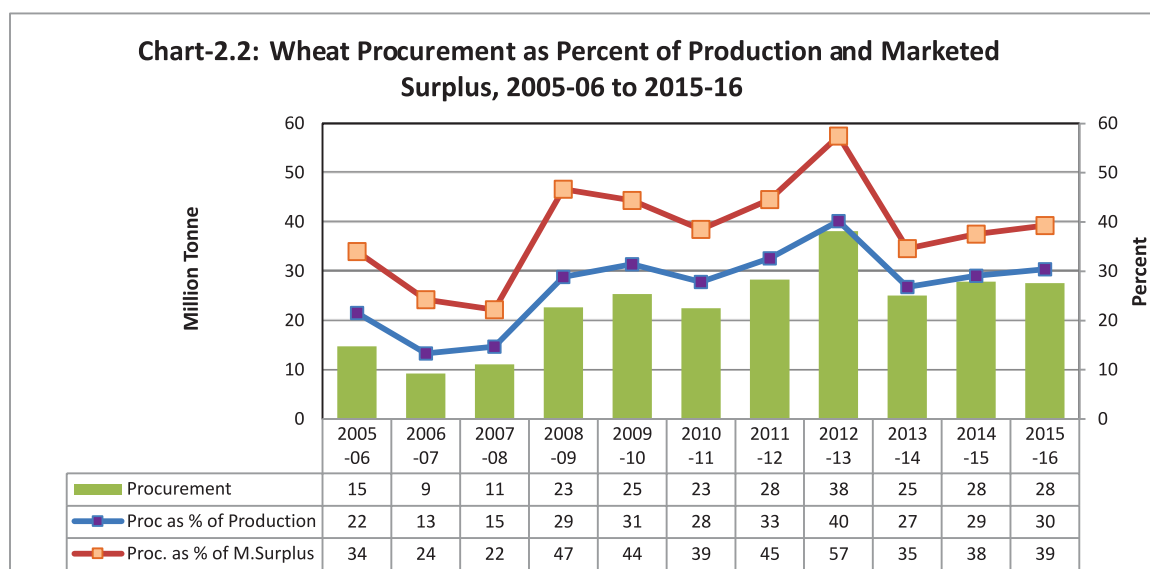


Source: DES

Note: Average wholesale price of Karnataka and MH (These state cover 82 percent of production)

### Procurement – Policy and Operations

2.3 Procurement of wheat by FCI has been 27.6 million tonnes (as on 30.06.2015) during the current rabi marketing season. This accounts for 30 percent of wheat production and 39 percent of marketed surplus which almost equals previous year's procurement of 29 percent of production and 38 percent of marketed surplus (Chart-2.2). Due to unseasonal rains and adverse climatic conditions, relaxations in quality norms of wheat for procurement during RMS 2015-16 was allowed with nominal value cut in the states of Gujarat, Haryana, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh.



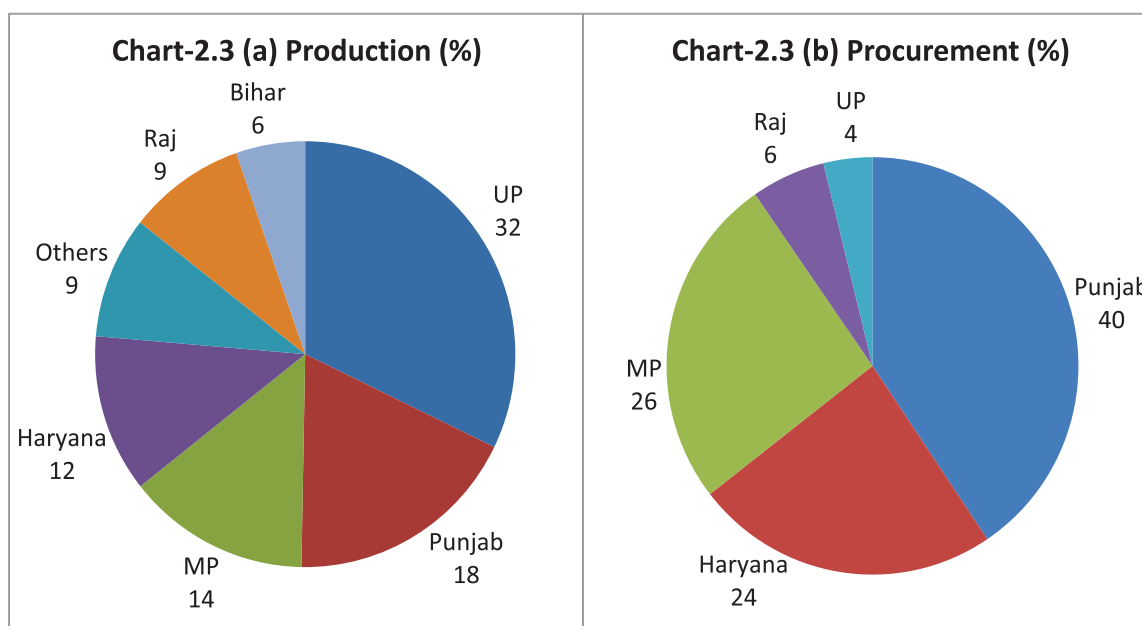
Source: DES and FCI

Note: MSR is available upto 2012-13 only and repeated thereafter

2.4 The major wheat producing states are Uttar Pradesh (32 percent), Punjab (18 percent), Madhya Pradesh (14 percent) and Haryana (12 percent), which accounted for more than 75 percent of the total production of wheat in the country in TE 2014-15 {Chart-2.3(a)}. Of these, three states namely Haryana, M.P. and Punjab accounted for 90 percent of the total procurement of wheat in TE 2014-15 while Uttar Pradesh, the largest producer of wheat accounted for only 4 percent in procurement {Chart-2.3 (b)}. Thus, the procurement operations are heavily concentrated in only three states and procurement machinery in other wheat

producing states needs to be strengthened, a point which CACP has made in its previous reports also.

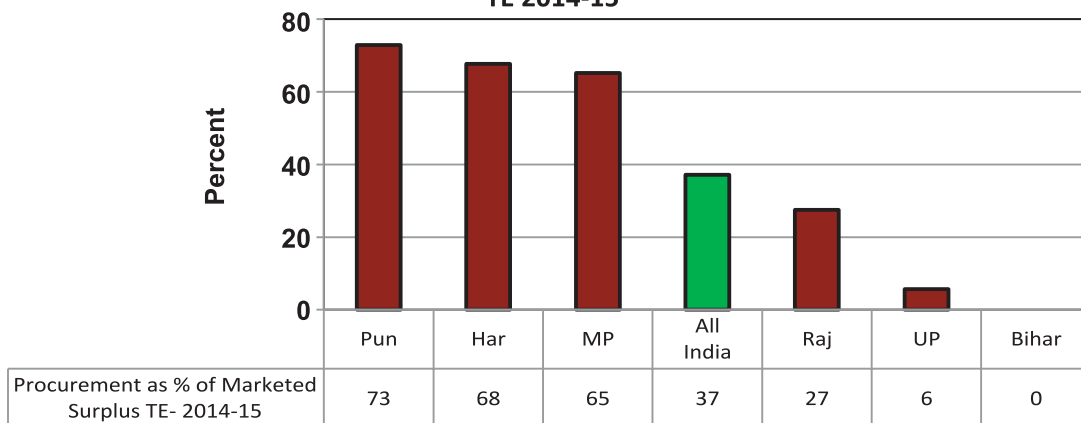
**Chart-2.3 (a) & (b): Share of Major States in Wheat Production and Procurement, TE 2014-15**



Source: DES and FCI

- 2.5 The Scheme of Decentralized Procurement (DCP) of foodgrains was introduced by the Government in 1997-98. The Central Government undertakes the scheme to meet the expenditure incurred by the State Governments on the procurement operations as per laid down guidelines. The Central Government also monitors the quality of foodgrains procured under the Scheme and reviews the arrangements made to ensure that the procurement operations are carried out smoothly. List of DCP states for wheat is shown in Annex Table 2.1. The states of Haryana and Punjab (both non-DCP states) and Madhya Pradesh (DCP state) procure more than two-third of market arrivals in their respective states (Chart-2.4).

**Chart- 2.4: State-Wise Wheat Procurement as Percentage of Marketed Surplus, TE 2014-15**

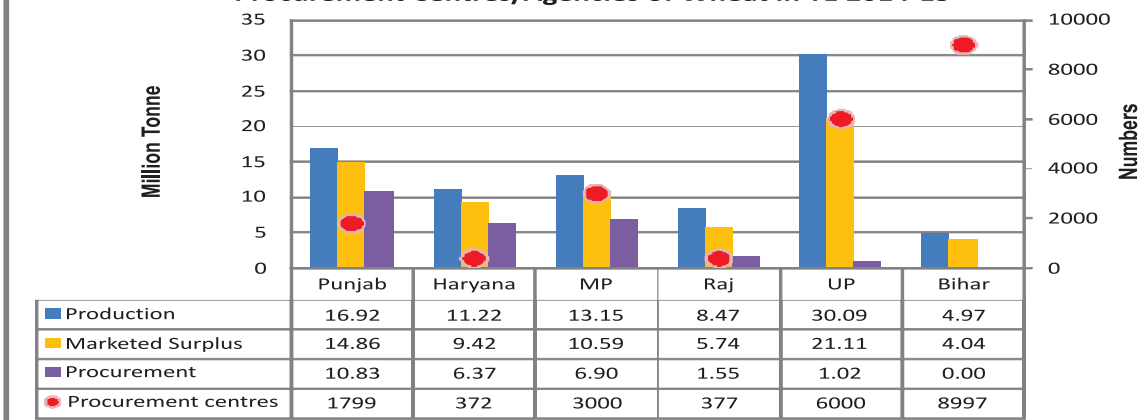


Source: FCI

#### Efficacy of Procurement System

- 2.6 U.P. is a non-DCP state and the number of procurement centres is 6000 whereas the procurement in the state is only 6 percent of the total marketed surplus during TE 2014-15. Bihar is a DCP state with 8997 procurement centres but procurement of wheat in TE 2014-15 is nil (Chart-2.5). This is a paradox of sorts where hardly any procurement takes place inspite of large number of procurement centres and raises the issue of resource use efficiency. This needs to be corrected urgently to contain the drain on the exchequer.

**Chart-2.5: State-Wise Production, Marketed Surplus, Procurement and Procurement Centres/Agencies of Wheat in TE 2014-15**



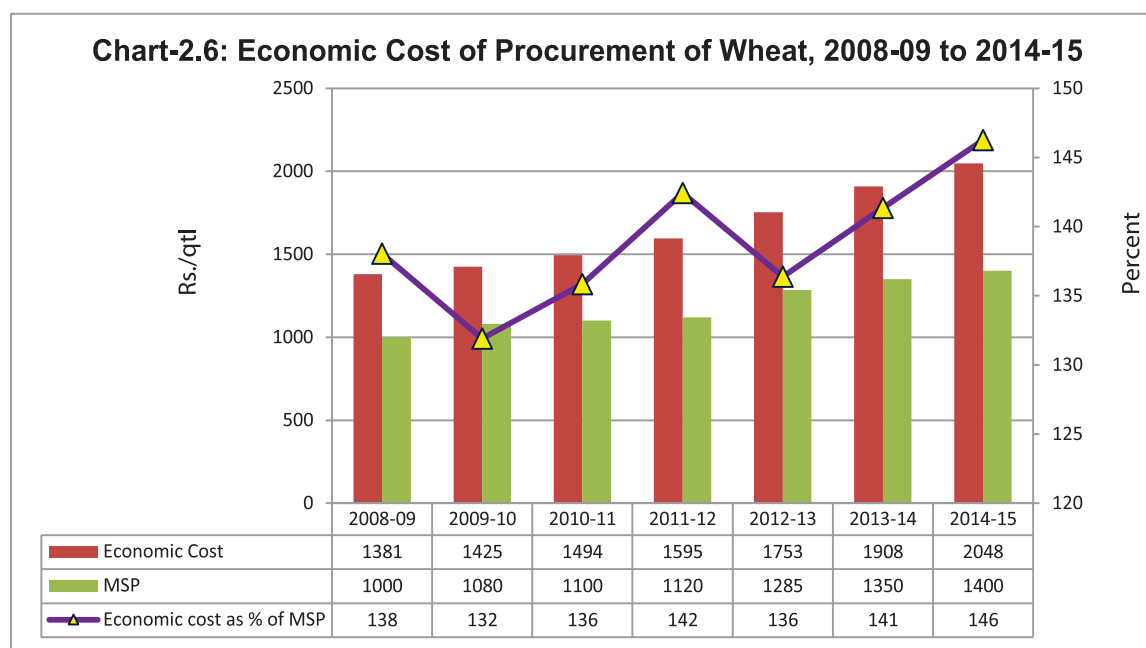
Source: DES and FCI

Note: Procurement Centres are of 2014-15



### Economic Cost of Procurement

2.7 The economic cost of procurement as a percent of MSP has increased from 138 percent in 2008-09 to 146 percent in 2014-15 (Chart-2.6). The component of economic cost which is over and above MSP includes costs on storage, distribution, gunny bags and other incidentals such as market fees, development cess, arhatia commission. FCI has cited increase in MSP/ acquisition cost and value of stock held by FCI without any increase in CIP as one of the reasons for its substantially increasing working capital requirement. It is also worth mentioning that Haryana, M.P. and Punjab lead in high net incidental costs thus pushing up the actual cost of wheat procurement.



Source: DES and FCI

### Procurement and Statutory Levies

2.8 A major contribution of increasing procurement incidentals is high rates of statutory levies by major wheat procuring states like Punjab (14.5 percent), Haryana (11.50 percent) and Madhya Pradesh (7.20 percent) (Table-2.2).

**Table-2.2: Statutory Levies Imposed on Wheat by States, 2013-14 to 2015-16**

S.No.	State	Taxes/Levies (as % of MSP)			Price after Tax (Rs./qtl)		
		2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	<b>MSP</b>				<b>1350</b>	<b>1400</b>	<b>1450</b>
2	Bihar \$	4.00	4.00	6.00	1404	1456	1537
3	Haryana	11.50	11.50	11.50	1505	1561	1617
4	MP	7.20	7.20	7.20	1447	1501	1554
5	Punjab	14.50	14.50	14.50	1546	1603	1660
6	Rajasthan*	1.60	1.60	6.60	1372	1422	1546
7	UP	6.50	6.50	8.93	1438	1491	1579
8	Uttarakhand	7.50	7.50	7.50	1451	1505	1559

Source: FCI

Note: \$ 3% additional tax

\* Govt. of Rajasthan has levied ID cess @ 5% w.e.f. 1<sup>st</sup> April, 2015

2.9 Taxes realized by states have two components:

- (i) On account of higher tax rates
- (ii) Increasing MSP over time

2.10 While states may claim that they have legitimate right to increase the tax rates, there is hardly any justification for corresponding increase due to increase in MSP. It may be appreciated that the objective of increasing MSP is to benefit the farmers and not the states. For instance Haryana, Madhya Pradesh, Punjab which account for 90 percent of procurement, have realized Rs.27135 crores by way of levies/taxes during 2004-05 to 2014-15. Out of this, Rs.15052 crore has been realized on account of increasing tax rates as also increasing procurement and Rs.12083 crores on account of increase in MSP alone (Annex Table-2.4).

2.11 Given the fact that states hardly make any significant investment in augmenting the facilities relating to grading of grain, dryers, moisture meters, facilities for farmers at Mandi level with increase in MSP, there is little justification for states to derive benefit out of the increasing MSP. Much though the Commission would like the states to bring down the rates of taxation, as have been recommended in its earlier Reports, no action has been taken on this count which

gives an indication that it is implausible for the states to do so. In this background, the least the states can do is to restructure taxes/levies on foodgrains/oilseeds in such a manner that the incidence of taxes/levies in absolute terms on per quintal basis does not increase with increase in MSP. The Commission, therefore, recommends that states should levy the taxes in next five years on the level of MSP fixed for RMS 2015-16 (for the purpose of taxation only). This dispensation should be implemented from RMS 2016-17 and be reviewed after five years.

### Direct Payment to Farmers for Produce

- 2.12 There are two distinct practices prevailing in two major wheat procuring states namely Madhya Pradesh and Punjab in so far as remitting payment to farmers is concerned. The state of MP remits the amount of the produce sold by farmers directly through cheque/RTGS into farmers' account under e-uparjan (computerization of food grain procurement system in MP) which is transparent and funds get transferred on real time basis. This has reduced the involvement of middle men thereby ensuring that farmers get their dues in time. In addition, SMS is sent to farmers for reaching the markets on a given date. Preference is given to small farmers as they have limited storage space and they are scheduled in the initial days on the start of procurement. This model is farmer friendly and is worth emulating in other states. In Punjab though procurement is computerized yet farmers get payment through Arhatiyas. Technically, farmers are asked to exercise the option (of getting payment of the produce sold directly or through Arhatiyas) 45 days in advance of the commencement of procurement. However, most farmers opt for payment through Arhatiyas, presumably for the fear of being isolated and ostracized. Also, such an arrangement takes 10 to 15 days for flow of funds to farmers. This arrangement not only increases farmers' dependence on Arhatiya but also leads to delays in remitting the amount due to farmers. Based on the discussions of the Commission with farmers and their Associations, it emerged that their interest will be better served if the system of direct payment to them through RTGS is institutionalized. The Commission, therefore, recommends that all states should put in place an arrangement for direct transfer of the payment to farmers' accounts through RTGS as is the practice in Madhya Pradesh.

### Pulses and Oilseeds

2.13 There is a huge deficit in domestic availability of pulses and oilseeds and these are imported on regular basis. In 2014-15 the imports of pulses and edible oilseeds was valued at Rs 81854 crore. To promote diversification and increase production of pulses, Government has given a bonus of Rs. 200 over and above MSP in Kharif 2015-16. However for sustained growth in pulses and oilseeds, reasonably strong procurement machinery is essential to instill the confidence among the farmers. The procurement of oilseeds and pulses by NAFED, the central nodal agency of the Government of India for undertaking procurement of oilseeds and pulses under MSP during 2010-11 to 2014-15 is shown in Table-2.3. FCI has been recently designated as an additional central nodal agency for procurement of these two groups of commodities for the ensuing rabi marketing season. This is the step in right direction for providing market support to pulses and oilseeds, which will encourage the diversification towards pulses and oilseeds.

**Table-2.3: Procurement of Oilseeds and Pulses by NAFED, 2010-11 to 2014-15**

(Tonne)

S.No	Crops		2010-11	2011-12	2012-13	2013-14	2014-15
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A-Pulses							
1	Kharif Pulses	Tur	291	Nil	16004.84	44859.75*	1543
2		Moong	Nil	Nil	Nil	Nil	-
3		Urad	131	1.57	79856.41	4647.77	Nil
4	Rabi	Gram	Nil	Nil	Nil	38266*	276519.45
5	Pulses	Lentil	Nil	Nil	Nil	-	Nil
B-Oilseeds							
6	Kharif Oilseeds	Groundnut	Nil	Nil	Nil	344211.95	6229.81
7		Sunflower	845		1499.1	4383.68	4153.12
8		Soyabean Yellow	Nil	Nil	Nil	Nil	Nil
9		Sesamum	1885	Nil	Nil	Nil	Nil
10		Nigerseed	Nil	Nil	Nil	Nil	
11	Rabi	R&M	Nil	Nil	Nil	Nil	1728.04
12	Oilseeds	Safflower	Nil	Nil	Nil	Nil	-

Source: NAFED

\* Procurement till 31.03.2014

### Right to Sell at MSP

- 2.14 The two most important procurement agencies of Government of India namely FCI and NAFED were set up with the main objective of procuring notified commodities at MSP, if and when the market prices go below MSP. These agencies have been in the existence for over 50 years and 30 years respectively. Yet, the benefits of MSP bypass a large section of farmers, rendering the entire dispensation of pricing policy and procurement operations ineffective. The procurement of oilseeds and pulses by NAFED during last five years has been abysmally low (Table-2.3).
- 2.15 To instill the confidence among farmers for procurement of their produce, a legislation conferring on farmers the right to sell at MSP may be brought out.

### Negotiable Warehouse Receipt System (NWRS)

- 2.16 Warehouse should be encouraged to be developed in the private sector with facility of Negotiable Warehouse Receipt System (NWRS) of 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 helps farmers getting loans from banks against these receipts and avoid distress sale. It would increase liquidity in the rural area 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.

### Recapitulation

- 2.17 Production of pulses and oilseeds be increased with a robust procurement machinery to encourage farmers for crop diversification and to reduce the gap between demand and supply of pulses and oilseeds without much dependence on import. FCI should formulate a strategy for strengthening of procurement machinery in states like Bihar and U.P. where despite a large number of procurement centres, procurement is very low or negligible. This state of affairs is a burden on national exchequer and needs to be looked into for systemic improvement so as to augment resource use efficiency.



- 2.18 It is well recognized that the rate of taxation on procurement is very high in Punjab (14.5 percent), Haryana (11.5 percent) and MP (7.2 percent). If it is implausible for the states to roll back the high taxes, the least the states can do is to restructure taxes/levies on foodgrains/oilseeds in such a manner that its incidence in absolute terms on per quintal basis does not increase with increase in MSP. The Commission, therefore, recommends that states should levy the taxes in next five years on the level of MSP fixed for RMS 2015-16 (for the purpose of taxation only). This dispensation should be implemented from RMS 2016-17 and be reviewed after five years.

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## Chapter-3

# Crop Insurance

### Evolution of Crop Insurance

3.1 The origin of Crop Insurance in India dates back to 1972 when 'individual farm' based insurance cover started for commercial crop H-4 cotton. In 1979, Pilot Crop Insurance Scheme (PCIS) was launched on a small scale and in a scattered manner on pilot basis, which was rooted in 'homogenous area' based yield index. The Government of India's first full-fledged Comprehensive Crop Insurance Scheme (CCIS) was introduced in 1985, covering cereals, millets, pulses and oilseeds country-wide, which was in vogue for 14 years. During this time, other small schemes such as providing insurance cover to non-loanee farmers, farmers' income insurance scheme were experimented. To respond to operational problems that emerged from implementation of CCIS, National Agricultural Insurance Scheme (NAIS) was conceptualized and introduced *w.e.f.* Rabi 1999. Based on the experience of implementing NAIS for over a decade, the Government of India modified NAIS, called mNAIS, which was implemented on a pilot basis in 50 districts from Rabi 2010-11. In the meantime, Weather Based Crop Insurance Scheme (WBCIS) was introduced by public and private sector insurance companies from Kharif 2007-08. A statement, showing the salient features of these three Schemes is at Annex Table-3.1.

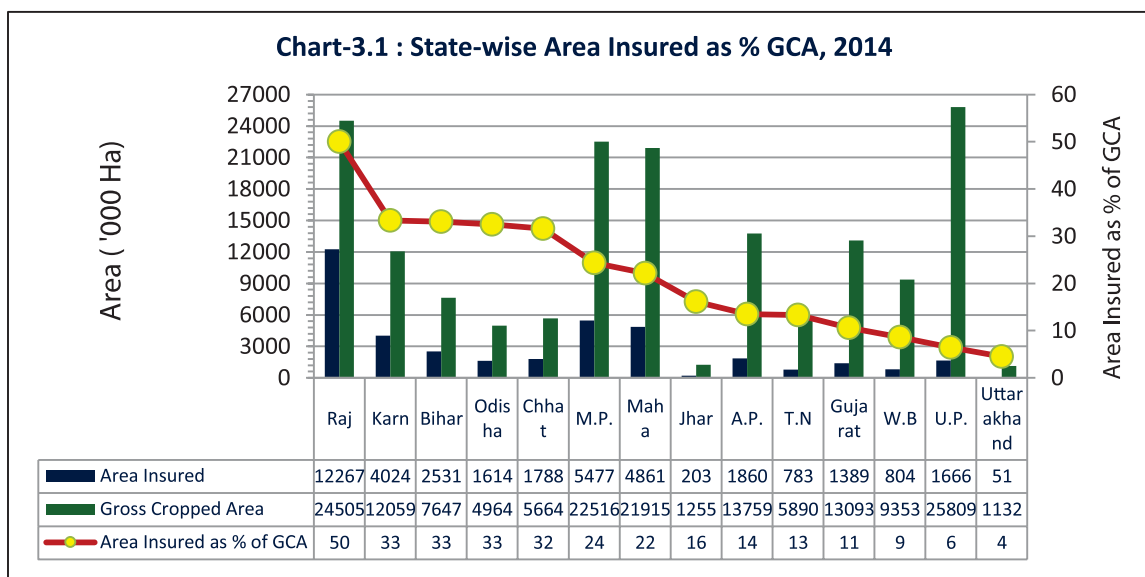
3.2 National Crop Insurance Programme (NCIP) was introduced by the Government of India on full-fledged basis throughout the country from Rabi 2013-14 with 3 components *viz.* **mNAIS, WBCIS and CPIS (Coconut Palm Insurance Scheme)**. With this, NAIS was to be discontinued. However, fourteen States/UTs that had already notified NAIS were allowed to continue NAIS in Rabi 2013-14 and thereafter. The states which have not implemented mNAIS are given in Table-3.1.

**Table-3.1: States not implementing mNAIS**

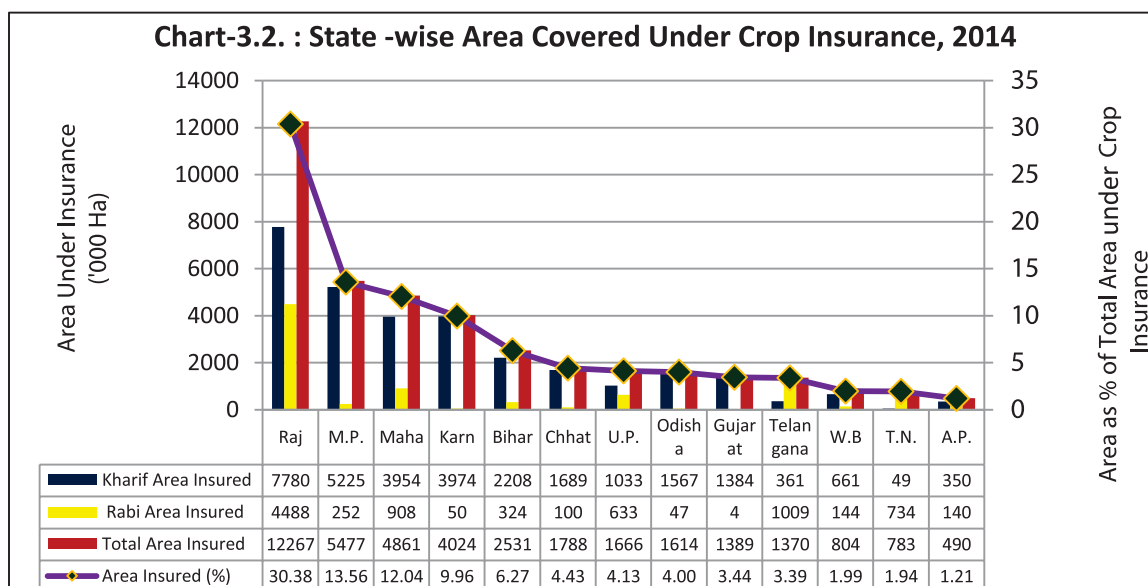
S.No.	Season	States
(1)	(2)	(3)
1	Rabi 2013-14	Andhra Pradesh, Assam, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Tamil Nadu, West Bengal, Andaman & Nicobar Islands and Puducherry.
2	Kharif 2014-15	Assam, Gujarat, Himachal Pradesh, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Telangana and Puducherry.
3	Rabi 2014-15	Andhra Pradesh, Assam, Bihar, Chhattisgarh, Meghalaya, Odisha, Tamil Nadu, Tripura, West Bengal & Puducherry.

### Coverage

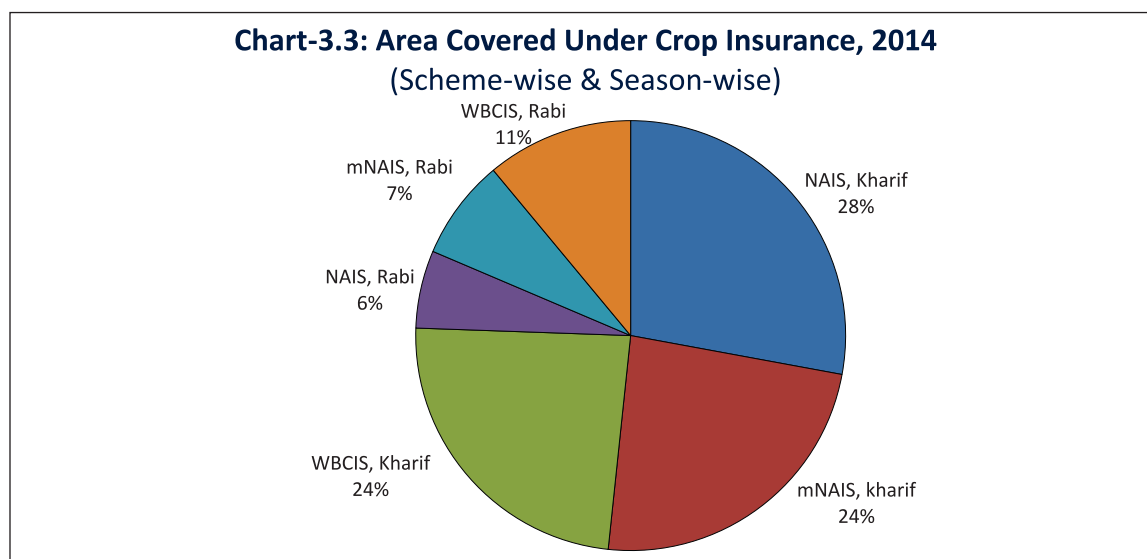
3.3 In India 85 percent of land holdings are marginal and small, farmers are resource poor and their propensity to bear losses is quite low. The losses could be due to vagaries of weather or natural calamities. To make Indian agriculture a reasonably viable enterprise, farmers' exposure to risk need to be reduced by providing them insurance cover. However, the area insured is in the range of 4 to 50 percent of Gross Cropped Area (GCA) in major states (Chart-3.1).



- 3.4 Out of total farm land of 195.26 million ha, only 42.82 million ha or 22 percent of GCA is insured. The maximum insurance coverage is in Rajasthan at 50 percent of GCA which itself is low. This implies that at least half of agri-land remains without any protection against risk in every state. In some states, coverage is abysmally low or nil.
- 3.5 The spread of agriculture insurance cover provided by different insurance companies (both private and public) varies a great deal across states. Four states of Rajasthan, M.P., Maharashtra and Karnataka account for two-third of the total area insured. The distribution of area under insurance cover state-wise and season-wise is depicted in Chart-3.2.



- 3.6 As kharif crops are exposed to higher risk due to more dependence on monsoon, farmers tend to get cover for kharif crops more than rabi crops. It is noted that area covered under kharif crops is about three times that of rabi crops (Chart-3.3).



Source:AIC, NewDelhi

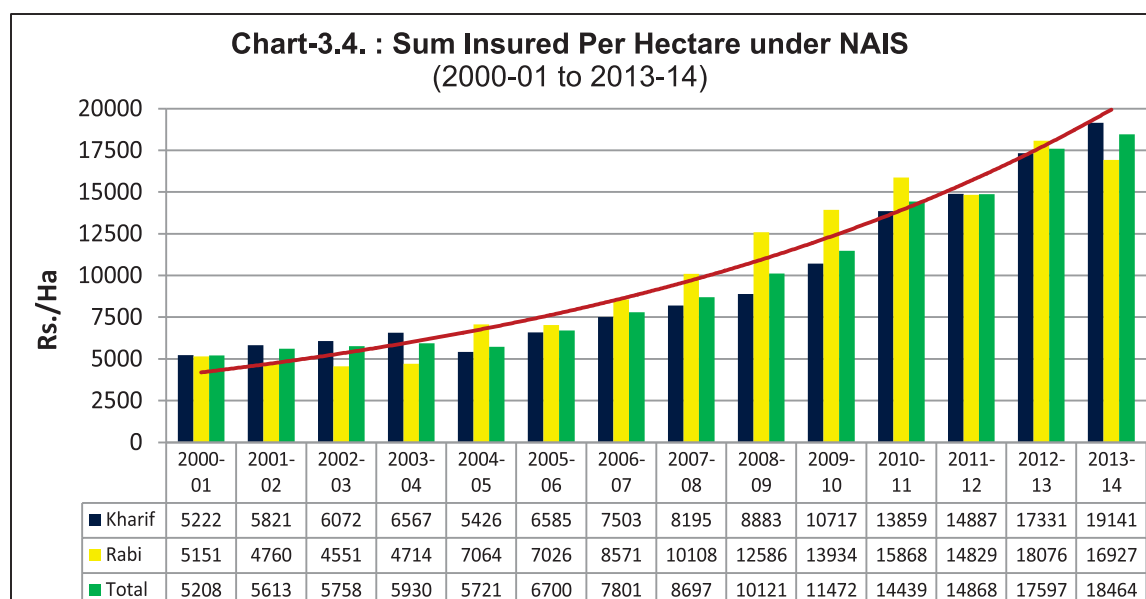
#### A Diagnosis of Low Spread of Crop Insurance

- 3.7 Farmers may be resource poor but they are rational. Yet, only one out of every five hectares, on an average, is covered under insurance, notwithstanding the fact that probability of occurrence of crop damage is quite high in India. Just to illustrate the point, there have been significant dips in foodgrains production 18 times during the last 54 years (1961-62 to 2014-15) due to aberrant weather conditions or natural calamities. That implies that likelihood of occurrence of crop damage is 33 percent or once every three years on an average. Low insurance cover in terms of area in the wake of clear evidence of high likelihood of crop loss bears a testimony to some flaws in the design of the crop insurance Schemes.
- 3.8 A litmus test for the success of any insurance product lies in fulfilling five important characteristics viz. **Adequacy** (of sum insured), **Affordability** (of farmers to pay premium), **Suitability** (customised according to needs), **Transparency** (in determining premium & claims) and **Timeliness** (in settlement of claims). If it lacks one or more of these, the product's ability to sell will be adversely affected.



### Adequacy

3.9 The Sum Insured (SI) under NAIS, WBCIS covers approximately the cost of production only and not the farmers' prospective incomes. Crops should be insured not just to cover the cost of inputs but SI should be approximately equal to its Gross Value of Output (GVO). The rationale behind covering GVO lies in enabling farmers to get the amount (claim from insurance cover in the event of damage of the crop) equivalent to the value of their crops when there is no loss. This will ensure that they are not distressed even if their crops are damaged. Therefore, SI ought to **determine** and **not be determined by the premium**. However, when the premium on SI works out to be higher than the farmers' propensity to pay, which happens in most cases, pricing of insurance premiums is capped. This leads SI being less than GVO. Though there is an upward trend in the SI over time, average SI still remains just about half of GVO (Chart-3.4). Against an average per hectare GVO of Rs. 41,442 (derived from National Accounts Statistics for foodgrains, oilseeds, sugarcane, cotton and jute crops for 2012-13) (rounded to Rs.41,000), average SI was little over Rs. 18000 per hectare in 2013-14. This is just an average insurance cover, implying thereby that many farmers get cover far less than their respective GVOs.



Source: CACP, using AIC data

### Affordability

3.10 Premiums on crop insurance have been capped in the range of 8 to 12 percent of SI, depending upon the crop and season. It is the least for rabi crops followed by kharif crops and commercial/horticulture crops. Even after capping the current rates of premiums under the mNAIS and WBCIS, these continue to be very high (Table-3.2).

**Table-3.2: Premium Charged under Crop Insurance**

S.No.	Season	Crops	Cap (%)	
			mNAIS	WBCIS
(1)	(2)	(3)	(4)	(5)
1	Rabi	Food and oilseeds	9%	8%
2	Kharif	Food and oilseeds	11%	10%
3	Annual crops	Commercial and horticulture crops	13%	12%

3.11 High premiums in India lead to low coverage, just 1 hectare out of every 5 hectares which makes it implausible for insurance companies to bring down the premium rates. These high premiums deter the farmers to get insurance cover and consequently the objective to **attain higher penetration** is not achieved. The country needs a major overhaul of the crop insurance system. To encourage farmers to take insurance cover on a mass scale, the government should lend an initial 'hand holding' by offering subsidy in premium. For instance, USA and China, the world's biggest crop insurers, support 70% and upto 80% of the premium respectively. Crop insurance subsidies being given by other countries are exhibited in Table-3.3.

**Table-3.3: Crop Insurance Subsidies in Various Countries**

S.No.	Country	Subsidy	Remarks
(1)	(2)	(3)	(4)
1	USA	38% to 80% (average 62% for 2013)	accounts for about 45% of global crop insurance premium
2	China	70% (average)*	accounts for about 20% of global crop insurance premium
3	Canada	56% (average)	accounts for about 5% of global crop insurance premium
4	Japan	50% for paddy & 55% for sugarcane +loss cap of 125%	accounts for about 5% of global crop insurance premium
5	Thailand	60% (average)	

*\*Upto 80 percent since 2013*

3.12 Given the fact that a majority of Indian farmers are resource poor, India too will have to pitch in heavily in the matter of payment of premium on crop insurance, on the lines of US and China. The biggest crop insurers in the world are the USA and China, having insured 120 million hectares and 73 million hectares respectively by 2013. They subsidise insurance premium to the extent of 80 percent (Table-3.3). If India too provides 80 percent of premium to be shared equally by the Centre and States, spread of insurance will be far and wide, say 50 percent of GCA. The empirical evidence shows that premium rates can decline drastically when insurance cover and geographical spread expands. Further, average SI ought to be approximately equal to Rs.41000 per hectare (para-3.9 refers). Taking these into consideration, premium payable by farmers after subsidies have been estimated under three alternative scenarios (Table-3.4).

**Table-3.4: Crop Insurance-Premium Payable by Farmers after Subsidies**

S.No.	Alternative Scenario	GCA to be Insured (Mha)	Estimated Gross Value of Output (Rs Crores)	Estimated Total Annual Premium (Rs Crores)	Centre's Subsidy (40% Subsidy) (Rs. Crores)	State's share (40% Subsidy) (Rs. crores)	Premium to be paid by Farmers (@20%) (Rs/ha)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Scenario-I (50% of GCA to be insured)	98	400263	14009	5604	5604	287
2.	Scenario-II (75% of GCA to be insured)	146	600394	18012	7205	7205	246
3.	Scenario-III (90% of GCA to be insured)	176	720473	19813	7925	7925	226

*Note: It is assumed that premium rates will come down to 3.5%, 3% and 2.75% in a phased manner under Scenario-I, II and III respectively.*

3.13 Based on assumption that premium rate will come down to 3.5 percent when 50 percent of GCA is insured, the premium will work out to Rs 14009 crore for 98 million hectares or Rs 1,435 per hectare. If 80 percent of premium is paid by way of subsidy (to be shared between the Centre and States), farmers' share of premium would be **Rs.287 per hectare** without taking recourse to scaling down the sum insured. As the scale of insured area increases, premiums rates will fall and consequently premium payable by farmers on per hectare basis will further decline.

### Suitability

#### i. Area Specific Approach

3.14 'One size fit all' defies suitability criteria. For instance, damage in Punjab has always been less than 10 percent in terms of yield. If indemnity is kept at 90% for Punjab also, there will not be any claim payable to them. This calls for 'customizing' the design of the product (crop insurance) so as to align with the needs of the area being insured.

## ii. Unbundling of risks

3.15 At present, a number of risks are bundled together while calculating the premium rate for a particular crop. Instead, the most critical risks associated with a particular crop should be identified first and the insurance product be designed accordingly. This will reduce the loading on premium, thereby reducing the premium rates. Other risks can be included as additional benefits with incremental premium. The feasibility of designing schemes covering limited but critical perils needs to be explored.

## iii. Season-wise Tenure of Insurance Companies Counter Productive

3.16 Under the present crop insurance system, districts are allocated through bids to insurance companies every season, creating uncertainty among insurers willing to invest in insurance education and awareness. Even those insurers who pay a large amount of claims in a particular season may not reap goodwill in the next season when they are allocated another district. The commission recommends that Insurance companies should be allocated districts for a minimum period of three years instead of one season, to remove uncertainties.

## Timeliness

3.17 The record of settling claims has been unimpressive so far. Insurance Companies wait till subsidy component of premium is remitted by the Government and results of CCEs are made available. The process of settling claims takes sometimes over a year, which shakes the confidence of farmers in the system of insurance, thereby defeating the very purpose of crop insurance. The time frame for disbursement of claims needs to be laid down, say within a month of damage, alongwith a suitable penalty clause in the policy itself for delay in settling the claims. Kenya, for instance, settles the claims within 4 days under '*Kilimo Salama*', a weather based insurance product.

3.18 An atlas of critical weather elements which trigger crop-yield losses in different crop growth periods should be developed for different agro-climatic regions. The process of settlement of claims in India can be hastened by deploying modern technology such as Drone technology in which robots fly at low heights, avoid clouds and capture images required for assessing crop damages and doves which fly near earth orbits can collect data required for estimating losses. Another way to capture details of crop losses is through satellite imageries. Once crop losses are assessed objectively, claims can be settled expeditiously through combination of Jan Dhan Yojana, farmers' Aadhar Cards, Mobile technology and Satellite imageries or its variant (JAMS).



### Transparency

3.19 The premium of Crop Insurance is determined by at least three factors namely risk, SI and administrative cost. As damage to crops is caused by natural factors and nature does not distinguish various crops by its value *per se*, probability of **occurrence of damage to a crop is independent of SI**. Then, **fixing premium in direct proportion to SI defies rationality**. Just as an analogy, railways fares are 'telescopic' in nature, so should the premium of crop insurance be.

3.20 It is hard for farmers to comprehend the premium in **percentage terms**. It is better to get the **premium payable translated into per hectare basis instead of percentage** and insurance companies be called upon to notify the premiums on per hectare basis.

3.21 A no claim bonus should be introduced to encourage farmers to participate in the Scheme as is done in most other general insurance policies.

### Recapitulation

3.22 Out of every 5 hectares of agri-land, only 1 hectare is covered under crop insurance. Given farmers are rational and probability of occurrence of crop damage as a result of exogenous shocks in the form of aberrant weather conditions or natural calamity is quite high at 33 percent, low level of acceptance of crop insurance does point to some flaws in the design of the crop insurance schemes. To enhance penetration of the crop insurance as a product, it should have five important characteristics viz. **Adequacy** (of sum insured), **Affordability** (of farmers to pay premium), **Suitability** (customised according to needs), **Transparency** (in determining premium & claims) and **Timeliness** (in settlement of claims). All these characteristics are missing in varying degrees. To enhance penetration of insurance cover, a participatory insurance model in which farmers pay 20 percent of the premium, which works out to Rs.287 per hectare on an average (excluding subsidy component), be propagated. So far, the record of settling claims is unimpressive. Insurance Companies wait till subsidy component of premiums is remitted by the Government and results of CCEs are made available. This takes about a year in many cases with the result that farmers lose faith and confidence in the crop insurance. As clients, farmers should own the 'cover' and thus demand for settlement of claims in a pre-determined time frame. Settling claims expeditiously is plausible through a combination of Jan Dhan Yojana, Aadhar number, Mobile Technology and Satellite Imageries or its variant (JAMS).

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## Chapter-4

# Productivity and Its Various Dimensions

## Chapter-4

- 4.1 The land and water are under increasing pressure due to rising demand of population. Productivity can play an important role in reducing the cost of production, releasing pressure on scarce natural resources and enhancing the profitability of the farmers. In this Chapter, analyses of land (both at district and state levels) and labour productivities have been undertaken, besides identifying drivers of the productivity and appraising efficiency gaps in productivity levels of major rabi crops in the country in relation to those of benchmark countries. To augment resource use efficiency, simulation model has been developed to incentivize farmers for every one-fourth percent point increase in oil content in the oilseed.

### Decadal Productivity Performance

- 4.2 The average decadal growth rates of area, production and productivity of various rabi crops during the decades of 1990s, 2000s and 2010s are given in the Table-4.1.

**Table-4.1: Annual Growth in Area, Production and Productivities of Various Rabi Crops, 1990s to 2010s**

(Percent)

S. No.	Crop	Area			Production			Productivity		
		1990s	2000s	2010s	1990s	2000s	2010s	1990s	2000s	2010s
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Wheat	1.6	0.4	1.3	4.5	0.8	2.5	2.9	0.3	1.1
2	Barley	-2.7	-1.0	1.8	0.6	0.4	4.3	3.2	1.3	2.5
3	Gram	0.9	3.5	1.3	3.9	6.0	1.2	3.0	1.5	0.0
4	Lentil #	2.9	0.3	2.2	5.4	0.2	0.1	2.2	-0.1	3.1
5	R & M	2.3	0.7	2.3	4.8	4.5	2.0	3.0	3.0	-0.7
6	Safflower	-3.9	-3.9	-12.6	7.2	-1.8	-16.8	14.2	1.9	-5.3

Source: DES, DAC, #Data for Lentil is upto 2013-14.

Note: 1990s, 2000s and 2010s refer to period 1990-91 to 1999-2000, 2000-01 to 2009-10 and 2010-11 to 2014-15 respectively.

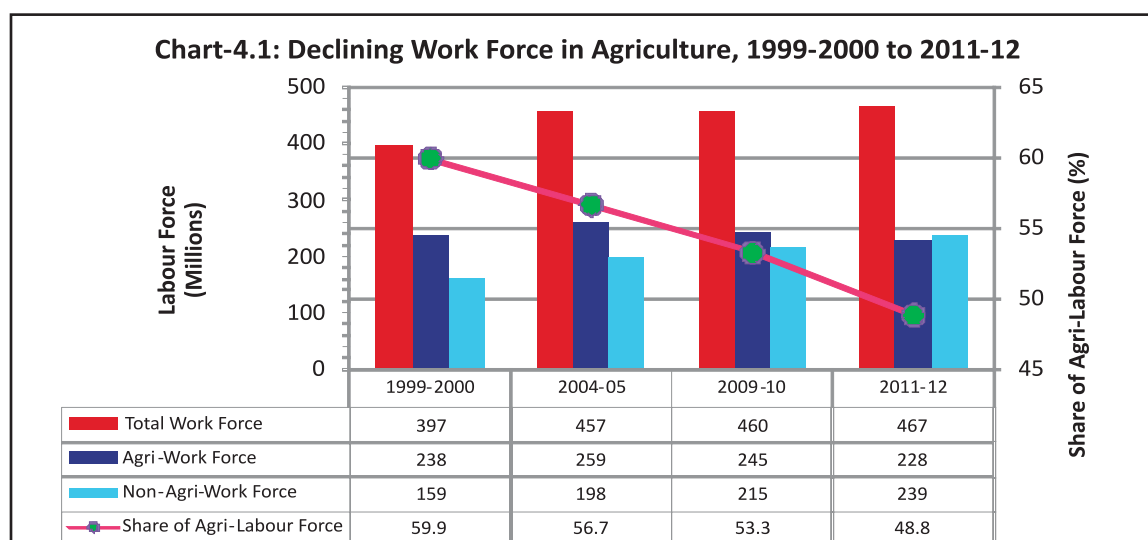
4.3 The following points emerge from the Table-4.1.

- i. The decadal growth rates of area and productivity of wheat and barley have improved in 2010s and have led to production growth rate of 2.5 percent p.a. in case of wheat and 4.3 percent p.a. in barley which are higher than those of previous decade.
- ii. In 2010s decade, area and productivity growth rates of gram have decelerated to 1.3 percent and zero percent respectively in comparison to 3.5 percent and 1.5 percent in the previous decade, resulting in deceleration in growth rate of production to 1.2 percent in 2010s from 6.0 percent in 2000s.
- iii. The lentil production growth rate dipped to 0.1 percent in 2010s which is resultant effect of shrinkage in area at 2.2 percent p.a. and acceleration in productivity at 3.1 percent p.a.

- iv. Though the area under the R&M increased at a rate of 2.3 percent during 2010s, negative productivity growth of 0.7 percent p.a. brought down the growth in production to 2.0 percent p.a. during this decade compared to 4.5 percent p.a. achieved during 2000s.
- v. Safflower production growth slipped to a negative 16.8 percent p.a in 2010s due to negative growth rates both in area and productivity to 12.6 percent p.a. and 5.3 percent p.a. respectively.
- vi. The productivities of cereals, pulses and oilseeds of rabi crops for the decades of 1990s, 2000s and 2010s are shown in the Annexure Charts-4.1 (a) to (c).

### Labour Productivity

- 4.4 Empirical evidence worldwide shows that workforce tends to move away from primary (agriculture) to secondary and tertiary sectors as economies develop. In India too, the agri-workforce has ebbed not just in relation to the total workforce from 60 percent in 1999-2000 to 49 percent in 2011-12 but also in absolute terms. For instance, the size of agri-workforce declined by 31 million during 2004-05 to 2011-12 against an increase by 10 million in the total workforce during the corresponding period (Chart-4.1). This implies that 44 lakh agricultural labourers, on an average, are migrating every year.



Source: CACP, using NSS data from its Various Reports.

- 4.5 Agri-work force which constitutes 49 percent of the total work force, contributes just 14 percent of National income (GDP) (Charts-1.3 and 4.1). This is a reflection of large gap between labour productivity of agricultural and non-agricultural sectors. Though the share of agri-work force has declined somewhat faster by 11 percent points compared to 9 percent points fall in agri-GDP during 1999-2000 to 2011-12, it is not fast enough. Low productivity of agriculture work force at 17 percent compared to that of non-agriculture places a stress on returns and overall well-being of farmers. To respond to this situation and make agriculture more profitable, two pronged strategy needs to be adopted. Firstly, traditional farming occupations ought to be replaced by widespread adoption of farm mechanization. For this purpose, a Scheme to develop a cooperative based 'Custom Hiring Model' under which a variety of machines for different farming operations be offered on rent. While doing this, care should be taken to customize the machines according to domestic requirement because imported machinery is not always suited for Indian crop architecture. Secondly, a Scheme for alternative avenues of employment for underemployed rural youth from agriculture to non-agriculture sector be formulated.
- 4.6 Labour productivity in agriculture is just about 17 percent compared to that of non-agriculture (Table-4.2) which implies that efficiency gap in agri-workforce is quite high at 83 percent and this explains low agri-wages in relation to wages in non-agriculture sectors. Relatively higher growth, rising opportunities and thus higher incomes in secondary and tertiary sectors (manufacturing and services) coupled with seasonal character of agricultural operations (where labourers remain unemployed during lean season) and the drudgery in agricultural occupations have contributed agri-workforce to shift away from the sector.



**Table-4.2: Low Labour Productivity in Agriculture**

S. N.	Parameter	2004-05	2011-12
(1)	(2)	(3)	(4)
1	GDP (Constant Prices) (Rs Crores), of which	3253073	5243582
i	Agri-GDP (constant prices) (Rs crores)	594487	739495
ii	Non-Agri. GDP (constant prices) (Rs crores)	2658586	4504087
2	Employment in Agri. sector (Crores)	26.3	22.8
3	Employment in non-agri-sectors (Crores)	19	23.9
4	Labour Productivity in agriculture sector (Agri-GDP per Capita) [ $\text{row } \{1(i)\} / \text{row}(2) * 100$ ] (Rs.)	22604	32434
5	Labour Productivity in non-agriculture sectors (GDP in non-agri sectors per capita) [ $\text{row } \{1(ii)\} / \text{row}(3) * 100$ ] (Rs.)	139926	188456
6	Agri-Labour Productivity as percent of non-agri-labour productivity (%) [ $\text{row } (4) / \text{row}(5) * 100$ ]	16.2	17.2

Source: National Accounts Statistics (NAS), CSO and NSSO

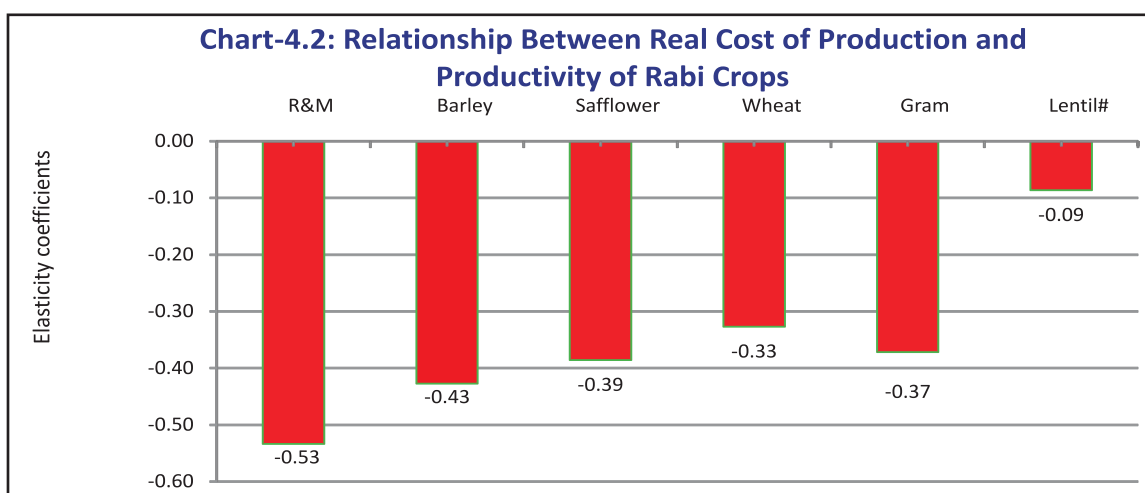
- 4.7 Human wages constitute 30 percent of total cost of cultivation and given that rural labour wages are rising in real terms, it can become an insurmountable problem in the foreseeable future. This will be exacerbated by faster increase in the cost of labour in relation to the cost of capital in near to medium run. To tackle this, traditional farming occupations need to be replaced by widespread adoption of farm mechanization. The role of farm mechanization ought to go beyond tractorization with emphasis on optimal use of inputs and more innovations in the pre-harvest and post-harvest operations. Some of important farm mechanization tools that can increase the speed of operations and reduce the requirement of agri-labour are given in Table-4.3.

**Table-4.3: Agricultural Operations and Farm Mechanization**

S.N.	Agricultural Operations	Farm Machines
(1)	(2)	(3)
i.	Land development, tillage, seed bed preparation	Tractors, Laser Levelers, Ploughs, Dozers and Scrapers
ii.	Sowing and Planting	Drill, Seeder, Planter, Dibber and transplanter
iii.	Weeding, inter cultivation, plant protection	Harrow, Tiller, Sprayer
iv.	Harvesting and Threshing	Harvester, Thresher, Reaper and Sheller

#### Relationship Between Cost of Production and Productivity Levels

- 4.8 To analyse the relationship between real cost of production (CoP) and productivity levels, scatter diagrams and trend on the basis of panel data were drawn. These diagrams indicate an inverse relationship between the real CoP and productivity {Annexure Chart-4.2 (a) to 4.2(f)}.
- 4.9 To estimate the magnitude of impact of increase in productivity on CoP, regression model between CoP and productivity have been fitted on the panel data (across states over time 1999-00 to 2013-14) and the results are depicted in the Chart-4.2.



Source: CACP, using DES data, # Not significantly different from zero.

- 4.10 From the Chart-4.2, it is deduced that CoP can be reduced in the range of 3 to 5 percent in case of wheat, barley, gram, safflower and R&M with 10 percent increase in productivity of the crop. In case of lentil, it is statistically not significant.

### Drivers of Yield

- 4.11 Having established an inverse relation between the cost of production and productivity levels, the question arises as to what drives the productivity. To identify drivers of the productivity, a simple linear regression analysis on the panel data for 2000-2001 to 2013-14 has been undertaken and elasticities of productivity are estimated (Table-4.4).

**Table-4.4: Drivers of Productivity of Various Crops**

S.No.	Crop	Elasticity			
		Gross Returns in preceding year at constant prices (2013-14)	Fertilizer	Seed	Manure
(1)	(2)	(3)	(4)	(5)	(6)
1	Wheat	0.312*	0.456*	0.342*	0.014*
2	Barley	0.189*		0.668*	
3	Gram	0.155*	0.137*	0.409*	
4	Lentil		0.176*		
5	R & M		0.566*		
6	Safflower	0.285*			

Source: CACP, using DES data.

(\*) connote that the relevant elasticities are statistically significant at 95% level of confidence.

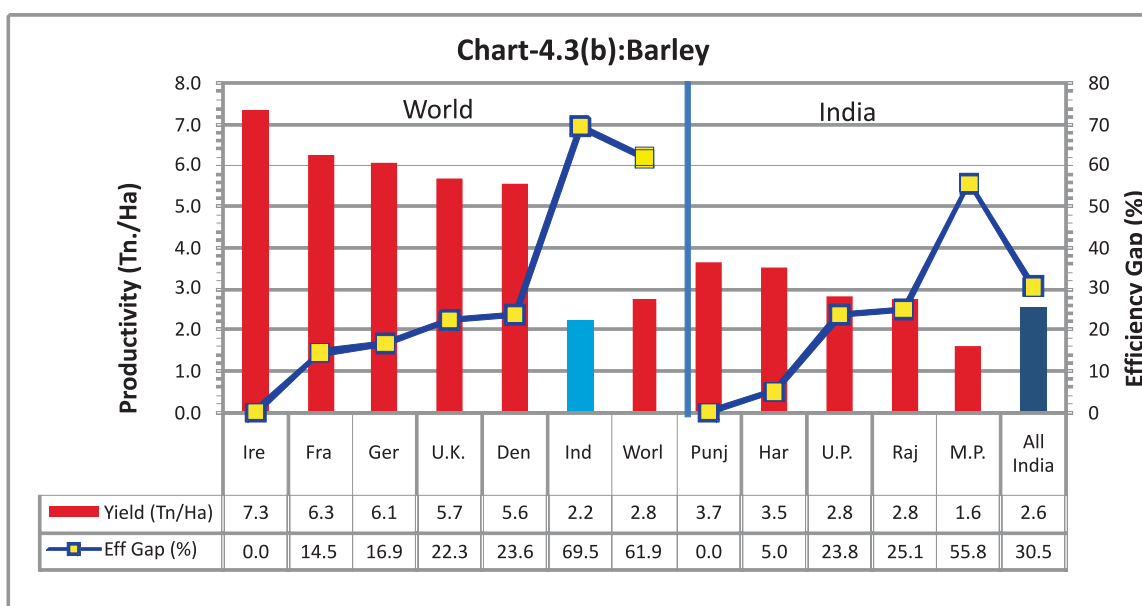
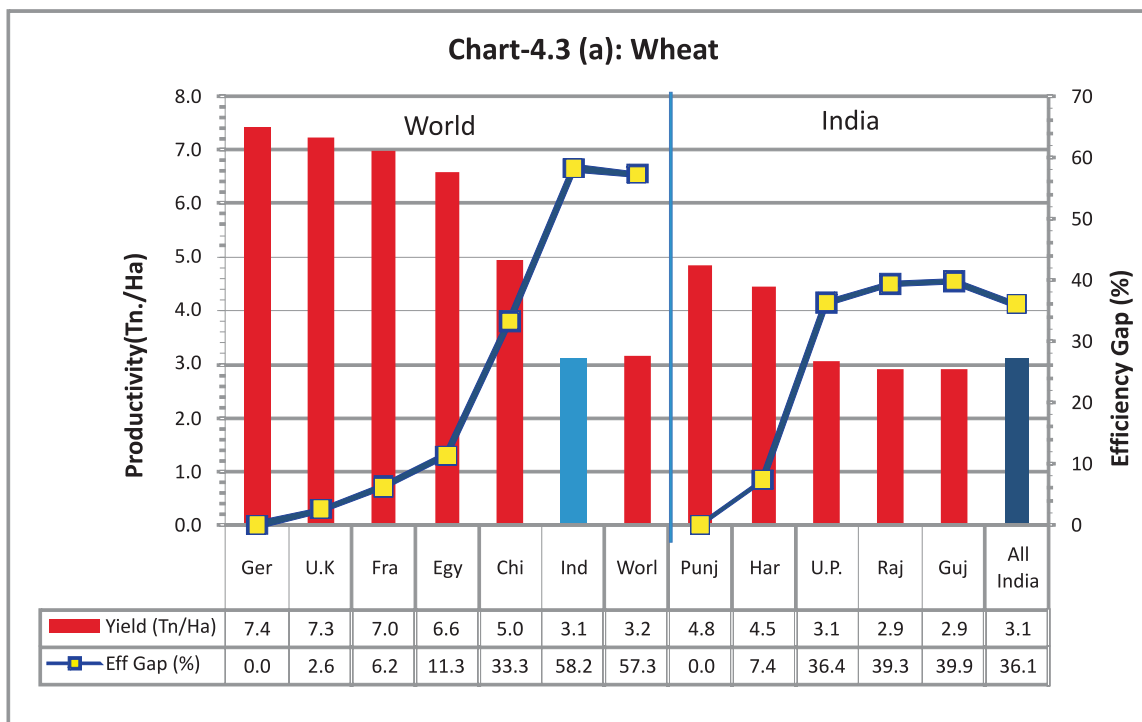
Blank cells indicate that the corresponding variable was not found appropriate to explain variability in productivity.

- 4.12 The solution to bring the production cost down lies in increasing the productivity levels which are far below the existing potential. Therefore, it is recommended to ensure supply of good quality of seeds and fertilizers timely as well as increase the investments in irrigation infrastructure which will go a long way in augmenting productivity and bring down the cost of production.

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

- 4.13 Having appraised the productivity levels within the country, an attempt has been made to compare crop-wise productivity of different crops in India with Benchmark countries for various crops as also with the benchmark states of India. Such gaps in the productivities are measured as efficiency gaps. The efficiency gaps in the productivities of different rabi crops of benchmarking country and India as well as benchmarking state and India for TE 2013-14 are shown in the Annexure Table-4.1.
- 4.14 It may be seen from the Annexure Table-4.1 that efficiency gaps between the productivities of India and benchmarking country have been as high as 68 percent in lentil to 54 percent in gram. But such efficiency gaps narrow down when the productivities of the benchmarking state are compared with those of India. The efficiency gaps in the productivities of benchmarking state with those of India are in the range of 36 percent in wheat to low of 8 percent in safflower. Envisioning the efficiency gaps would enable the country to gain greater competitiveness by setting out the targets in benchmarking productivity standards of the crops. Productivity levels of the relevant crops of benchmarking countries and of states along with their shares in production are depicted in Charts-4.3(a) to 4.3(f).

Charts-4.3 (a) to (f): Benchmarking of Productivity across Countries and States in India,  
TE 2013-14



Productivity and Its Various Dimensions

## Productivity and Its Various Dimensions

Chart-4.3(c):Gram

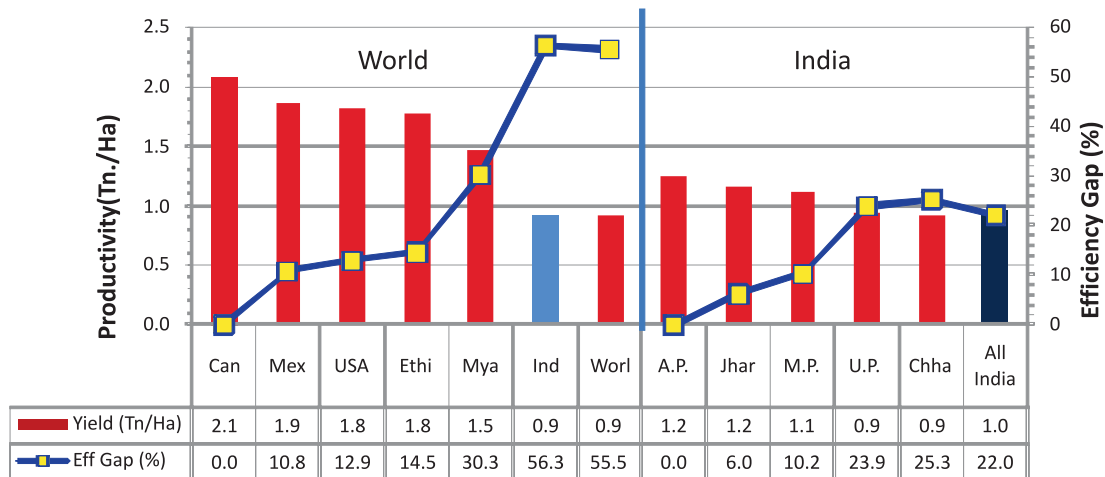
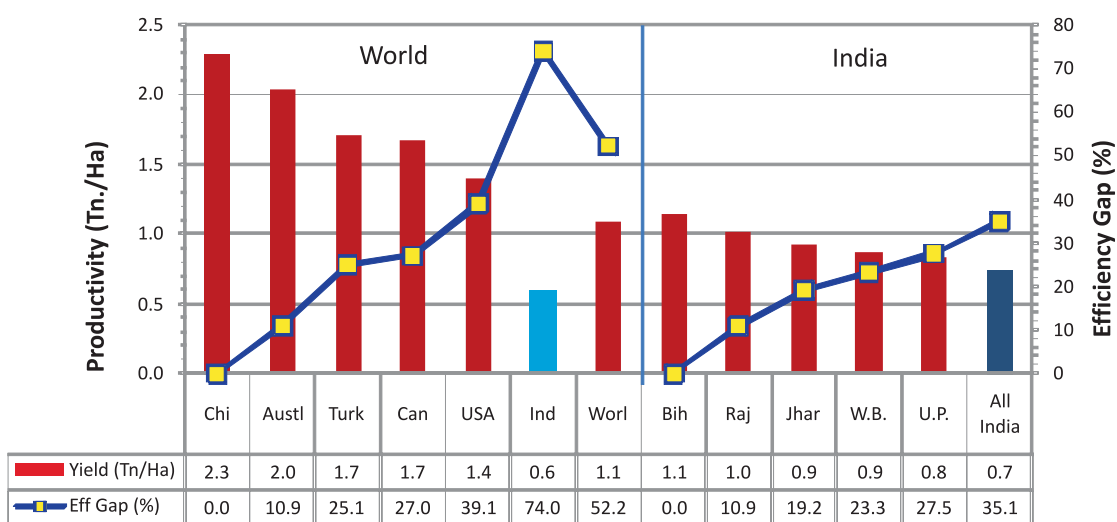
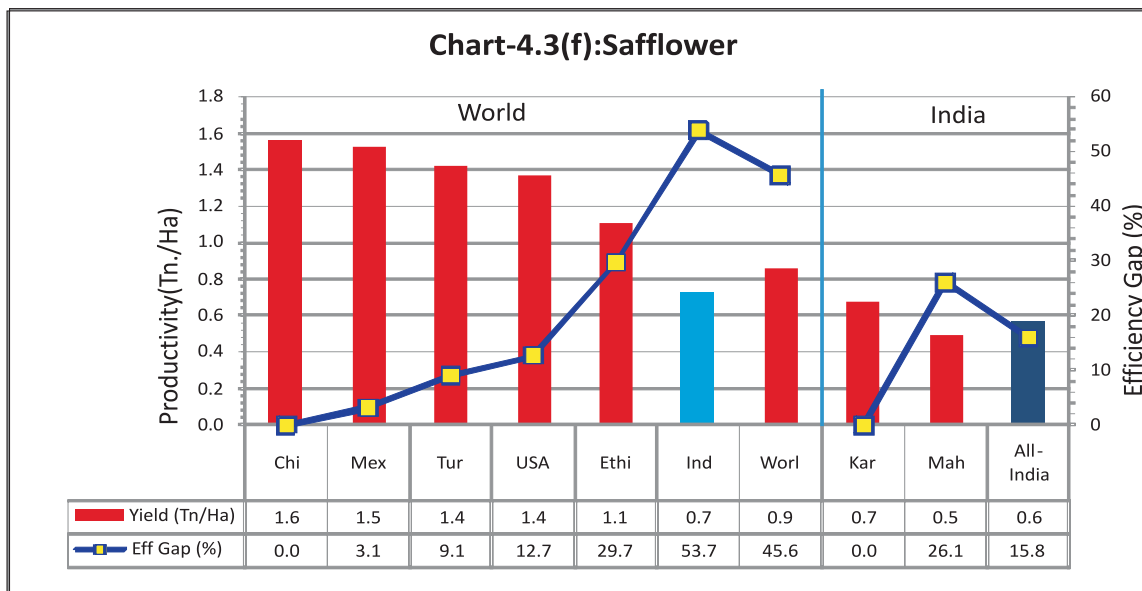
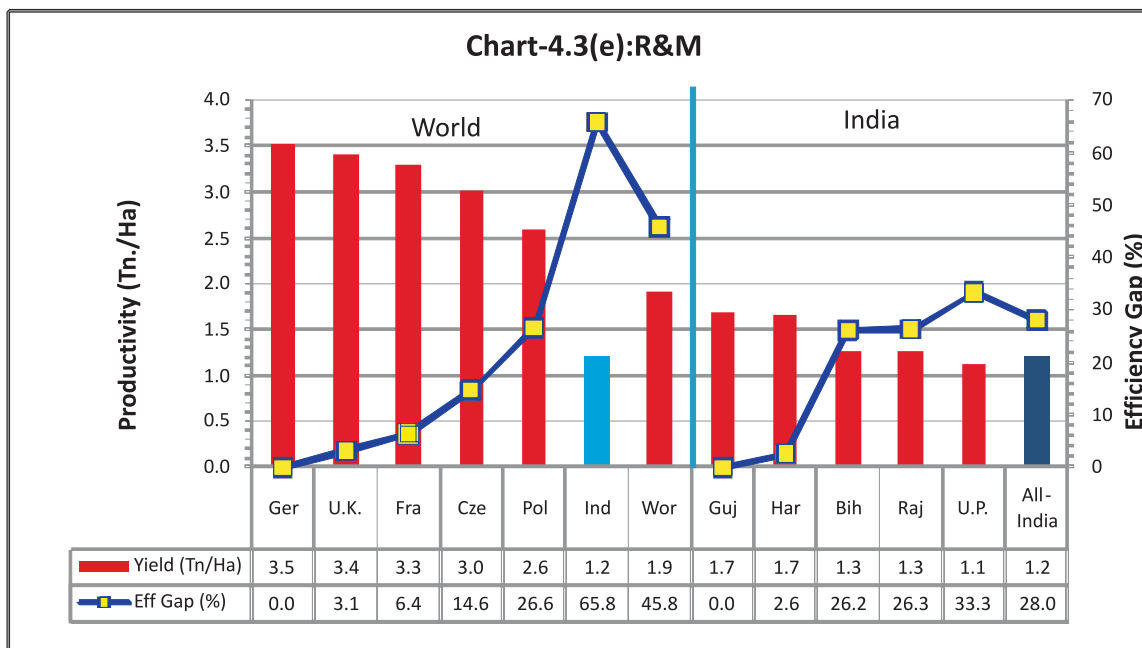


Chart-4.3(d):Lentil







Note: Countries' FAO Data are for TE 2013

State wise Data are for TE 2014-15, DES (except Lentil which is for TE 2013-14)

Source: CACP, using DES and FAO data.

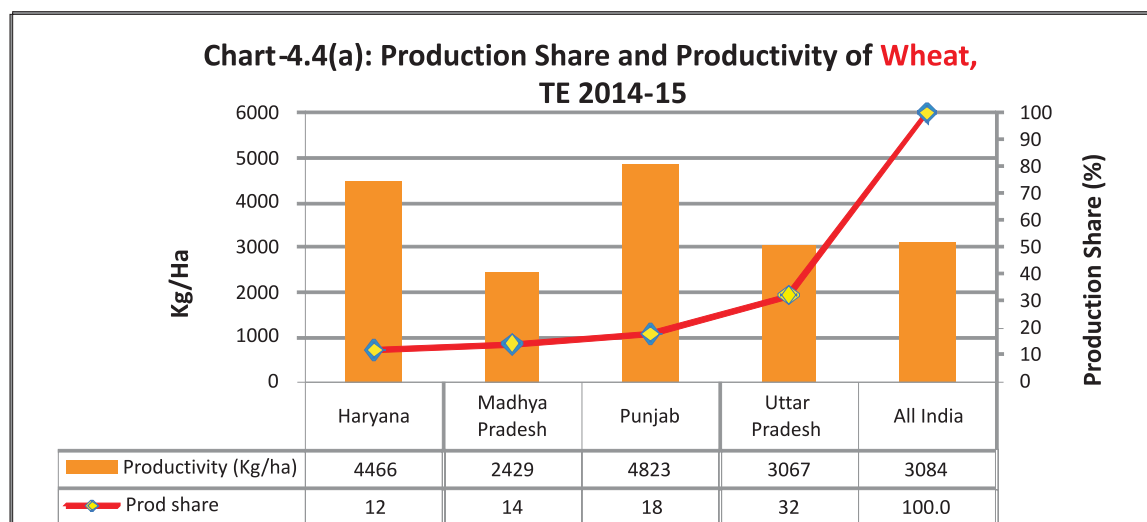
Productivity and Its Various Dimensions

### District-wise and State-wise Productivity Levels of Major Rabi Crops

4.15 To appraise the productivity at district level, these have been arranged in ascending order of the major producing States, made yield bands based on 'intelligible differentia' and then worked out area coverage corresponding to each yield band. 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.

#### (i) Wheat

4.16 The four major wheat growing States Haryana, Madhya Pradesh, Punjab and Uttar Pradesh contribute more than 76 percent of the total production in the country as per TE 2014-15. The production share and productivities of the major wheat growing States are shown in the Chart-4.4(a).



Source: CACP using DES data.

4.17 The district-wise productivity levels of major producing states of wheat based on analysis are shown in the Table-4.5 (a).

**Table-4.5(a): District-wise Productivity Levels of Wheat, TE 2014-15**

S. No	Yield Band (Kgs/Ha.)	Haryana		M.P. *		Punjab		U.P. *	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Up to 2000	-	-	27.34	9	-	-	1.65	1
2	2001-3000	-	-	52.21	23	-	-	26.86	16
3	3001-4000	10.93	2	12.22	5	-	-	50.93	31
4	4001-5000	88.39	18	-	-	66.53	15	0.80	1
5	above 5000	-	-	-	-	32.27	6	-	-
Summary Indicators of Land Productivity	Total Area ('000 ha)	2512		5190		3508		9768	
	Max Yield (Kgs/Ha.)	4881		3603		5408		4042	
	Top 3 distts. In descending order of Yields	Sirsa, Fatehabad and Karnal		Sheopur, Indore and Mandsaur		Sangrur, Moga and Ferozepur		Meerut, Bulandshahar and Agra	
	Area under top 3 distts (%) (highest yield levels)	25.9		5.1		18.5		4.2	
	Minimum Yield. (Kgs/Ha.)	3777		1478		4152		1968	
	Distt. Having Min. Yield.	Rohtak		Damoh		Gurdaspur		Banda	
	Share of Area under Min. Yield (%)	4.1		1.6		5.2		1.6	
	Average Yield (Kgs/Ha.)	4466		2429		4823		3067	
	Efficiency Gap (%)	8		33		11		24	

Source: CACP, using DES and Concerned State Governments' data, \* Data pertains to 2013-14

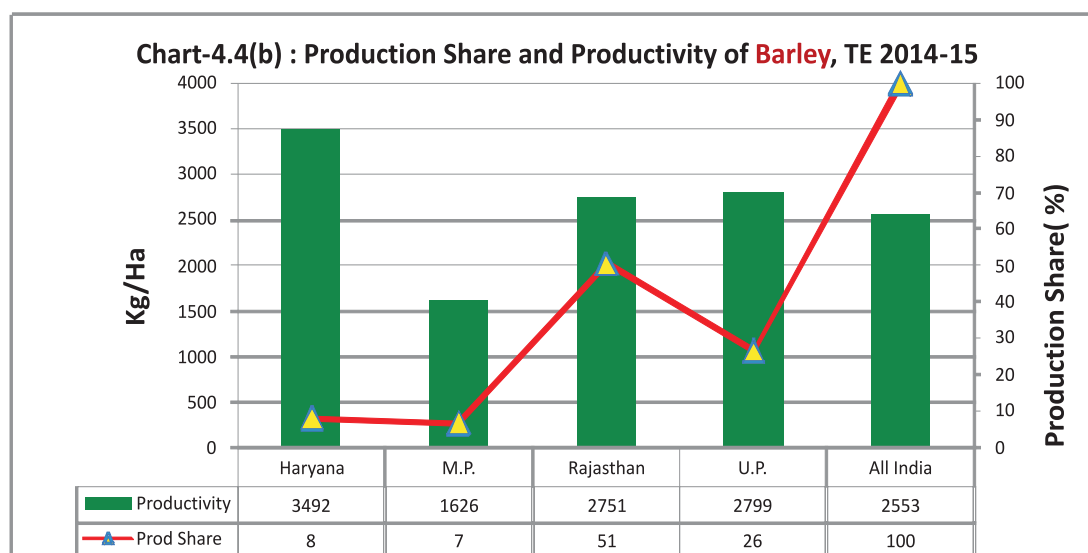
Note: Districts which contribute less than 1% share in total production have not been considered.

Productivity and Its Various Dimensions

- 4.18 Punjab has the highest average productivity of 4823 kg/ha and its 67 percent area has yield in the band of 4001-5000 kg/ha and 32 percent in 'above 5000 kg/ha' band {Table-4.5(a)}. Haryana has the average productivity of 4466 kg/ha as it has about 11 percent and 88 percent area under the yield bands of 3001-4000 kg/ha and 4001-5000 kg/ha respectively. Madhya Pradesh with 27 percent and 52 percent area in the yield bands of below 2000 kg/ha and 2001- 3000 kg/ha respectively has the average productivity of 2429 kg/ha. Uttar Pradesh with average productivity of 3067 kg/ha has 51 percent area concentrated in the yield band of 3001-4000 kg/ha.

(ii) Barley

- 4.19 The four major barley growing States Haryana, Madhya Pradesh, Rajasthan and Uttar Pradesh contribute 92 percent of the total production in the country. The production share and productivities of the major barley growing States are shown in the Chart-4.4(b).



Source: CACP, using DES data

- 4.20 The productivity levels of major producing states of barley based on district-wise analysis are shown in the Table-4.5 (b).

**Table-4.5(b): District-wise Productivity Levels of Barley, TE 2014-15**

S.No.	Yield Band (Kgs/Ha.)	Haryana		M.P. *		Rajasthan		U.P. *	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Up to 1000	-	-	7.02	1	-	-	-	-
2	1001-2000	-	-	73.41	8	2.16	1	15.38	4
3	2001-3000	5.00	2	2.81	2	48.90	8	41.93	17
4	3001-4000	92.50	10	12.43	4	40.40	5	30.87	10
5	above 4000	5.00	1	-	-	2.21	1	-	-
Summary Indicators of Land Productivity	Total Area ('000 ha)	40		84		319		161	
	<b>Max Yield (Kgs/Ha.)</b>	4333		3598		4393		3311	
	Top 3 distts. In descending order of Yields	Gurgaon, Sirsa and Fatehabad		Neemuch, Datia and Gwalior		Dausa, Hanumangarh and Ganganagar		Etah, Bulandshahar and Aligarh	
	Area under top 3 distts (%) (highest yield levels)	25.8		6.1		25.2		11.4	
	<b>Minimum Yield. (Kgs/Ha.)</b>	3000		920		1592		1505	
	Distt. Having Min. Yield.	Palwal		Rewa		Churu		Sonbhadra	
	Share of Area under Min. Yield (%)	2.5		7.0		2.2		4.9	
	<b>Average Yield (Kgs/Ha.)</b>	3492		1626		2751		2799	
	Efficiency Gap %	19		55		37		15	

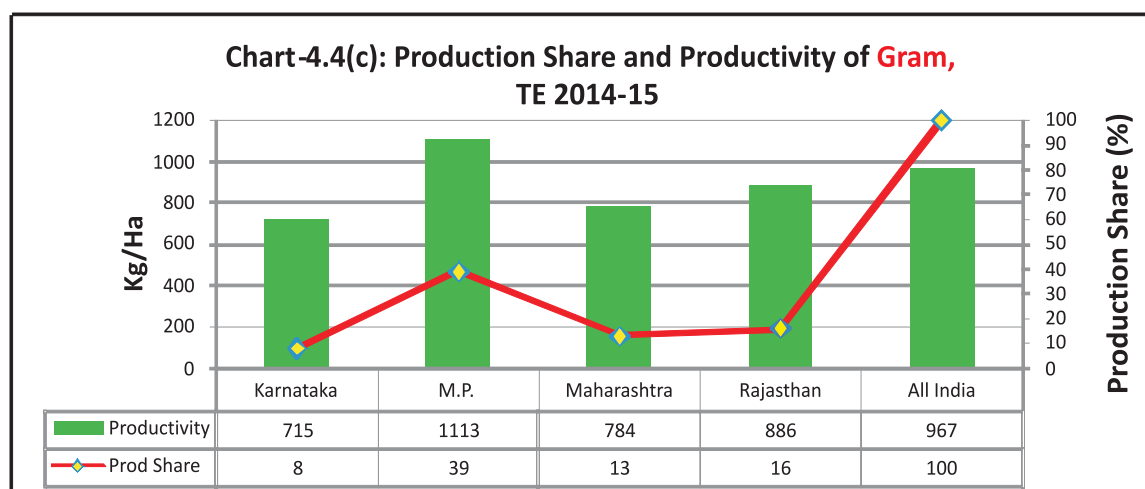
Source: CACP, using DES and Concerned State Governments' data, \* Data pertains to 2013-14

Note: Districts which contribute less than 1% share in total production have not been considered.

- 4.21 Haryana has the highest average productivity of barley at 3492 kg/ha and its 93 percent area is in the yield band of 3001-4000 kg/ha and another 5 percent in 'above 4000 kg/ha' {Table-4.5(b)}. Rajasthan has the average productivity of 2751 kg/ha as it has roughly 89 percent and 2 percent area under the yield bands of 2001-4000 kg/ha and above 4000 kg/ha respectively. Madhya Pradesh with its 80 percent and 15 percent area under the yield bands of upto 2000 kg/ha and 2001-4000 kg/ha respectively has the average productivity 1626 kg/ha. Uttar Pradesh with 2799 kg/ha productivity has 57 percent area under yield bands 1001-3000 kg/ha and 31 percent area under 3001-4000 kg/ha yield band.

(iii) Gram

- 4.22 The four major gram growing States Karnataka, Madhya Pradesh, Maharashtra and Rajasthan contribute 76 percent of the total production in the country. The production share and productivities of the major gram growing States based on TE 2014-15 are shown in the Chart-4.4(c).



Source: CACP, using DES data

- 4.23 The productivity levels of major producing states of gram based on district-wise analysis are shown in the Table-4.5(c).



**Table-4.5(c): District-wise Productivity Levels of Gram, TE 2014-15**

S.No	Yield Band (Kgs/Ha.)	Karnataka*		M.P.*		Maharashtra		Rajasthan	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Up to 500	24.65	4	-	-	3.90	1	15.81	1
2	501-1000	73.18	8	26.46	7	84.28	22	44.58	7
3	1001-1500	-	-	59.95	19	9.49	2	35.98	13
4	1501-2000	-	-	0.83	1	-	-	-	-
5	above 2000	-	-	1.72	1	-	-	-	-
Summary Indicators of Land Productivity	Total Area ('000 ha)	905		3111		1429		1558	
	Max Yield (Kgs/Ha.)	846		2865		1054		1497	
	Top 3 distts. In descending order of Yields	Raichur, Gulbarga and Bellary		Chhindwara, Harda and Guna		Amaravati, Dhule and Jalgaon		Jaipur, Sawai Madhopur and Dausa	
	Area under top 3 distts (%) (highest yield levels)	36.1		5.4		12.5		10.4	
	Minimum Yield. (Kgs/Ha.)	417		558		494		293	
	Distt. Having Min. Yield.	Gadag		Satna		Beed		Churu	
	Share of Area under Min. Yield (%)	8.8		2.9		3.9		15.8	
	Average Yield (Kgs/Ha.)	715		1113		784		886	
	Efficiency Gap (%)	15		61		26		41	

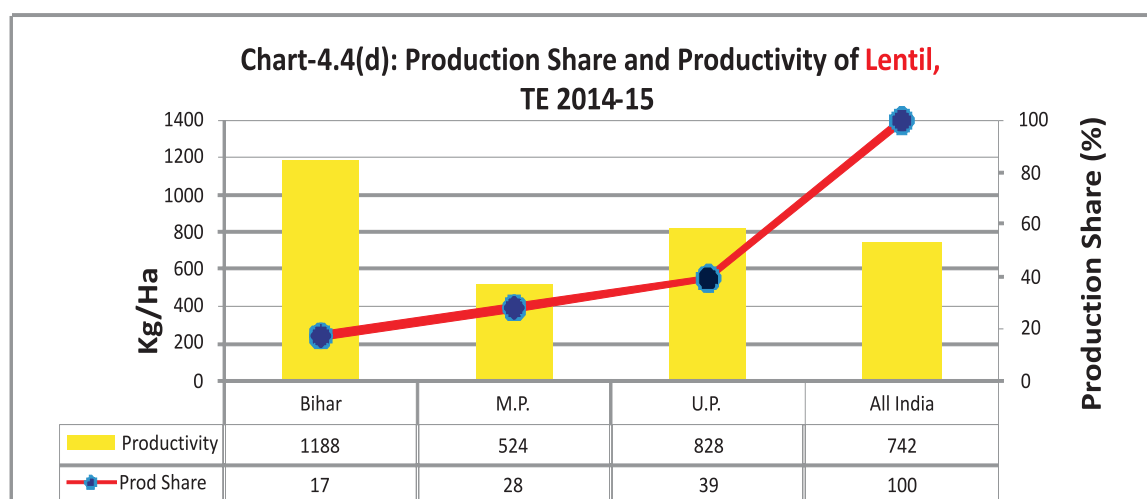
Source: CACP, using DES and Concerned State Governments' data, \* Data pertains to 2013-14

Note: Districts which contribute less than 1% share in total production have not been considered.

- 4.24 Madhya Pradesh has the highest average productivity of gram at 1113 kg/ha and its 60 percent area is in the band 1001-1500 and another 3 percent in the bands 1501-2000 kg/ha & 'above 2000 kg/ha' {Table-4.5(c)}. Rajasthan has the average productivity of 886 kg/ha and has 81 percent and 16 percent area in the yield bands of 501-1500 kg/ha and 'upto 500 kg/ha' respectively. Maharashtra with 84 percent and 9 percent area in the yield bands of 501-1000 kg/ha and 1001-1500 kg/ha respectively has the average productivity 784 kg/ha. Karnataka with average productivity of 715 kg/ha has 73 percent area in the bands 501-1000 kg/ha and 25 percent area under 'upto 500 kg/ha'.

(iv) Lentil

- 4.25 The three major lentil growing states Bihar, Madhya Pradesh and Uttar Pradesh contribute 84 percent of the total production in the country. The production share and productivities of the major lentil growing states are shown in the Chart-4.4(d).



Source: CACP, using DES data, Data for MP & UP pertain to TE 2013-14

- 4.26 The productivity levels of major producing states of lentil based on district-wise analysis are shown in the Table-4.5 (d).

**Table-4.5(d): District-wise Productivity Levels of Lentil, TE 2014-15**

S.No	Yield Band (Kgs/Ha.)	Bihar		M.P. *		U.P. *	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Up to 500	-	-	41.49	8	-	-
2	501-1000	19.69	6	50.63	14	79.72	21
3	1001-1500	63.47	15	0.47	1	11.29	6
4	above 1500	6.90	1	-	-	-	-
Summary Indicators of Land Productivity	Total Area ('000 ha)	158		574		506	
	Max Yield (Kgs/Ha.)	1559		1144		1445	
	Top 3 distts. In descending order of Yields	West Champaran, Lakhisarai and Patna		Bhopal, Ashoknagar and Singrauli		Budaun, Ballia and Bareilly	
	Area under top 3 distts (%) (highest yield levels)	28.4		5.28		5.32	
	Minimum Yield. (Kgs/Ha.)	924		305		563	
	Distt. Having Min. Yield.	Aurangabad		Satna		Chitrakut	
	Share of Area under Min. Yield (%)	9.0		0.5		3.7	
	Average Yield (Kgs/Ha.)	1188		524		828	
	Efficiency Gap (%)	24		54		43	

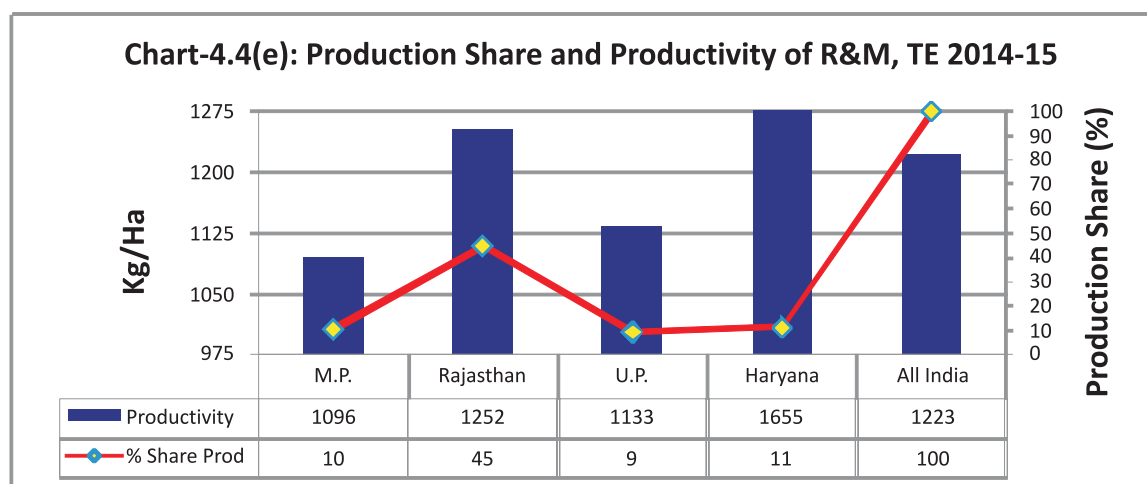
Source: CACP, using DES and Concerned State Governments' data, \* Data pertains to 2013-14

Note: Districts which contribute less than 1% share in total production have not been considered.

- 4.27 Bihar has the highest average productivity of lentil at 1188 kg/ha and 64 percent area is in the yield band of 1001-1500 kg/ha, 20 percent in 501-1000 kg/ha and 7 percent in 'above 1500 kg/ha' band. Uttar Pradesh has the average productivity of 828 kg/ha and has about 80 percent and 11 percent area under the yield bands of 501-1000 kg/ha and 1001-1500 kg/ha respectively. Madhya Pradesh with its 41 percent and 51 percent area in the yield bands of 'upto 500' kg/ha and 501-1500 kg/ha respectively has the average productivity 524 kg/ha.

(v) Rapeseed and Mustard

- 4.28 The four major R&M growing States Haryana, Madhya Pradesh, Rajasthan and Uttar Pradesh contribute 75 percent of the total production in the country. The production shares and productivities of the major R&M growing States are shown in the Chart-4.4(e).



Source: CACP, using DES data

- 4.29 The productivity levels of major producing states of R&M based on district-wise analysis are shown in the Table-4.5 (e).

**Table-4.5(e): District-wise Productivity Levels of R&M, TE 2014-15**

S.No	Yield Band (Kgs/Ha.)	Haryana		MP*		Rajasthan		UP*	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.	Area (%)	No. of Distts.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	0-500	-	-	3.33	1	-	-	-	-
2	501-1000	-	-	13.75	4	2.77	1	32.54	13
3	1001-1500	2.22	1	61.83	5	97.23	23	20.00	9
4	1501-2000	94.07	9	6.79	2	-	-	26.75	8
Summary Indicators of Land Productivity	Total Area ('000 ha)	541		777		2852		654	
	Max Yield (Kgs/Ha.)	1833		1916		1475		1818	
	Top 3 distts. In descending order of Yields	Rewari, Gurgaon and Fatehabad		Ratlam, Mandasaur and Sheopur		Karauli, Bharatpur and Dausa		Kasganj, Etah and Agra	
	Area under top 3 distts (%) (highest yield levels)	16.9		13.4		14.7		11.5	
	Minimum Yield. (Kgs/Ha.)	1417		466		927		612	
	Distt. Having Min. Yield.	Rohtak		Tikamgarh		Pali		Barabanki	
	Share of Area under Min. Yield (%)	2.2		3.3		2.8		3.3	
	Average Yield (Kgs/Ha.)	1655		1096		1252		1133	
	Efficiency Gap (%)	10		43		15		38	

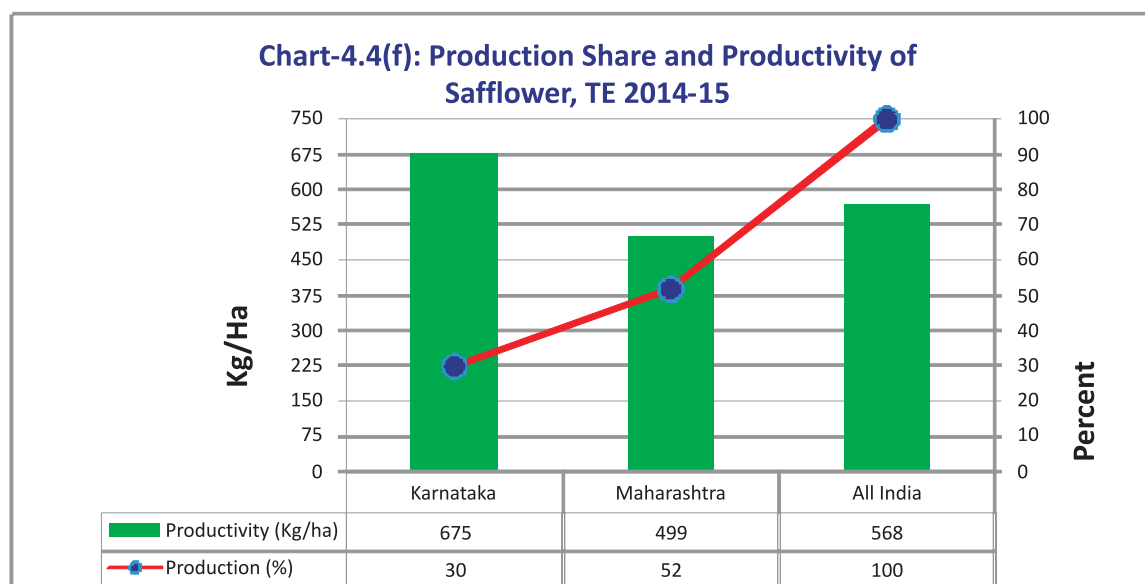
Source: CACP, using DES and Concerned State Governments' data, \* Data pertains to TE 2013-14

Note: Districts which contribute less than 1% share in total production have not been considered.

- 4.30 Haryana has the highest average productivity of R&M at 1655 kg/ha and has 94 percent area in the yield band 1501-2000 kg/ha {Table-4.4(e)}. Rajasthan has productivity of 1252 kg/ha as its 97 percent area is under 1001-1500 kg/ha and remaining 3 percent in 501-1000 kg/ha yield bands. Uttar Pradesh has 27 percent area in the yield band 1501-2000 kg/ha, another 20 percent in the band of 1001-1500 kg/ha with average productivity of 1133 kg/ha. Madhya Pradesh with average yield of 1096 kg/ha has 62 percent area in the yield bands 1001-1500 kg/ha.

(vi) Safflower

- 4.31 The two major safflower growing states Karnataka and Maharashtra contribute 82 percent of the total production in the country. The production share and productivities in the major safflower growing states are shown in the Chart-4.4(f).



Source: CACP, using DES data

- 4.32 The productivity levels of major producing states of safflower based on district-wise analysis are shown in the Table-4.5 (f).



**Table-4.5(f): District-wise Productivity Levels of Safflower, TE 2014-15**

S.No	Yield Band (Kgs/Ha.)	Karnataka		Maharashtra	
		Area (%)	No. of Distts.	Area (%)	No. of Distts.
(1)	(2)	(3)	(4)	(5)	(6)
1	Upto -400	19.35	2	25.00	2
2	401-600	24.66	2	44.41	4
3	601-800	16.76	4	25.19	3
4	above 800	37.65	3	1.41	2
Summary Indicators of Land Productivity	Total Area ('000 ha)	46		99	
	<b>Max Yield (Kgs/Ha.)</b>	1031		1111	
	Top 3 distts. In descending order of Yields	Bidar, Gulbarga and Koppal		Buldhana, Jalna and Beed	
	Area under top 3 distts (%) (highest yield levels)	37.6		4.0	
	<b>Minimum Yield. (Kgs/Ha.)</b>	222		381	
	Distt. Having Min. Yield.	Bijapur		Osmanabad	
	Share of Area under Min. Yield (%)	10.3		21.8	
	<b>Average Yield (Kgs/Ha.)</b>	675		499	
	Efficiency Gap (%)	37		55	

Source: CACP, using DES and Concerned State Governments' data, \* Data pertains to 2013-14

Note: Districts which contribute less than 1% share in total production have not been considered.

- 4.33 Karnataka has productivity of 675 kg/ha and 54 percent area is in the yield bands of 600 to 800 kg/ha and 'Above 800 kg/ha' while remaining 44 percent is in the bands 401-600 kg/ha and below {Table-4.5(f)}. In comparison, Maharashtra has 27

percent and 69 percent area in the yield bands of more than 600 kg/ha and below 600 kg/ha with average productivity of 499 kg/ha.

- 4.34 It merges from the district-wise analyses that certain districts have significantly higher yields compare to their respective state averages. The districts of Sangrur, Moga and Ferozpur in Punjab for wheat; Gurgaon, Sirsa and Fatehabad in Haryana for barley; Chhindwara, Harda and Guna in Madhya Pradesh for gram; West Champaran, Lakhisarai and Patna in Bihar for lentil; Rewari, Gurgaon and Fatehabad in Haryana for R&M; and Bidar, Gulbarga and Koppal in Karnataka for safflower have significantly higher productivities in their respective states. Many of these districts within a state are neighbouring districts. While these districts may have certain advantage in terms of natural endowment, they could be following different farming practices and applying better inputs which needs to be explored separately. The role of soil health becomes important in respect of using the inputs to get better productivities. Therefore, it is imperative to study these districts in greater detail 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 across the states as well as within the states.
- 4.35 In contrast, the districts which have the lowest productivity in respective states are Gurdaspur for wheat, Palwal for barley, Satna for gram, Aurangabad for lentil, Pali for R&M and Bijapur for safflower have the lowest productivities. The intra-state efficiency gaps in the major producing states have also been wide and these are 33 percent, 55 percent, 61 percent, 54 percent and 43 percent in wheat, barley, gram, lentil and R&M respectively in Madhya Pradesh only, and 55 percent in safflower in Maharashtra.
- 4.36 In order to reduce the cost and augment the productivity at district levels, Village Level Support Centre (VLSC) should be developed by the State Governments in consultation with PRIs which can be entrusted with dissemination of services ranging from modern scientific cultivation practices, improved seed varieties, soil testing and markets besides resource conservation technology (RCT) such as zero tillage and farm mechanisation. Timely planting with no tills or surface seeding

lowers the cost, improves productivities of crops and saves water and crop residues from burning. This can be achieved by way of strengthening and modernizing the extension services.

### Incentivizing Efficiency: Linking MSP of R&M with Oil Content

- 4.37 Based on sound economic principle, MSPs of oilseeds ought to have an explicit and direct relation with its 'oil content'. To augment resource use efficiency, the Commission is of the considered opinion that farmers be incentivized for higher 'oil content'. On the basis of detailed discussions held with various stakeholders such as cultivators of oilseeds (R&M and also Sunflower), processors, scientists of ICAR, the Commission had recommended in its reports on 'Price Policy for Rabi Crops: The Marketing Season 2015-16', 'Price Policy for Kharif Crops: The Marketing Season 2015-16', submitted in July, 2014 and March 2015 respectively, to link MSP of R&M and sunflower to its oil content. This recommendation based on sound economic principle was not accepted on both the occasions simply on the ground of 'non-availability' of the requisite equipment.
- 4.38 The Commission had visited Bharatpur (Rajasthan, the major R&M producing state) once again in July 2015. It was found that farmers' seeds are purchased at prevailing market rates if its oil content is 40 percent. If oil content is less than this level, proportionate deductions are made from the price payable to sellers (farmers). Although fixing price corresponding to 40 percent oil content is quite high which needs to be fixed at 35 percent, this also shows that oil content is measurable and indeed it is measured in some mandis. All that is required to take measures to make this equipment available across most mandis so as to introduce objectivity and incentivize efficiency.
- 4.39 An apparatus to measure oil content in oilseeds is not highly sophisticated and is currently used, albeit on a limited scale. The Commission is aware of the fact that such equipments are not commonly seen in mandis/procurement centres, possibly due to less demand. However, this should not be construed as its non-availability. It is not known whether DAC explored the possibility with manufacturers of such

equipments to make these available. The Commission recommends that the Government explore the possibility of supply of the equipment, if not already done, by reputed manufacturers and lend initial 'hand holding' to NAFED /procurement centres/ FCI (they have been recently authorized to procure oilseeds) to enable them to acquire/purchase the equipment so as to ensure that MSP of R&M seeds is linked to its 'oil content' from ensuing rabi season. This will go a long way in augmenting resource use efficiency.

- 4.40 To incentivize farmers for their efforts to improve 'oil content' in R&M seeds beyond 35 percent, scale of incentive for higher 'oil content' needs to be determined cogently. To arrive at this in an objective manner, 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 cake at Rs. 1980/ql and MSP at Rs.3350/ql. (being recommended in this report), he will realize Rs.1287 ( $\text{Rs.1980} \times 0.65$ ) from the cake. Thus, the cost of this raw material (conceptually, oil component but without cake) would be Rs. 2063 ( $\text{Rs.3350} - 1287$ ) which will contain 35 kgs of oil. Thus, the cost per kg (which is nothing but 1 percent) of oil will be Rs. 58.94 or Rs.14.74 for every 0.25 percent point {Table-4.6 (abridged version), details in Annex Table-4.2}.

**Table-4.6: 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/q= Rs. 1980 {col(3)*Price of Oil cake}/100	Cost of Oil Content i.e. oilseeds without cake (Rs/ctl.), assuming MSP/ctl.= 3350 MSP-Col(4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (Rs/ctl.) {col(5)/col(2)}*0.25	MSP 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	1287	2063	14.74	3350
2	35.25	64.75	1282	2068	14.67	3365
3	35.50	64.50	1277	2073	14.60	3379
4	35.75	64.25	1272	2078	14.53	3394
5	36.00	64.00	1267	2083	14.46	3409
6	42.00	58.00	1148	2202	13.10	3739
7	43.00	57.00	1129	2221	12.92	3791
8	44.00	56.00	1109	2241	12.73	3843
9	45.00	55.00	1089	2261	12.56	3893
10	46.00	54.00	1069	2281	12.40	3943
11	47.00	53.00	1049	2301	12.24	3993
12	48.00	52.00	1030	2320	12.09	4041
Average increase in MSP with 0.25 percent increase in oil content					13.27	

- 4.41 However, cost per unit of oil content slowly decreases with increase in 'oil content'. To illustrate, it is Rs. 14.74 for every 0.25 percent point when 'oil content' is 35 percent and decreases to Rs.12.09 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. 13.27/ctl. The Commission, therefore, recommends that MSP be increased by Rs. 13.27/ctl. 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 not only incentivize 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.

### Recapitulation

- 4.42 To recapitulate, the following points emerge from the analysis:
- i. Agri-work force which constitutes 49 percent of the total work force, contributes just 14 percent of National income. This is a reflection of large gap between labour productivity of agricultural and non-agricultural sectors. Low productivity of agriculture work force at 17 percent compared to that of non-agriculture places a stress on returns and overall well-being of farmers. To respond to this situation and make agriculture more profitable, two pronged strategy needs to be adopted. Firstly, traditional farming occupations ought to be replaced by widespread adoption of farm mechanization by developing a cooperative based 'Custom Hiring Model'. Secondly, a Scheme for alternative avenues of employment for underemployed rural youth from agriculture to non-agriculture sector be formulated.
  - ii. To augment the resource use efficiency, MSP of R&M be linked to the basic 'oil content' of 35 percent. For every 0.25 percent point increase beyond this level, the MSP be increased by Rs.13.27/ quintal so as to incentivise the farmers to invest in technology. The Government should lend initial hand holding to NAFED/ FCI/ other procurement centres to acquire or purchase the requisite equipments to objectively measure oil content.
  - iii. There is need to study the farming practices of the benchmarking countries and emulate those practices in our country, subject to adaptability so as reduce the cost of production, increase profitability of the farmers.
  - iv. In order to reduce the cost of production, augment the productivity and enhance competitiveness, Village Level Support Centre (VLSC) should be developed by the State Governments in consultation with PRIs. Timely planting with no tills or surface seeding lowers the cost, improves productivity of crops.

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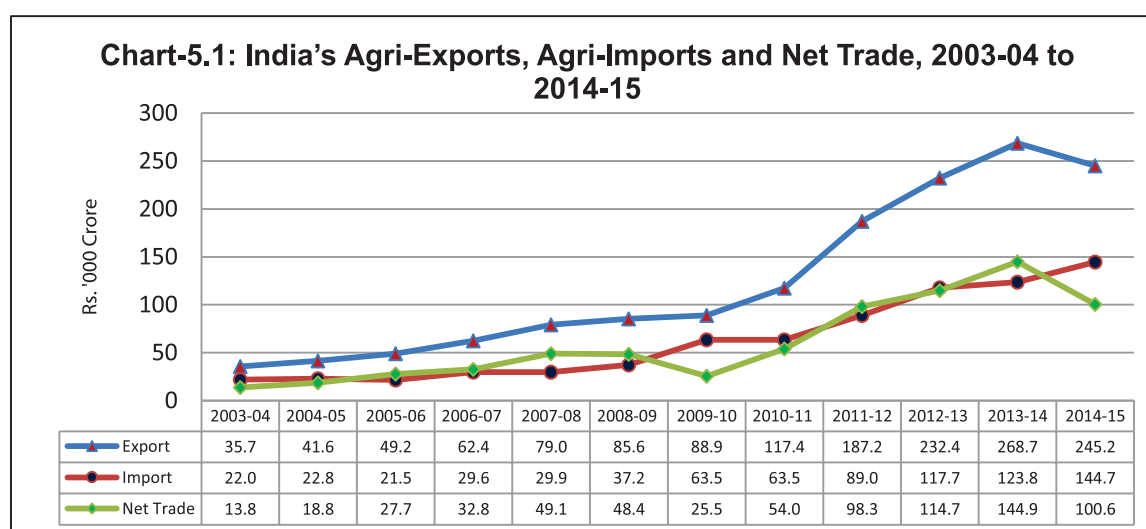


## Chapter-5

# Trade Competitiveness of Indian Agriculture

### Trade Performance

5.1 India has experienced decline in its agri-exports whereas agri-imports have increased during the year 2014-15. Its agri-exports have declined from Rs.268728 crores in 2013-14 to Rs.245229 crores in 2014-15 [decline of (-) 8.7 percent] whereas agri-imports have increased from Rs.123830 crores in 2013-14 to Rs.144658 crores in 2014-15 with a growth rate of 16.8 percent. The main reason behind decline in agri-exports is fall in international prices of agricultural commodities during the corresponding period. However, India continues to be a net exporter of agri-commodities whereas it is net importer in overall trade. Its net trade has increased from Rs.13757 crores in 2003-04 to Rs.100571 crores in 2014-15 (Chart-5.1).



Source: DGCIS

5.2 The share of agri-exports in total exports has increased from 10.5 percent in 2009-10 to a high of 14.2 percent in 2012-13 before declining to 13.9 percent in 2013-14 and 12.7 percent in 2014-15. However, the share of agri- imports in total imports has declined from 4.7 percent in 2009-10 to 3.8 percent in 2010-11 but subsequently increased to 4.6 in 2013-14 and 5.3 percent in 2014-15.

5.3 Our major agri-export commodities are rice, marine products, meat & meat preparations, cotton and guar gum meal, whereas major agri-import commodities are edible oils, pulses and wood & wood products. Major agri-commodities which have achieved considerable growth in exports in 2014-15 are oilseeds (35.9 percent), meat & meat preparations (10.9 percent), marine products (10.0 percent), cashew & cashew nut shell liquid (9.5 percent) and castor oil (7.9 percent). However, exports of some agri-commodities have declined in 2014-15. These include oil meals [(-) 52.4 percent], cotton [(-) 47.9 percent], wheat [(-) 46.4 percent], poultry & dairy products [(-) 42.3 percent], sugar [(-) 25.8 percent] and guar gum meal [(-) 19.2 percent]. In value terms, rice continues to be India's highest agri-export item followed by marine products and meat & meat preparations both in 2013-14 and 2014-15. India is the biggest importer of edible oils and pulses in the world. Import of edible oils was 104.7 lakh tonnes valued at Rs.56844 crores in 2013-14 which has increased to 127.0 lakh tonnes valued at Rs.64894 crores in 2014-15. As regards pulses, imports were 35.3 lakh tonnes valued at Rs.12352 crores in 2013-14 which increased to 45.7 lakh tonnes valued at Rs.16960 crores in 2014-15.

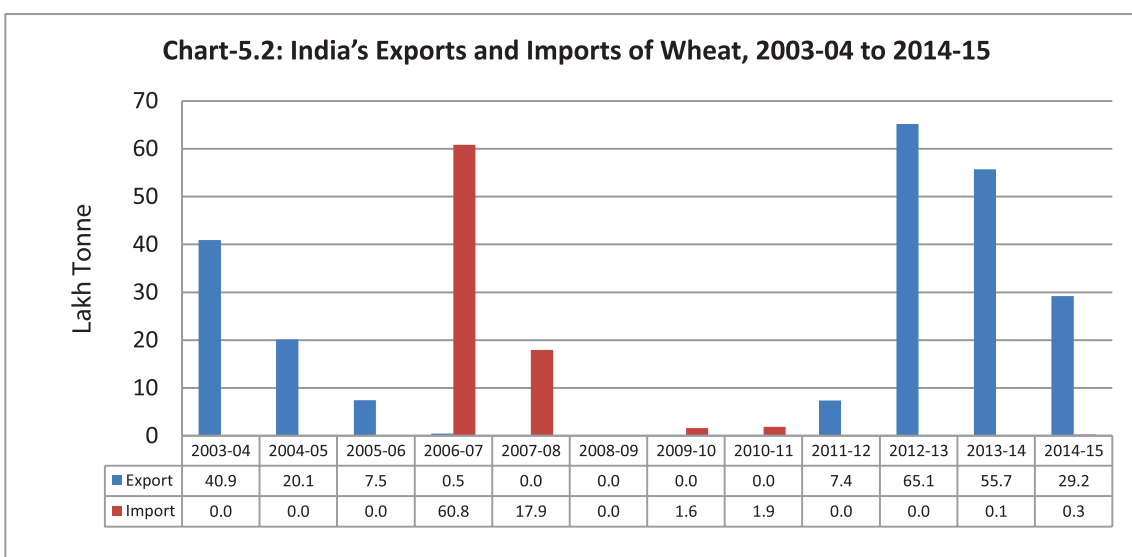
#### Cereals

##### i. Wheat

5.4 Global production of wheat, as per USDA, was 700.6 million tonnes in TE 2014-15 out of which about 22 percent was traded. EU is the largest producer of wheat with a share of 20.7 percent in the global wheat production followed by China (17.6 percent) and India (13.5 percent). EU is the largest exporter of wheat in the world with a share of 18.9 percent followed by USA (17.5 percent) and Canada (13.7 percent). Other major exporters are Australia (12.1 percent), Russia (10.9 percent)

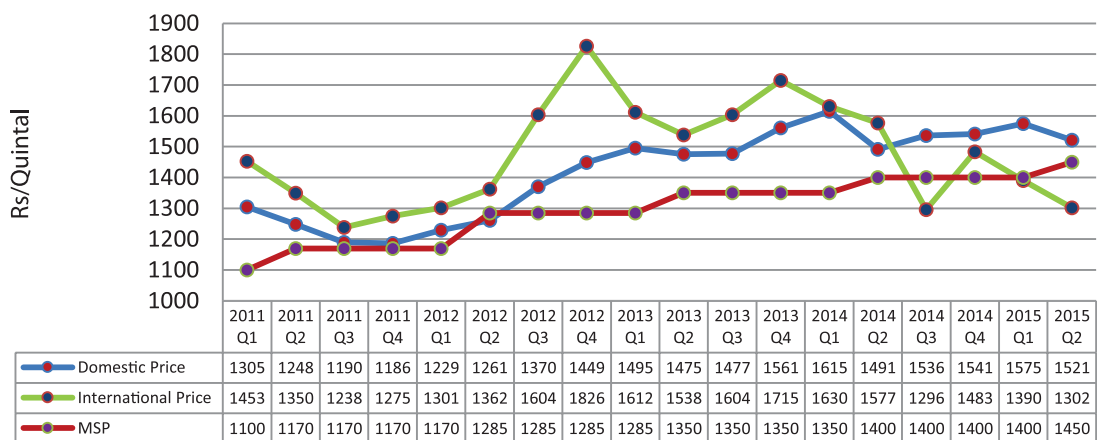
and Ukraine (6.0 percent). India's share was 3.4 percent in global exports of wheat in TE 2014-15. Egypt with a share of 6.3 percent, Indonesia (4.7 percent), Algeria (4.5 percent), Brazil (4.4 percent), Iran (4.0 percent) and Japan (3.9 percent) are the major importers of wheat, accounting for about 28 percent of global imports in TE 2014-15.

- 5.5 As per DGCIS, the exports of wheat were 40.9 lakh tonnes in 2003-04 which declined to 20.1 lakh tonnes in 2004-05, 7.5 lakh tonnes in 2005-06 and 0.5 lakh tonnes in 2006-07. However, the Government prohibited exports of wheat from Central Pool in August, 2003 because of decline in wheat production in 2002-03 due to draught in 2002. Exports on private account were also prohibited in February, 2007 and so there were no exports during 2007-08 to 2010-11. The ban on export of wheat was lifted in September, 2011 when export of 20 lakh tonnes 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 export of wheat under OGL was allowed. India's exports of wheat during 2011-12 were only 7.4 lakh tonnes which increased to record exports of 65.1 lakh tonnes in 2012-13 (Chart-5.2). However, its exports declined to 55.7 lakh tonnes in 2013-14 which further declined to 29.2 lakh tonnes in 2014-15. Domestic wholesale prices, international prices and MSP of wheat may be seen at Chart-5.3.



Source: DGCIS

**Chart-5.3 : Prices (Domestic and International) and MSP of Wheat, 2011(Q<sub>1</sub>) to 2015(Q<sub>2</sub>)**



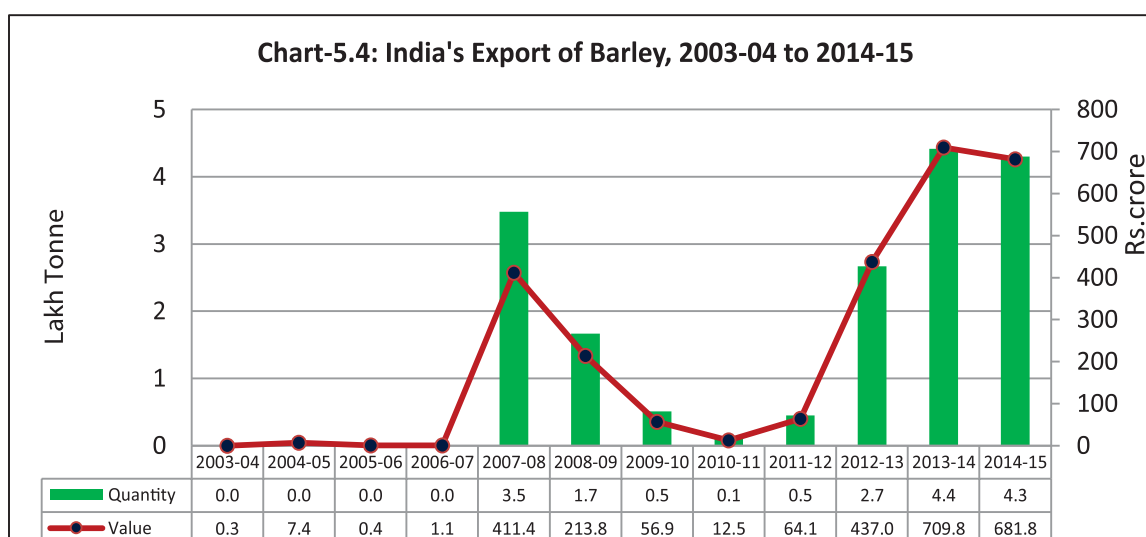
Source: World Bank for International Prices and DES for domestic prices.

- 5.6 India's imports were nil or negligible during 2003-04 to 2014-15 except 2006-07 and 2007-08 when 60.8 lakh tonnes and 17.9 lakh tonnes respectively were imported. The import duty on wheat was reduced from 50 percent to 5 percent in June, 2006 and further reduced to zero in September, 2006 which continues to be the same till date.

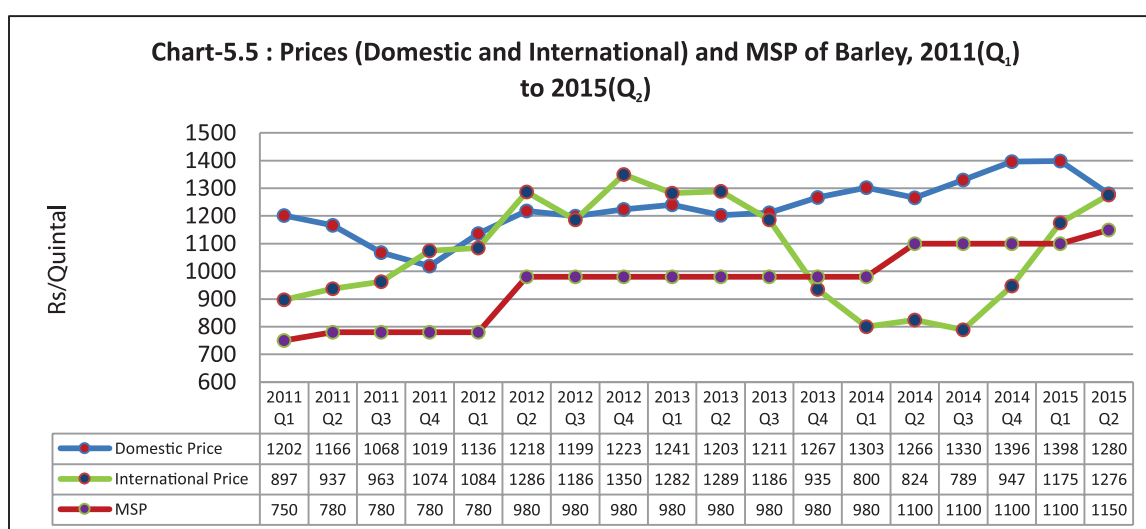
## ii. Barley

- 5.7 Global production of barley, as per USDA, was 138.7 million tonnes in TE 2014-15 out of which about 17 percent was traded. EU is the single largest producer with a share of 42 percent in global production. Other major producers are Russia (11.9 percent), Canada (6.1 percent), Australia (6.0 percent) and Ukraine (5.8 percent). EU is the largest exporter with a share of 28.0 percent followed by Australia (22.9 percent), Russia (13.7 percent), Ukraine (12.8 percent) and Argentina (11.3 percent). Saudi Arabia is the largest importer with a share of 35.3 percent followed by China (21.1 percent), Japan (5.5 percent) and Iran (5.2 percent).
- 5.8 India's exports of barley have increased from negligible quantity to a high of 4.4 lakh tonnes in 2013-14 before declining to 4.3 lakh tonnes in 2014-15 (Chart-5.4). Quantitative ceiling on exports was removed in March, 2002 and since then exports

continue to be free. Import was made free in November, 2002 and continues to be so till date. Though domestic wholesale prices are generally higher than the international prices, India exports barley to countries like Iran, Jordan, UAE, Oman, Qatar, Bhutan and Pakistan where it enjoys a freight advantage over major barley exporting countries like Australia, EU, Russia, Ukraine, Argentina and Canada. Domestic wholesale prices, international prices and MSP of barley may be seen at Chart-5.5.



Source: DGCIS

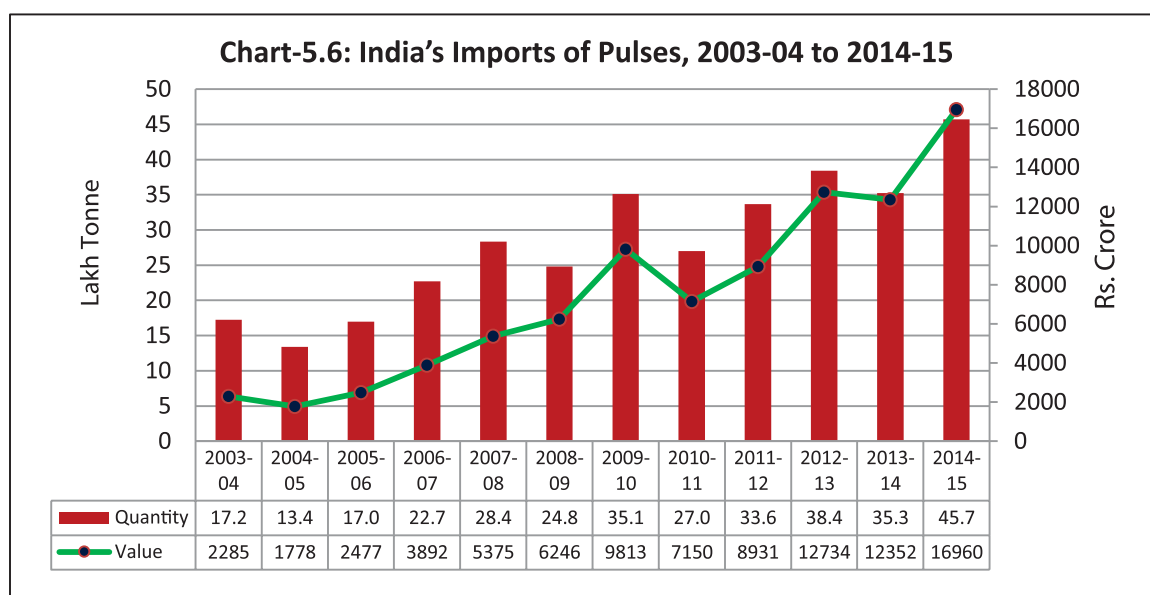


Source: World Bank for International prices and DES for domestic prices.



## Pulses

- 5.9 As per FAO, the global production of total pulses was 72.3 million tonnes in TE 2013, out of which about 19 percent is traded. India is the largest producer of pulses in the world with a share of 24.3 percent. Other major producers are Myanmar (7.3 percent), Canada (7.1 percent), China (6.3 percent), Nigeria (4.6 percent), EU (4.3 percent) and Australia (4.2 percent). Canada is the largest exporter with a share of 29.9 percent followed by Australia (11.6 percent), Myanmar (9.7 percent) and EU (9.2 percent). India is the largest importer with a share of 27.3 percent. India's imports of pulses have increased from 13.4 lakh tonnes in 2004-05 to a record high of 45.7 lakh tonnes in 2014-15 (Chart-5.6).



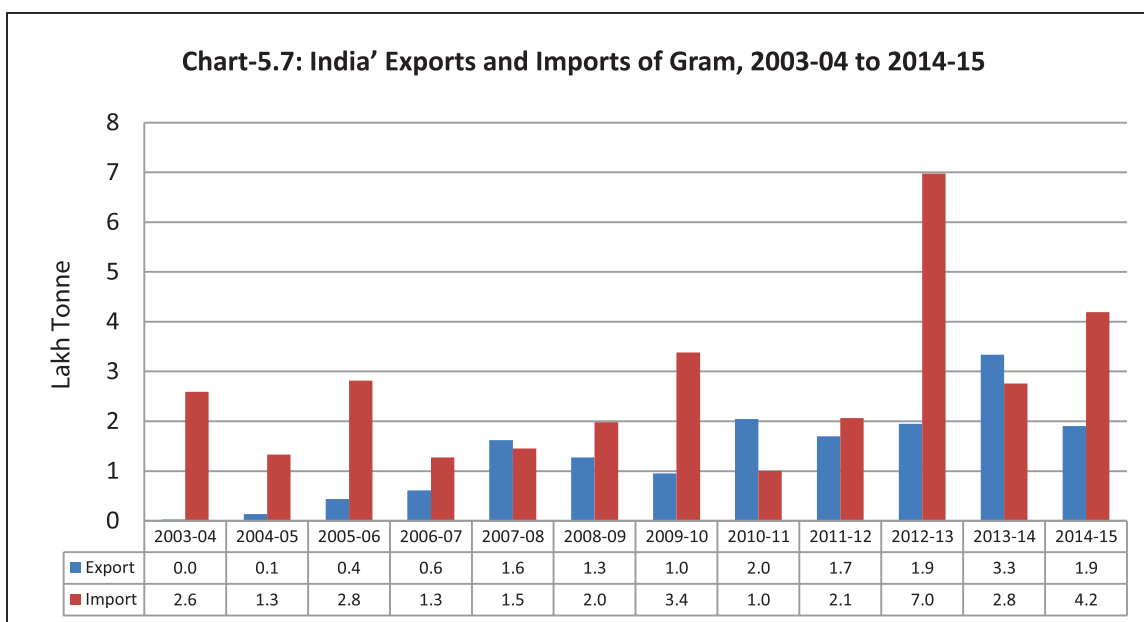
Source: DGCIS

- 5.10 Export of pulses was prohibited in June, 2006, initially for a period of six months which has been extended from time to time, the latest being in March, 2014. However, Kabuli Channa is exempted from this prohibition. Also, exports of organic pulses upto 10,000 tonnes per annum have been allowed since March, 2011, subject to certification by APEDA and such exports are allowed from Customs EDI ports only.



### i. Gram (Chickpea)

5.11 As per FAO, the global production of gram (chickpea) was 12.2 million tonnes in TE 2013. India is the largest producer with a share of 67.8 percent in TE 2013. Other major producers are Australia (5.5 percent), Turkey (4.1 percent), Pakistan (4.2 percent) and Myanmar (4.0 percent). India imports as well as exports small quantities of gram. India imported 4.6 lakh tonnes and exported 2.2 lakh tonnes of gram in TE 2014-15. India's exports (mostly Kabuli Channa) have increased from a small quantity of 0.03 lakh tonnes in 2003-04 to 3.3 lakh tonnes in 2013-14 before declining to 1.9 lakh tonnes in 2014-15 (Chart-5.7) whereas imports have increased from 2.6 lakh tonnes to a high of 7.0 lakh tonnes in 2012-13 before declining to 2.8 lakh tonnes in 2013-14. Imports of gram were 4.2 lakh tonnes in 2014-15.

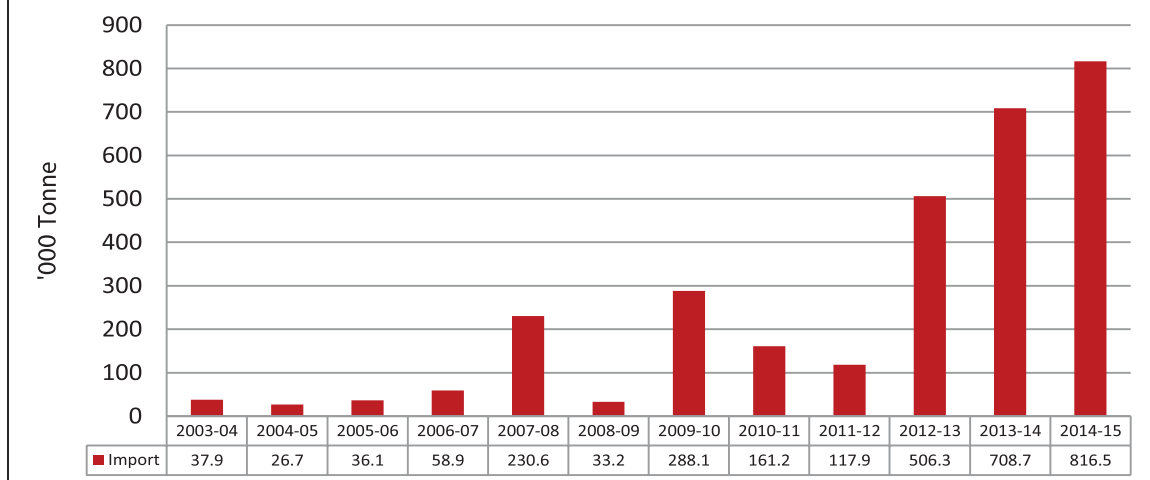


Source: DGCIS

### ii. Masoor (Lentil)

5.12 As per FAO, the global production of masoor (Lentil) was 4.7 million tonnes in TE 2013. Canada is the largest producer with a share of 35.1 percent followed by India (22.2 percent), Turkey (8.9 percent) and Australia (8.3 percent). India's exports of masoor are negligible whereas its imports have increased from 0.4 lakh tonnes in 2003-04 to 8.2 lakh tonnes in 2014-15. (Chart-5.8)

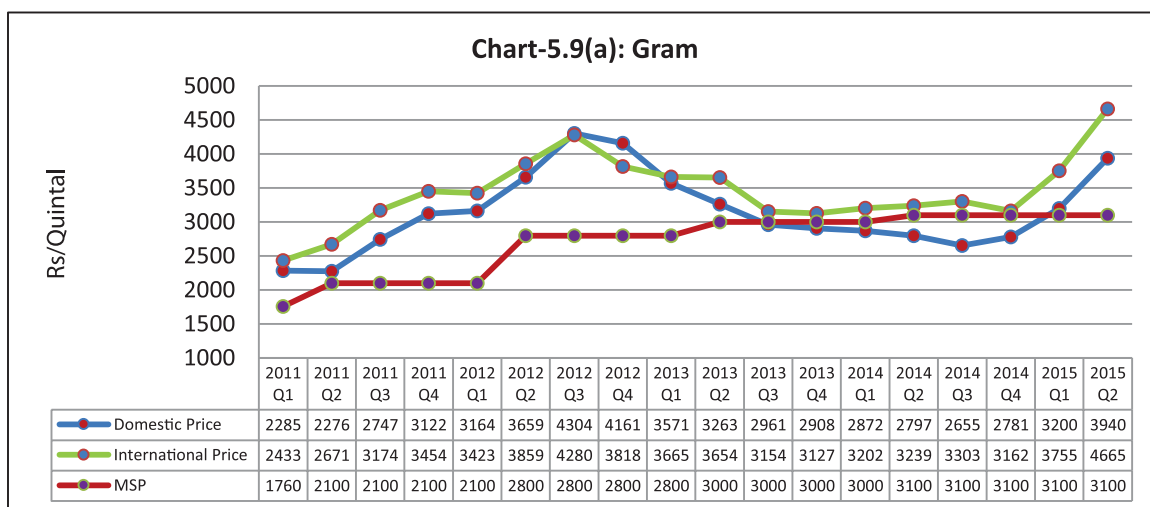
**Chart-5.8: India's Imports of Masoor (Lentil), 2003-04 to 2014-15**



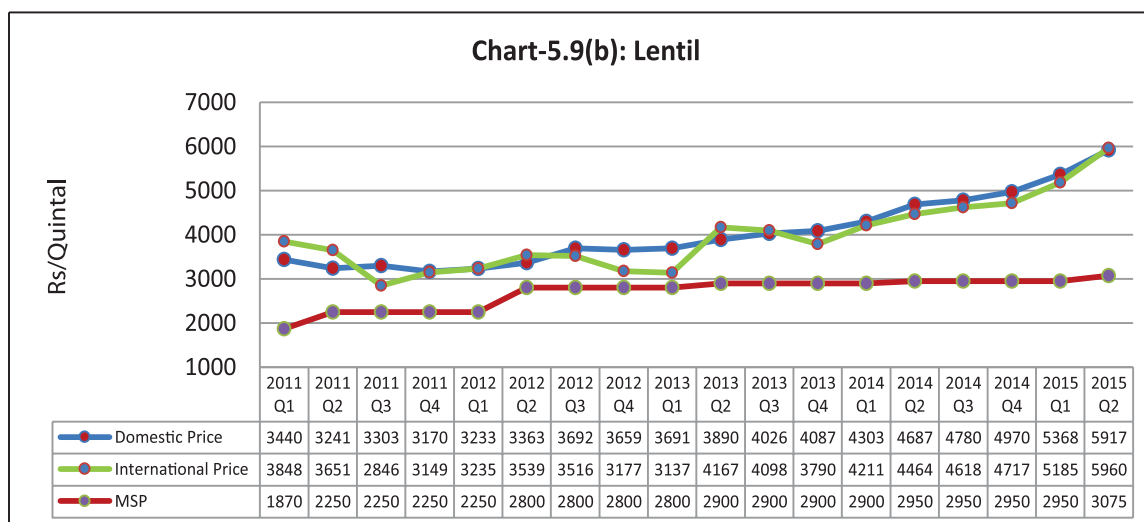
Source: DGCIS

- 5.13 During the period from 2011 ( $Q_1$ ) to 2015 ( $Q_2$ ), the domestic wholesale prices of gram have been generally lower than international prices whereas domestic wholesale prices of masoor have been generally higher than international prices (Chart-5.9). MSP of gram and masoor have generally been lower than the corresponding domestic and international prices during this period.

**Chart-5.9 (a) & (b): Prices (Domestic and International) and MSP of Gram and Lentil, 2011( $Q_1$ ) to 2015( $Q_2$ )**



Source: NAFED and DES

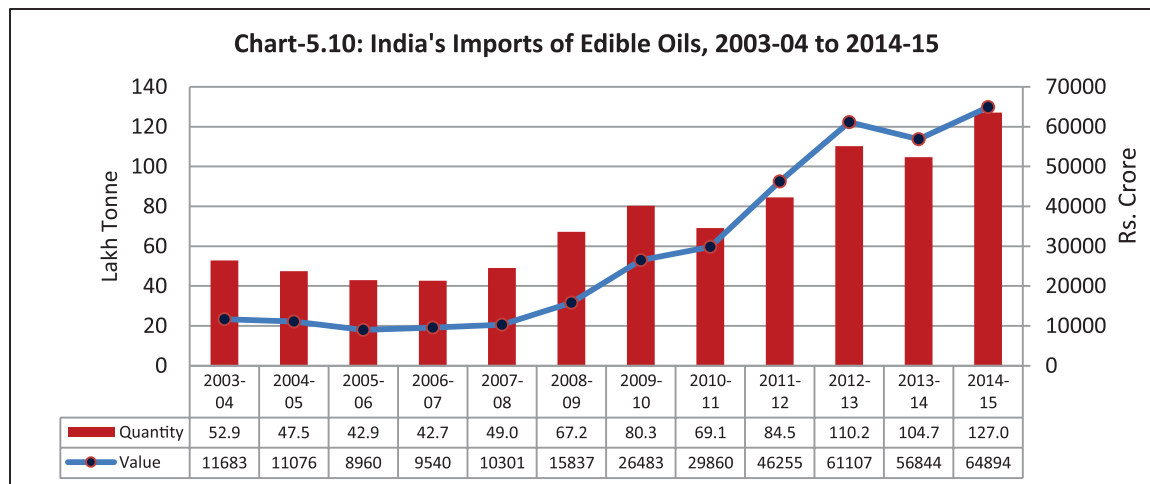


Source: NAFED and DES

### Oilseeds/Edible Oils

- 5.14 As per USDA, the global production of total oilseeds was 505.4 million tonnes in TE 2014-15 out of which 25.7 percent is traded. USA is the largest producer with a share of 20.4 percent followed by Brazil (18.0 percent), China (11.6 percent) and India (7.3 percent). Brazil and USA together export more than two-thirds of the global total exports, with a share of 34.6 and 34.1 percent respectively. Other major exporters are Canada (9.2 percent), Argentina (6.6 percent) and Paraguay (3.9 percent). China is the single largest importer with a share of 58.1 percent. Other importers are EU (13.8 percent), Japan (4.4 percent) and Mexico (4.4 percent).
- 5.15 As per USDA, the global production of vegetable oils was 169.2 million tonnes in TE 2014-15 out of which 41.1 percent is traded. Indonesia is the largest producer of vegetable oils with a share of 20.8 percent followed by China (13.8 percent), Malaysia (13.1 percent) and EU (10.2 percent). Indonesia is also the largest exporter of vegetable oils with a share of 34.2 percent closely followed by Malaysia (27.4 percent). India is the largest importer of vegetable oils with a share of 17.7 percent followed by EU (14.8 percent), China (14.2 percent) and USA (5.9 percent).
- 5.16 As per DGCIS, India's imports have increased from 52.9 lakh tonnes in 2003-04 to 127.0 lakh tonnes in 2014-15 (Chart-5.10). India's imports of edible oils have

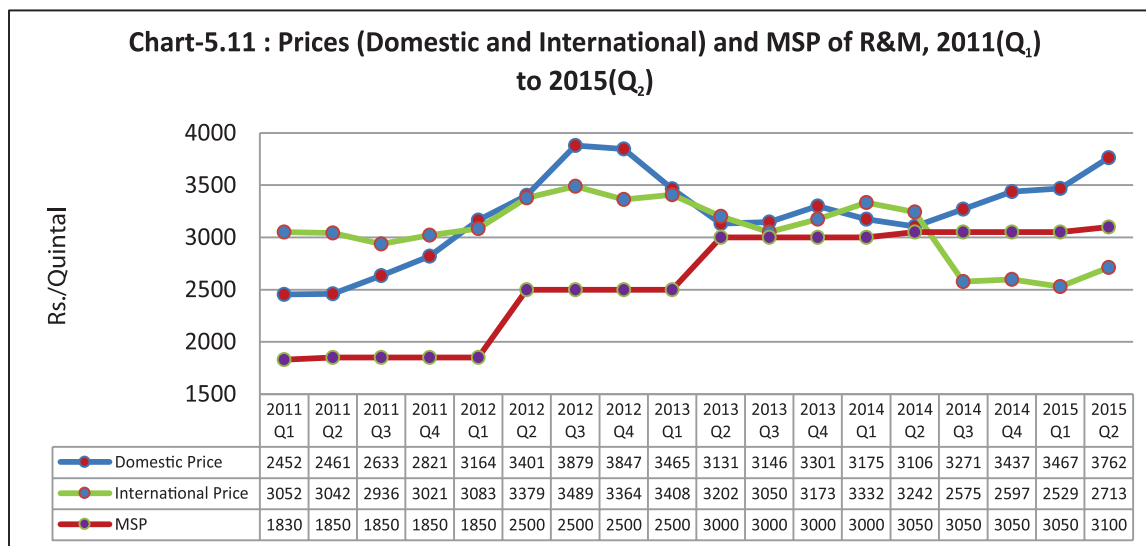
increased in 2014-15 over the previous year mainly due to decrease in domestic production of oilseeds/edible oils and also because of decline in international prices of most of the edible oils during this period.



Source DGCIS

#### i. Rapeseed and Mustard (R&M) Oilseeds

- 5.17 As per USDA, the global production of R&M was 68.9 million tonnes in TE 2014-15 out of which about 20 percent is traded. EU is the largest producer of R&M with a share of 31.5 percent followed by Canada (22.9 percent), China (20.8 percent) and India (10.3 percent). Canada is the single largest exporter of R&M with a share of 60.1 percent while China is the largest importer of R&M with a share of 29.9 percent followed by EU (23.1 percent) and Japan (17.4 percent).
- 5.18 India exports small quantities of R&M while its imports of R&M are nil. As per DGCIS, India's exports of R&M were 34 thousand tonnes in TE 2014-15. During the period from 2011 ( $Q_1$ ) to 2014 ( $Q_2$ ), the domestic wholesale prices of R&M have generally followed the trend of international prices. However, during the latest period [2014( $Q_3$ ) to 2015 ( $Q_2$ )], the domestic prices of R&M have been continuously higher than international prices. MSP of R&M have been continuously lower than domestic wholesale prices. However, MSP of R&M have been higher than international prices during the period from 2014 ( $Q_3$ ) to 2015 ( $Q_2$ ) (Chart-5.11).

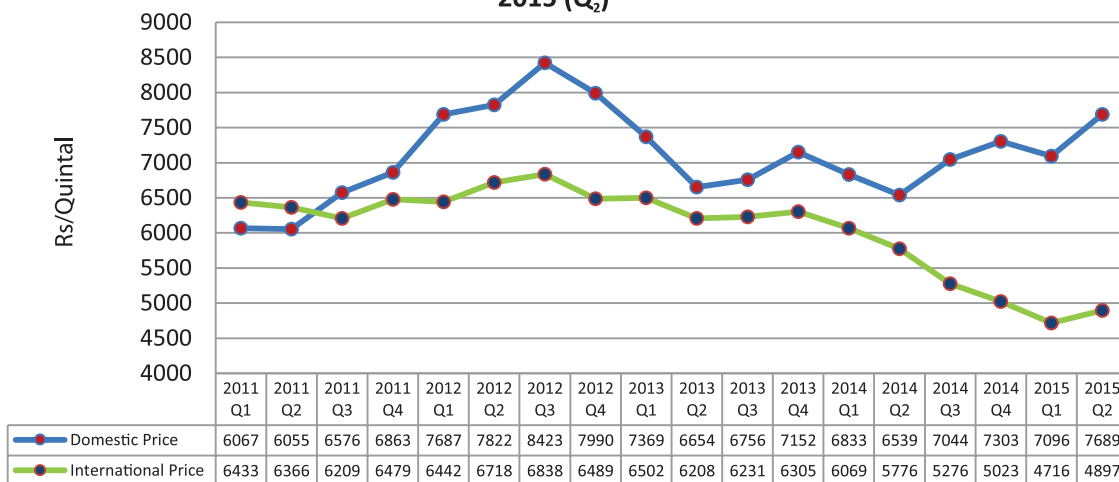


Source: World Bank for international prices and DES for domestic prices

## ii. Rapeseed & Mustard Oil

- 5.19 As per USDA, the global production of R&M oil was 26.2 million tonnes in TE 2014-15 out of which about 15 percent is traded. EU is the largest producer of R&M oil with a share of 37.5 percent followed by China (24.3 percent), Canada (11.5 percent) and India (9.3 percent). Canada is the largest exporter of R&M oil with a share of 62.4 percent followed by EU (9.3 percent). China is the largest importer of R&M oil with a share of 29.1 percent followed by EU (6.8 percent) and India (3.7 percent).
- 5.20 India's exports of R&M oil are negligible but imports only small quantities of it. Imports of R&M oil have increased from 70 thousand tonnes in 2013-14 to 3.1 lakh tonnes in 2014-15. The domestic wholesale prices of R&M oil have continuously been higher than international prices from 2011 (Q<sub>3</sub>) to 2015 (Q<sub>2</sub>) (Chart-5.12).

**Chart-5.12 : Prices (Domestic and International) of R&M Oil, 2011 (Q<sub>1</sub>) to 2015 (Q<sub>2</sub>)**



Source: World Bank for International prices and Solvent Extractors Association of India (SEAI) for domestic prices.

### Trade Policy – Oilseeds/Edible Oils

5.21 Exports of edible oils were initially prohibited for a period of one year in March 2008 which was extended from time to time. 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 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 upto 5 kg. is permitted with a MEP of US \$900 per MT. India's trade policy for major rabi crops is summarized in Table-5.1.



**Table-5.1: India's Trade Policy–Rabi Crops**

S. No.	Crop/Commodity	Trade Policy				
		Import Policy			Export Policy	
		OGL/ Import ban	Import duty (%)	Bound Duty (%)	OGL/Export ban	Export duty (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A-Cereals						
1	Wheat	OGL	Zero	100	OGL	Zero
2	Barley	OGL	Zero	100	OGL	Zero
B- Pulses						
3	Gram (Chickpea)	OGL	Zero	100	Export ban (except (i) Kabuli chan na (ii)10000 tonnes per annum of organic pulses and Lentils)	
4	Masoor (Lentil)	OGL	Zero	100		
C-Oilseeds/Edible oils						
5	R&M	OGL	30	100	OGL	Zero
6	R&M Oil (Crude)	OGL	7.5	75	Export ban*	
7	R&M Oil (Refined)	OGL	15.0	75	Export ban*	

\* Export of edible oils in branded consumer packs up to 5 kg is permitted with MEP of US\$ 900 per MT.

### Recapitulation

5.22 India has been importing edible oils and pulses to meet its domestic demand. For example, huge quantity of edible oils, valued at over Rs.64000 crore, were imported in 2014-15 alone. In the backdrop of high import-dependence on Indonesia and Malaysia for palm oil, promoting oil palm in the country would benefit domestic farmers instead of those of Indonesia and Malaysia. In addition, this would be a land saving strategy, as through the current mix of oilseeds, 4 million MT of domestic production of edible oils is being produced by using about 15.80 million hectares of land. This much quantity of palm oil could be produced from just 1 million hectares. It is recommended that CACP's Report on 'Oil Palm: Pricing for Growth, Efficiency & Equity, Towards a Rational Pricing Policy for Fresh Fruit Bunches and Potential Solution for India's Burgeoning Edible Oil Imports' be implemented in the medium to long term interest of the country.

- 5.23 Based on sound economic principle, import duty ought to escalate from raw material to intermediate product 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 7.5 percent for intermediate product i.e. crude oil and in between at 15 percent for finished product i.e. refined oil. The Commission recommends that import duty on oilseeds be fixed at 5 percent so that edible oil crushing mills are able to withstand the competition from crude oil imports at 7.5 percent import duty. 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-6

# Costs and Returns

- 6.1 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, in addition to ensuring rational utilization of natural resources like land and water. Thus, price policy is rooted not only in cost plus approach though cost is one of the important factors.
- 6.2 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). However, since CS data is generally available with a time lag of two years, it needs to be projected for RMS 2016-17 state-wise and at all-India level. These projected cost estimates are factored into formulation of price policy i.e. MSPs.
- 6.3 The Commission has projected CoP estimates for RMS 2016-17, based on actual estimates for the latest three years' viz. 2011-12 to 2013-14 for each state. These three projections capture movement in overall input cost separately for the crop year 2015-16 over each of the year's viz. 2011-12, 2012-13 and 2013-14. An assessment of overall movement in input cost likely for the crop year 2015-16 with reference to each of the three consecutive years ending with 2013-14 is made by constructing the Composite Input Price Index (CIPI) based on latest prices of different inputs namely labour (human, bullock and machine), seeds, fertilizers, manures, insecticides and irrigation charges sourced from Labour Bureau, State governments, Office of the Economic Adviser (OEA), Ministry of Commerce and

Industry, Fertilizers Association of India (FAI). Based on CIPI thus constructed, the Commission then projected CoP for RMS 2016-17.

### Costs and Returns of Rabi Crops, 2011-12 to 2013-14

6.4 Profitability can be seen from three perspectives. The first is gross returns over  $A_2$  which is defined as gross value of output less costs  $A_2$ , second is gross returns over  $A_2+FL$  which is defined as gross value of output less costs  $A_2+FL$  and the third is net returns which represent gross value of output less costs  $C_2$ . The average returns (both gross and net) during 2011-12 to 2013-14 for various rabi crops are presented in Table-6.1 and Chart-6.1. It may be seen from Table-6.1 that the gross rate of returns over  $A_2$  are significantly higher for all rabi crops compared to the gross rate of returns over  $A_2+FL$  and  $C_2$ . The gross rate of return over  $A_2$ ,  $A_2+FL$  cost and net rate of return is maximum for rapeseed & mustard while it is minimum for safflower. The state-wise details of average returns are given at Annex Table-6.1.

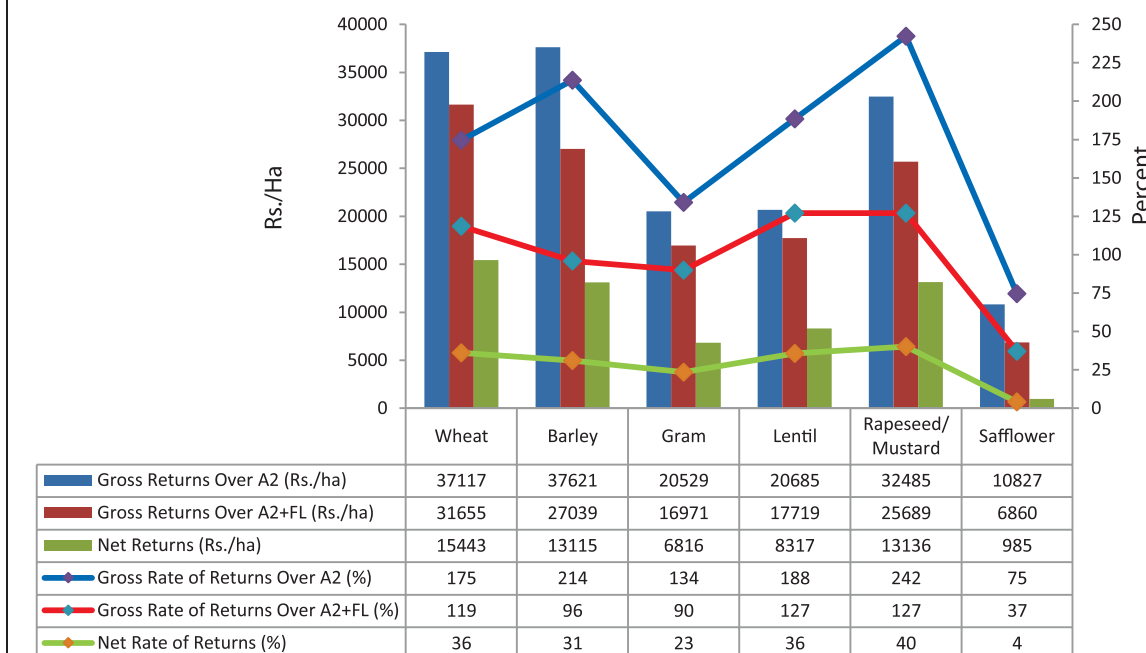
**Table-6.1: Gross and Net Returns of Rabi Crops**  
(Average 2011-12 to 2013-14)

(Rs/ha, Percent)

S. No.	Crops	Cost $A_2$	Cost $A_2+FL$	Cost $C_2$	GVO	Gross Returns over $A_2$		Gross Returns over $A_2+FL$		Net Returns	
						Rs./ha. (Col.6- Col.3)	Percent (Col.7/ Col.3* 100)	Rs./ha. (Col.6- Col.4)	Percent (Col.9/ Col.4* 100)	Rs./ha. (Col.6- Col.5)	Percent (Col.11/ Col.5* 100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<b>A-Cereals</b>											
1	Wheat	21225	26687	42899	58342	37117	175	31655	119	15443	36
2	Barley	17605	28187	42111	55226	37621	214	27039	96	13115	31
<b>B-Pulses</b>											
3	Gram	15317	18875	29030	35846	20529	134	16971	90	6816	23
4	Lentil	10975	13941	23343	31660	20685	188	17719	127	8317	36
<b>C-Oilseeds</b>											
5	R & M	13406	20203	32756	45892	32485	242	25689	127	13136	40
6	Safflower	14516	18483	24358	25343	10827	75	6860	37	985	4

Source: CACP Calculations based on data received under Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops in India, DES, Ministry of Agriculture.

**Chart-6.1: Gross and Net Returns of Rabi Crops**  
(Average 2011-12 to 2013-14)



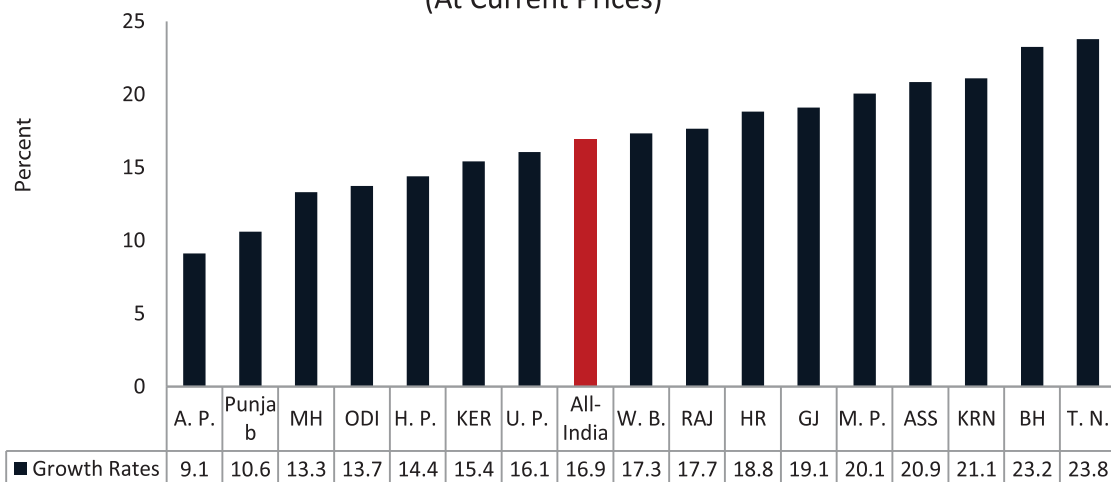
Source: CACP, Using DES data.

Costs and Returns

### Labour and Input Price Movement

6.5 Chart-6.2 (a) and (b) depict annual average growth in wage rates of agricultural labour in major states and at all-India level at current prices and constant prices (2014-15=100) respectively for TE 2014-15. At all-India level, agricultural wage rates have increased by 16.9 percent at current prices while 7.4 percent at constant prices during TE 2014-15. The increase during this period is the highest at 24 percent at current prices in Tamil Nadu and 13 percent at constant prices in Madhya Pradesh whereas the lowest at 9.1 percent at current prices and (-)0.1 percent at constant prices in Andhra Pradesh. Given the fact that wage rates have increased significantly, it is imperative to adopt farm mechanization in a big way so as to improve productivity, contain costs and enhance profitability. However, at all India level growth in agricultural labour wages at current prices has decelerated to 16.9 percent in TE 2014-15 from 18 percent during TE 2013-14.

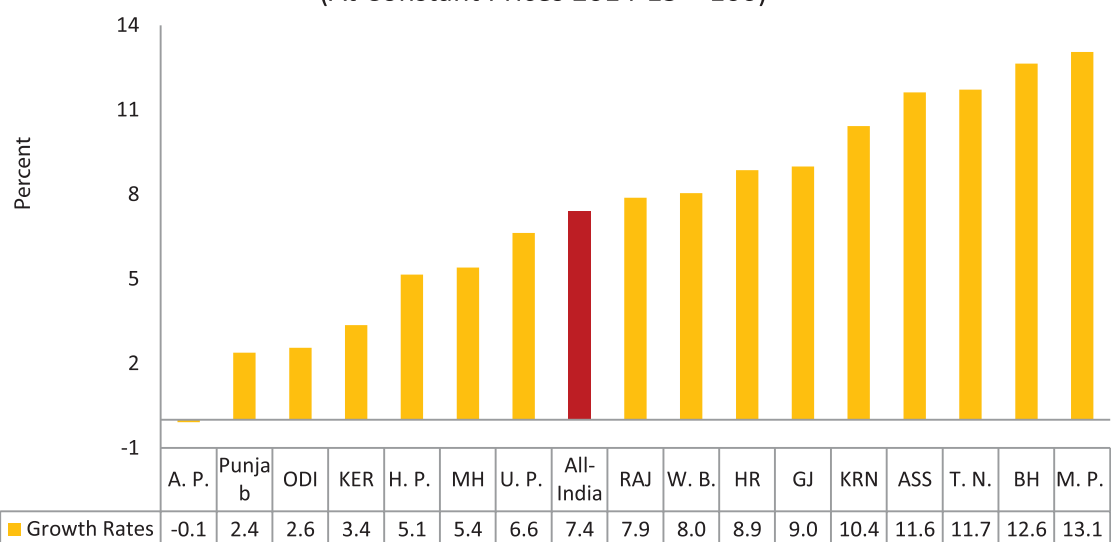
**Chart-6.2(a): Annual Growth in Wages of Agricultural Labour, TE 2014-15**  
(At Current Prices)



Source: Labour Bureau, Simla

Note: For the year 2014-15 the annual average is from July, 2014 to April, 2015

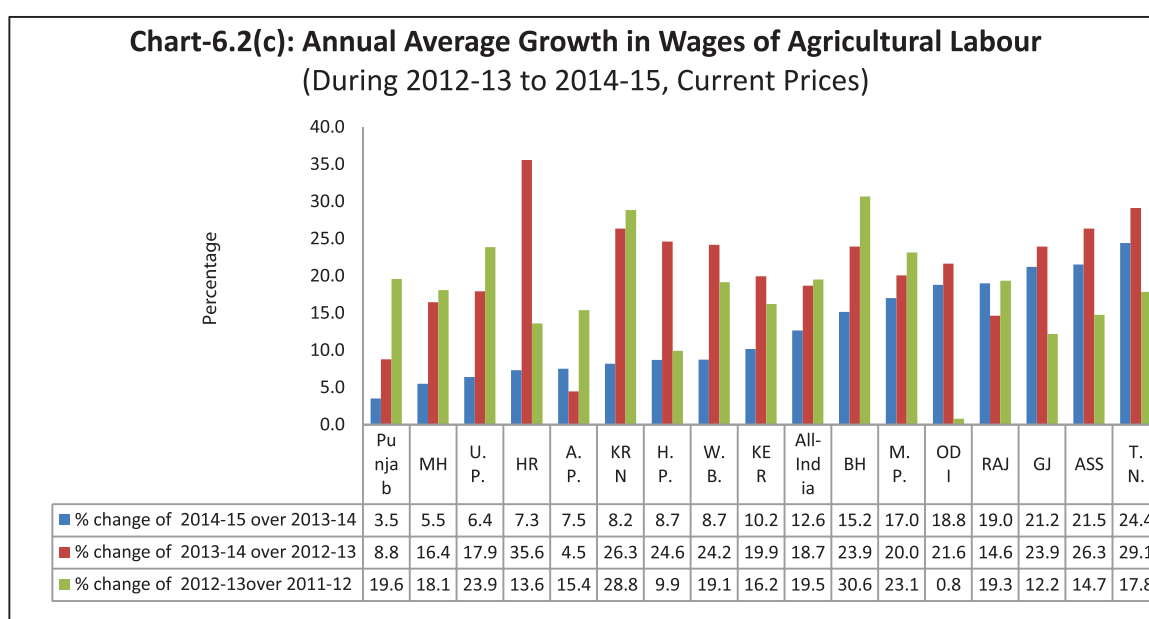
**Chart-6.2(b): Annual Growth in Wages of Agricultural Labour, TE 2014-15**  
(At Constant Prices 2014-15 = 100)



Source: Labour Bureau, Simla



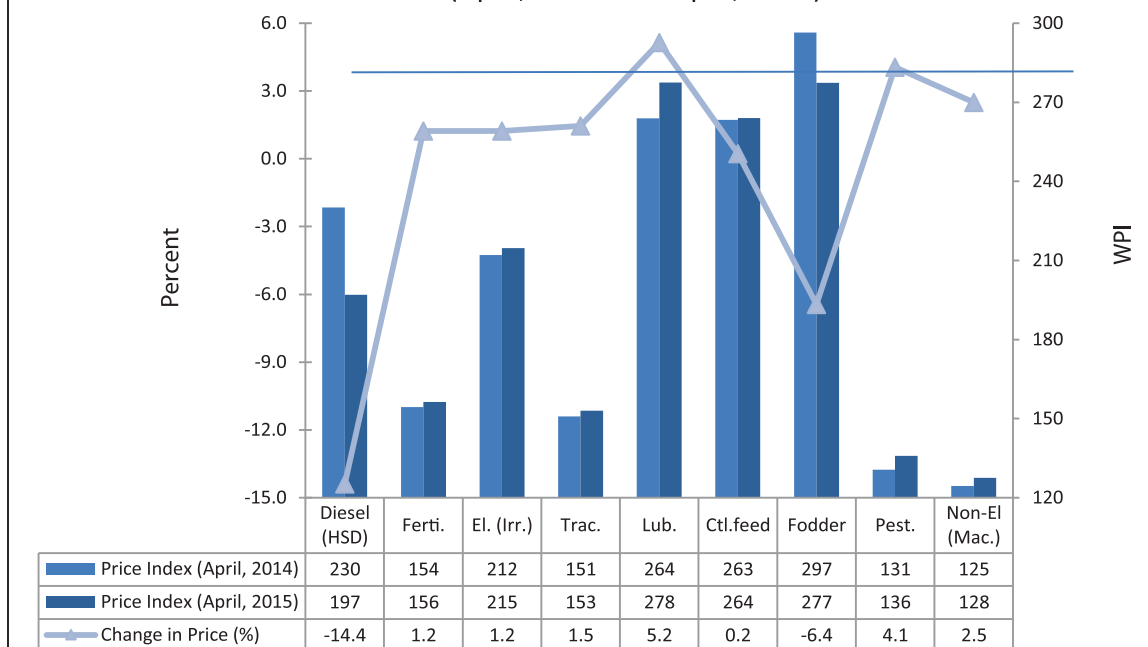
- 6.6 Chart-6.2(c) presents annual average growth in agricultural labour wages in major states and at all-India level at current prices during 2012-13 to 2014-15. The growth of agricultural labour wage has decelerated from 19.5 percent in 2012-13 to 18.7 percent in 2013-14 and further to 12.6 percent in 2014-15. The state-wise and all-India details of monthly average daily wage rates of agriculture labour in nominal terms of major states are given in Annex Table-6.2.



Source: Labour Bureau, Simla

- 6.7 The prices of farm inputs have generally exhibited an upward trend during April, 2015 over the corresponding month of the preceding year (Chart-6.3). While the prices of fertilizers, electricity for irrigation, tractors, lubricants, cattle feed and pesticides have increased in the range of 0.2 percent to 5.2 percent, those of HSD and fodder have declined by 14 and 6 percent respectively during the corresponding period (details in Annex Table-6.3).

**Chart-6.3: Movements in Prices of Farm Inputs (WPI, 2004-05=100)  
(April, 2015 over April, 2014)**



Source: DIPP, Ministry of Commerce and Industry

### Cost Projections, RMS 2016-17

6.8. Based on the state-wise costs and CIPI, an all India weighted average cost of production, with weights being relative shares of the states in the total production in TE 2014-15 is projected for RMS 2016-17. Table-6.2 presents the projected cost ( $A_2$ ,  $A_2+FL$  and  $C_2$ ) and modified cost  $C_2$  (including costs of marketing, transportation and insurance premium) of all rabi crops at all India level. The state-wise and all India projected costs of six rabi crops under the domain of MSP for RMS 2016-17 are given in Annex Table-6.4. Also, state-wise actual costs for 2012-13 and 2013-14 are given in Annex Table-6.5 (a) to (f).

**Table-6.2: Projected Costs, RMS 2016-17**

(Rs./qtl)

S.No.	Crops	Cost of Production			Cost of Marketing, Transportation and Insurance Premium	Modified Cost#
		2015-16				
		A <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Wheat	631	785	1163	49	1212
2	Barley	486	776	1089	45	1134
3	Gram	1724	2124	3102	57	3159
4	Lentil (Masoor)	1573	2015	3098	55	3153
5	R & M	1138	1702	2605	59	2664
6	Safflower	2574	3057	3734	47	3781

Source: CACP Calculations.

# Modified cost is total of projected cost C<sub>2</sub> plus transportation, insurance and marketing charges.

- 6.9. Based on state-wise indices, an all India weighted average input index, with weights being relative shares of total area under the crop in the state, has been worked out for various crops. On the basis of the all India crop-wise indices thus worked out, all India weighted average composite input index, with weights being relative shares of the total production of crops, has been arrived at for rabi crops. The Composite Input Index (CII, across crops and across states) has increased by 8.3 percent in 2015-16 (Table-6.3).

**Table-6.3: All India Rabi Crops Input Index**

S.No.	Inputs	Weights (2013-14)	Rabi Crops Input Index				Percentage Change in Input Index 2015- 16 over 2014-15
			2012-13	2013-14	2014-15	2015-16	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	HL	0.36	287	325	365	411	12.6
2	BL	0.02	264	318	365	422	15.6
3	ML	0.23	186	215	209	211	0.7
4	SEEDS	0.11	221	237	254	275	8.1
5	FERT.	0.14	147	148	152	156	2.3
6	MANR.	Negligible	210	223	237	247	4.4
7	INSEC.	0.01	120	126	135	140	4.2
8	IRR.CH.	0.11	169	180	186	191	2.7
9	CII	1.00	217	242	259	281	<b>8.3</b>

Source: CACP Calculations.

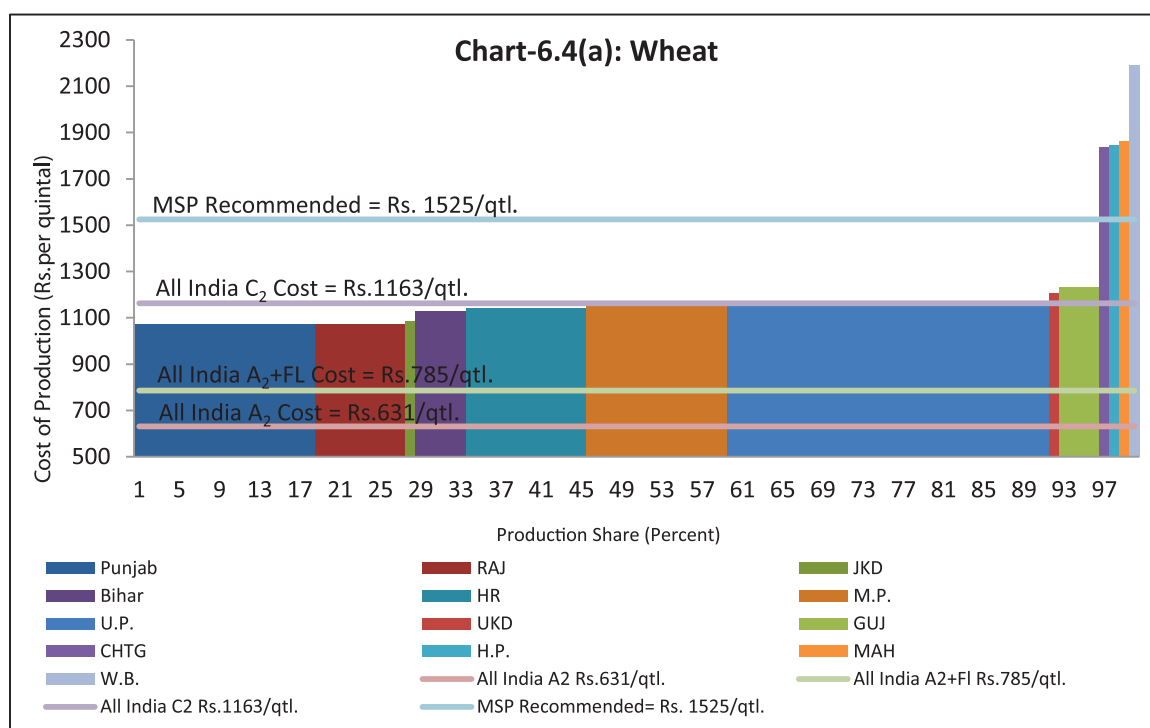
Notes : 1. CII (Composite Input Index).

2. Figures in col (3) show truncated decimal places and the total may not add to exactly one.

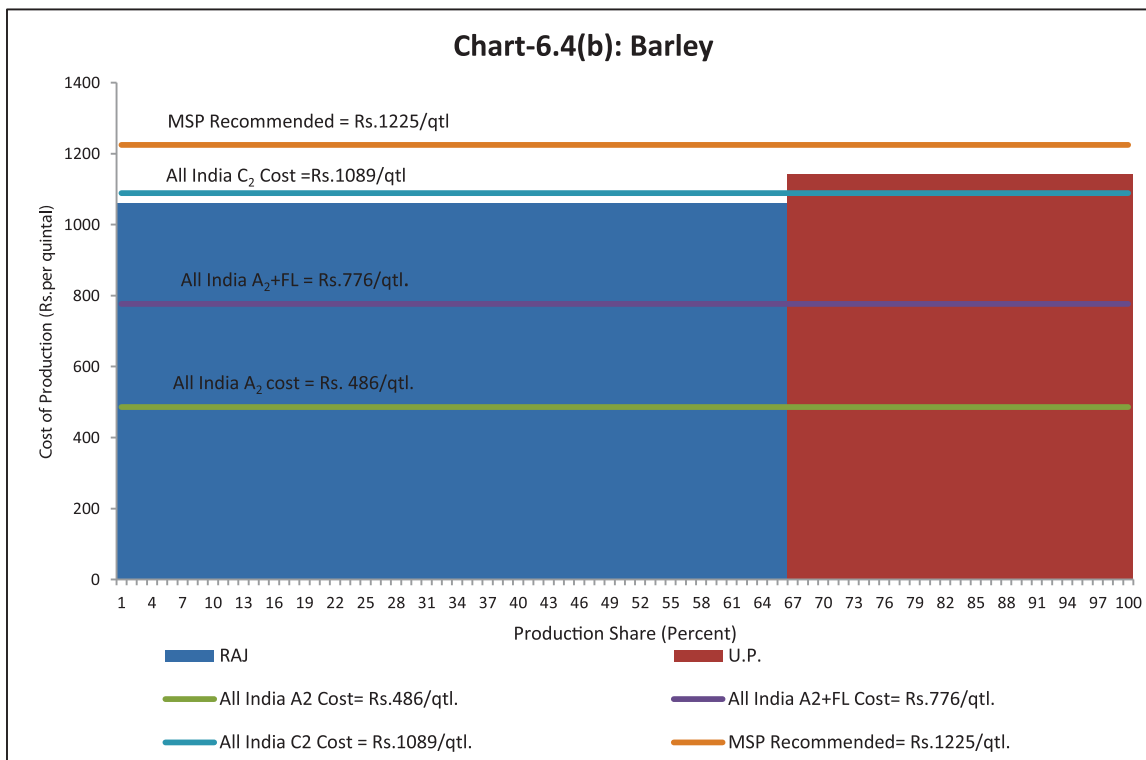
6.10. Charts-6.4 (a) to (e) depict the cost of production ( $C_2$ ) by states as well as at all-India level in ascending order of cost with the corresponding shares in the total production for different crops. The shares of production covered at  $C_2$  cost are 92 percent in case of wheat, 66 percent in case of barley, 62 percent in case of gram, 47 percent in case of lentil and 79 percent in case of R&M.

**Chart-6.4 (a) to (e): Supply Curve and Projected Cost,RMS 2016-17**

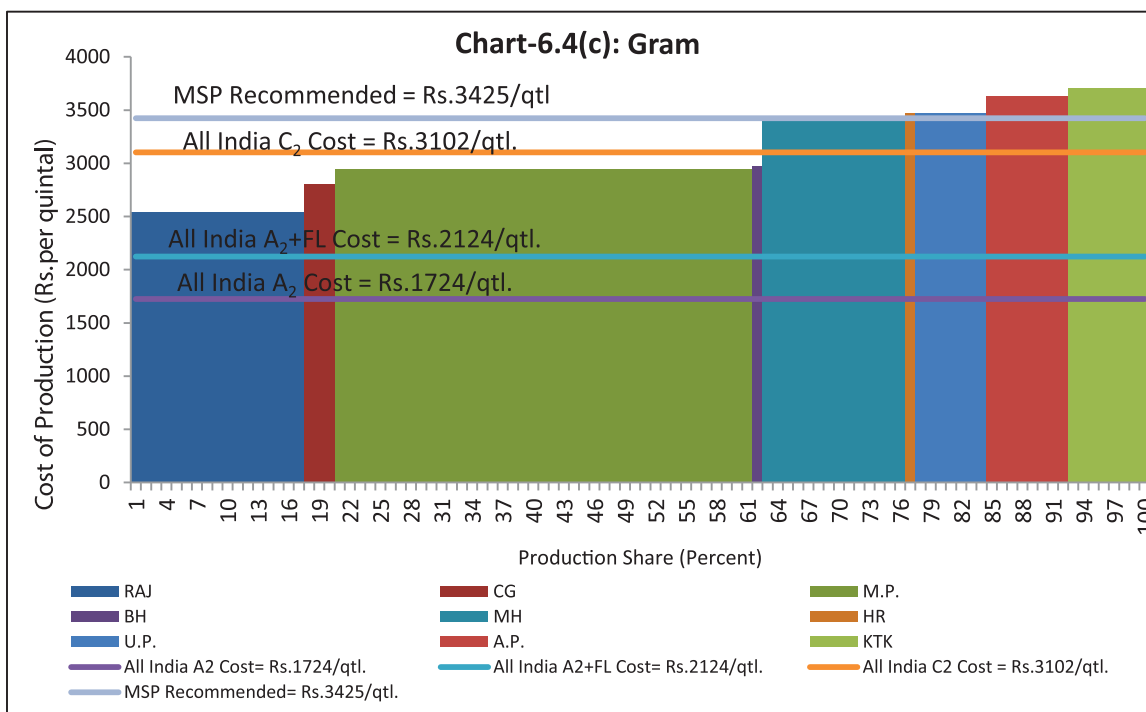
## Costs and Returns



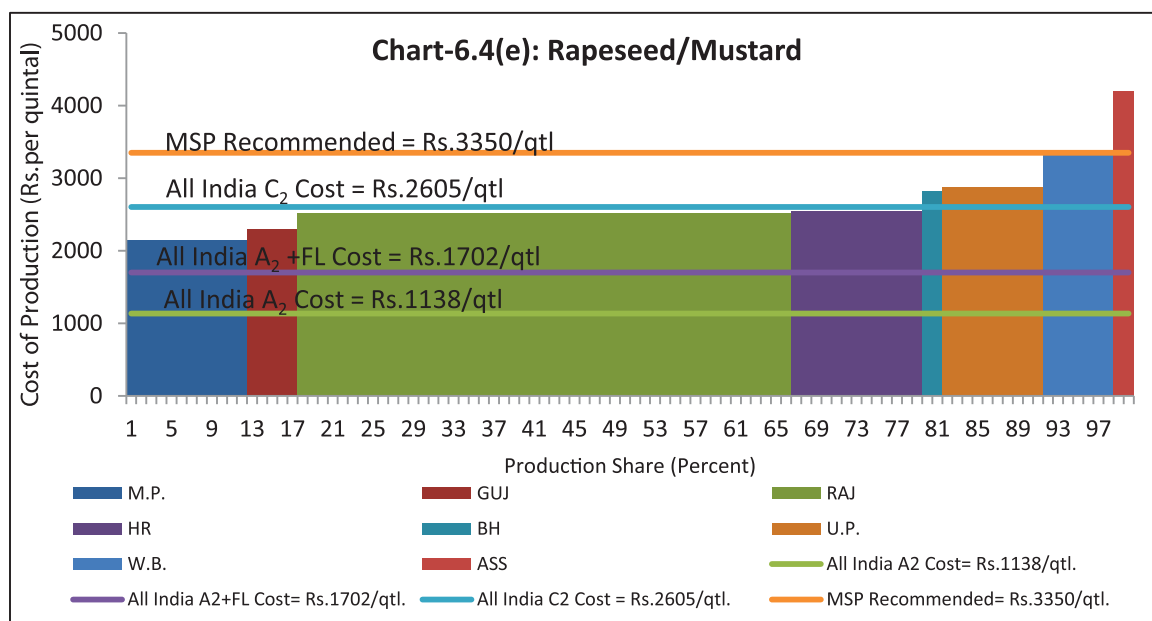
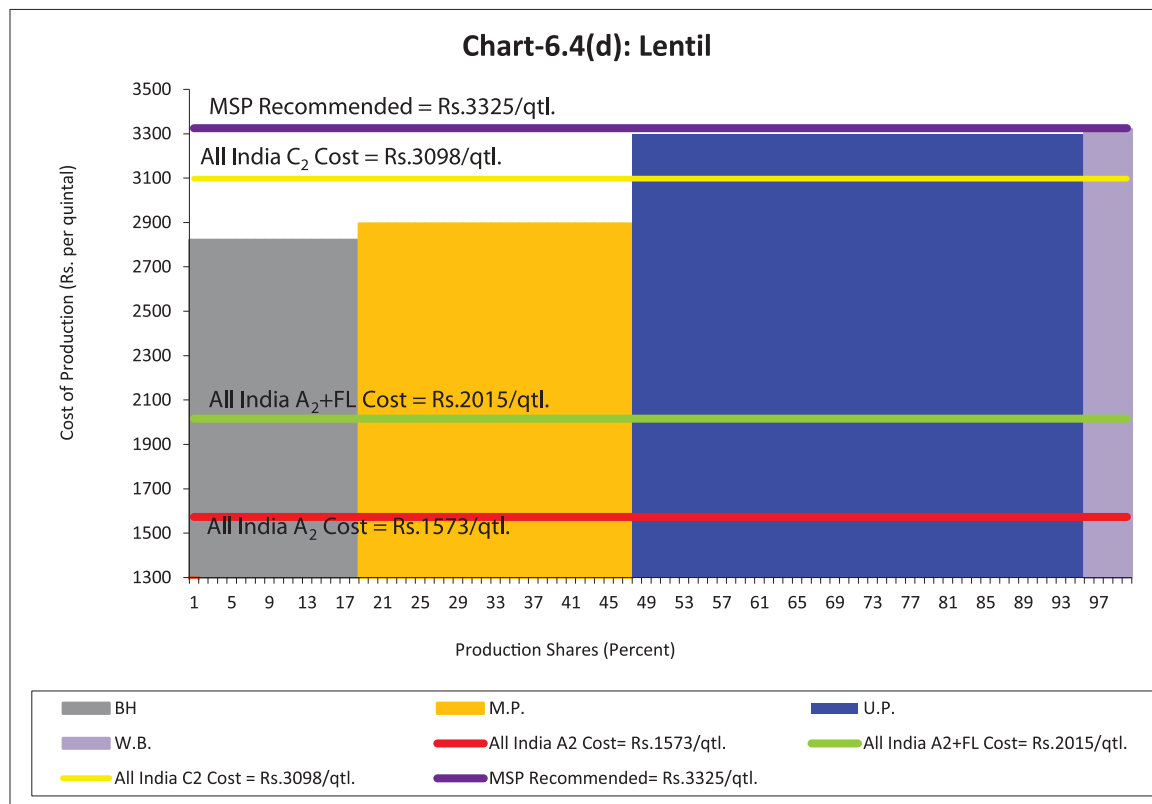
**Chart-6.4(b): Barley**



**Chart-6.4(c): Gram**



Costs and Returns





### Inter-Crop Price Parity

- 6.11. To appraise inter-crop price parity, per hectare relative returns over  $A_2$ ,  $A_2+FL$  and  $C_2$  for various rabi crops with reference to wheat have been worked out in percent terms (Table-6.4). R&M stands out as it reaps higher relative returns in comparison to wheat on all three criteria viz. with reference to costs  $A_2$ ,  $A_2+FL$  and  $C_2$ .

**Table-6.4: Crop-wise Relative Returns (Percent)**  
(Average 2011-12 to 2013-14)

S. No.	Crops	Relative Gross Returns over $A_2$ with respect to wheat	Relative Gross Returns over $A_2+FL$ with respect to wheat	Relative Net Returns with respect to wheat
(1)	(2)	(3)	(4)	(5)
<b>A-Cereals</b>				
1	Wheat	100	100	100
2	Barley	122	81	87
<b>B-Pulses</b>				
3	Gram	77	76	65
4	Lentil	108	107	99
<b>C-Oilseeds</b>				
5	R & M	139	107	111
6	Safflower	43	31	11

Source: CACP Calculations, using DES data.

### Terms of Trade

- 6.12. The Terms of Trade (ToT) between agricultural and non-agricultural sectors refers to the ratio of prices farmers receive for their produce to what they pay for goods and services purchased. A Working Group on ToT, set up by the Ministry of Agriculture (MoA), has submitted its Report on 29<sup>th</sup> Jan, 2015. The Group has undertaken a comprehensive exercise of constructing year-wise Indices of Prices Received (IPR) by farmers for 79 commodities. These cover 40 agricultural crops, 29 fruits and vegetables and 10 livestock, fishing and forest products. The IPRs, in turn, have been compared with separate Indices of Prices Paid (IPP) for products bought by farmers. They include final consumption items (74 of them – from rice and edible oils to toilet soaps, medicines, mobile and cable TV services, two-wheelers and gold jewelry), intermediate inputs (seed, fertiliser, pesticide, livestock feed, electricity/irrigation charges, diesel, hired labour, marketing costs and interest on loans) and capital

goods (tractor, electric motor/pump, cement, bricks, steel and other construction materials). It is found that ToT has moved in favour of agricultural sector between 2004-05 and 2010-11. ToT index fell below 100 during last three years and it was at 95.55 in 2013-14, being still higher than its level of 87.82 in 2004-05. ToT movements are considerably influenced by global agri-commodity prices. As global prices rose, MSPs were raised to align with them. This led to improvement in ToT. But from 2011-12 (Annex Table-6.6), these too started getting squeezed, especially on account of spiraling rural wages. On the other hand, the ratio of agricultural prices to non-agricultural prices as calculated from the WPI improved substantially from 100.8 in 2005-06 to 157.2 in 2014-15 (with base year 2004-05=100).

### Recapitulation

- 6.13. The Commission uses the cost data 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 is generally available with a time lag of two years, state-wise and also all-India weighted average cost of production has been projected for RMS 2016-17. Given the time lag of about two to three years in dissemination of data from field levels to DES, the Commission projected the cost estimates for the ensuing RMS 2016-17. The Commission recommends that DES take appropriate measures to improve timeliness in furnishing of cost data.
- 6.14. Costs of production ( $A_2+FL$ ) per quintal for wheat, barley, gram, lentil, R&M and safflower have been projected at Rs.785, Rs.776, Rs.2124, Rs.2015, Rs.1702 and Rs.3057 respectively for RMS 2016-17 and modified  $C_2$  costs for the corresponding period are Rs.1212, Rs.1134, Rs.3159, Rs.3153, Rs.2664 and Rs.3781 respectively. These projected costs have been factored into while formulating price policy recommendations. It may, however, be noted that the pricing policy is rooted not just in the 'cost plus' approach, though cost is one of its important determinants. Based on all the relevant factors including costs, the Commission makes certain recommendations, the details of which are given in Chapter-7.

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# Considerations and Recommendations for Price Policy

- 7.1 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 besides ensuring rational utilization of production resources like land and water while recommending Minimum Support Prices (MSPs). Thus, pricing policy is rooted not in “cost plus” approach, though cost is an important determinant of the level of MSPs.

## **Efficacy of Procurement**

- 7.2 Haryana, Madhya Pradesh and Punjab account for 90 percent of the total procurement of wheat by FCI though their share in the total production is only 44 percent. FCI should make result oriented strategy for strengthening the procurement machinery in states like Bihar and U.P., where procurement is very low or negligible despite a large number of procurement centres. This is indicative of abysmally low resource use efficiency. The Commission recommends strengthening of marketing infrastructure and procurement system in other major wheat producing states so as to bring them at least at the level prevailing in the states of Haryana and Punjab.

## **Rationalization of Statutory Levies/Taxes on Procurement**

- 7.3 Haryana, Madhya Pradesh and Punjab are the major contributors to wheat procurement. High statutory levies in these states on procurement escalate the food subsidy. These states which account for 90 percent of procurement have realized over Rs. 27135 crores by way of statutory levies/taxes during 2004-05 to

2014-15. Out of this, Rs. 15052 crore has been realized on account of increasing tax rates as also increasing procurement and Rs. 12083 crore on account of increase in MSP alone. Considering the fact that investment by states to augment the facilities relating to grading of grain, dryers, moisture meters, sieves and their mandi infrastructure does not increase with increase in MSP, there is a need to restructure taxes/levies on foodgrains/oilseeds in such a manner that its incidence in absolute terms on per quintal basis does not increase with increase in MSP. The Commission, therefore, recommends that states should levy the taxes in next five years on the level of MSP fixed for RMS 2015-16 (for the purpose of taxation only). This dispensation should be implemented from RMS 2016-17 and be reviewed after five years.

#### **Direct Payment to Farmers for Produce**

- 7.4 There are two distinct practices prevailing in two major wheat procuring states namely Madhya Pradesh and Punjab in so far as remitting payment to farmers is concerned. The state of MP remits the amount of the produce sold by farmers directly into their accounts through cheque/RTGS under e-uparjan (computerization of foodgrain procurement system in MP) which is transparent and funds get transferred on real time basis. This has reduced the involvement of middle men thereby ensuring that farmers get their dues in time. In addition, SMS is sent to farmers for reaching the markets on a given date. In Punjab though procurement is computerized yet farmers get payment through Arhatiyas. Technically, farmers are asked to exercise the option (of getting payment of the produce sold directly or through Arhatiyas) 45 days in advance of the commencement of procurement. However, most farmers opt for payment through Arhatiyas, presumably for the fear of being isolated and ostracized. Also, such an arrangement takes 10 to 15 days for flow of funds to farmers. This arrangement not only increases farmers' dependence on Arhatiya but also leads to delays in remitting the amount due to farmers. Based on the discussions of the Commission with farmers and their Associations, it emerged that their interest will be better served if the system of direct payment to them through RTGS is institutionalized with no option of remittance being routed through Arhatiya.

### Disposal of Excess Stocks by FCI

- 7.5 Against a norm of 41.12 million tonnes of wheat and rice, Central Pool stocks were 54.57 million tonnes as on 1<sup>st</sup> July 2015. The Commission is of the considered view that stocks in excess of buffer norms should be liquidated. This will lead to realization of Rs.20062 crore at current prices which can be utilized for augmenting productivity by investing in irrigation and strengthening extension services which will go a long way in improving profitability in agriculture.

### Negotiable Warehouse Receipt System (NWRS)

- 7.6 NWRS allows transfer of ownership of a commodity stored in a warehouse without physical delivery which helps farmers getting loans from banks against these receipts and avoid distress sale. This would increase liquidity in the rural areas and encourage better price risk management of agriculture commodities. The Commission recommends that pilot projects in certain states need to be undertaken where NWRs can supplement procurement by FCI.

### Cash Transfer of Fertilizer Subsidy

- 7.7 The price of urea at Rs.5360 per tonne (due to subsidy, without neem coating) is low in relation to about Rs.24000 per tonne of DAP and Rs.17000 per tonne of MoP. This has led to increased use of urea in relation to P and K. Cash transfer directly to the farmers in lieu of subsidized urea will benefit them as they would be empowered to choose the fertilizer combination best suited to their soil texture without the influence of distorted price relatives of NPK. This is a win-win situation where Government would be saving about Rs.16247 crores and farmers' would be empowered to decide for themselves as to which fertilizer to use as per requirement.

### Investment in Irrigation and Water Conservation

- 7.8 The country's farm sector alone accounts for 83 percent of all water use. Investment in sprinkler and drip irrigation will have a significant impact on the Agriculture Sector and will also ensure judicious use of water. To promote economy



of water use in agriculture, water and electricity should be metered and some quantitative ceiling should be fixed. Farmers who use water/electricity less than the ceilings fixed for them should be rewarded by cash incentive equivalent to unused units of water/power at the rates of their domestic resource costs. This would encourage farmers to use drip irrigation and would enhance production per drop of water. The need for economical use of water has to sink in the consciousness of policy makers.

#### Modernizing Extension and Advisory Services (MEAS)

- 7.9 Extension services (including KVKs) in India leave much to be desired and need to undergo significant change if they are to effectively serve the food security and economic welfare of resource poor farmers. Focus of the extension system should be on supporting small and marginal framers. Modernization of Extension and Advisory Services to disseminate efficient, effective and financially sustainable services should be taken up on priority which will go a long way in increasing farm incomes.

#### Right to Sell at MSP

- 7.10 Two most important procurement agencies of Government of India namely FCI and NAFED were set up with the main objective of procuring notified commodities at MSP. These agencies have been in existence for over 50 years and 30 years respectively. Yet, the benefits of MSP bypass a large section of farmers, rendering the entire dispensation of pricing policy and procurement operations ineffective. To instill confidence among farmers for procurement of their produce, a legislation conferring on farmers the right to sell at MSP be brought out.

#### Providing Insurance Cover to Farmers

- 7.11 Out of every 5 hectares of agri-land, only 1 hectare is covered under crop insurance. Given the fact that probability of occurrence of crop damage is high, almost once in three years, coupled with the fact that insurance cover is low indicates some flaws in the design of these schemes. To enhance penetration of the crop insurance as a product, it ought to have five important characteristics viz. **Adequacy** (of sum insured), **Affordability** (of farmers to pay premium), **Suitability** (customised



according to needs), **Transparency** (in determining premium & claims) and **Timeliness** (in settlement of claims). A participatory insurance model in which farmers pay Rs.287 per hectare as premium along with subsidy element will increase the coverage upto 50 percent of gross cropped area i.e. about 98 million hectares. The process of settlement of claims in India can be hastened by deploying modern technology such as Drone Technology in which robots fly at low heights, avoid clouds and capture images required for assessing crop damages and doves which fly near earth orbits can collect data required for estimating losses. Another way to capture details of crop losses is through satellite imageries. Once crop losses are assessed objectively, claims can be settled expeditiously through combination of Jan Dhan Yojana, farmers' Aadhar Cards, Mobile Technology and Satellite Imageries or its variant (JAMS).

#### Labour Productivity and Farm Mechanisation

7.12 Agri-work force which constitutes 49 percent of the total work force, contributes just 14 percent of National income (GDP). This is a reflection of large gap in agri-labour productivity compared to that of non-agriculture. The share of agri-work force has declined by 11 percent points compared to 9 percent points fall in share of agri-GDP during 1999-2000 to 2011-12. However, the decline in agri-workforce is not fast enough to significantly augment agri-labour productivity. Low productivity of agriculture work force at 17 percent compared to that of non-agriculture places a stress on returns and overall well-being of farmers. In order to respond to this situation and make agriculture more profitable, a two pronged strategy needs to be adopted. Firstly, traditional farming occupations ought to be replaced by widespread adoption of farm mechanization. For this purpose, a Scheme to develop a cooperative based 'Custom Hiring Model' under which a variety of machines for different farming operations be offered on rent. Secondly, a strategy for alternative avenues of employment for underemployed rural youth from agriculture to non-agriculture sector be formulated.

#### National Farm Market

7.13 The Government of India has recently approved the creation of a portal that will integrate 585 APMCs across the country. Out of these, 250 APMCs would be

integrated through online platform during 2015-16, 200 in 2016-17 and the remaining 135 in 2017-18. This is a step in the right direction. However, the prices that National Agriculture portal will throw up are not clear. This assumes importance because the prices vary a great deal depending upon grading of the produce of the same commodity. For instance, the price differential between the most and the least expensive markets for Jowar was 282 percent. Also inter-state variation in the rates of taxes/levies and commissions add to the price differential across states, even for a commodity of the same grade. Unless the centre sensitizes the states to agree to inter-state movement of agri-commodities without tax and also de-lists cereals, pulses and oilseeds from APMCs, it is unlikely that a pan-India market will emerge. It is, therefore, recommended that centre should persuade the states to allow free movement of agri-commodities without taxes/levies, besides emphasizing grading of agriculture produce, so as to enable a truly PAN India National Farm Market to emerge and take roots.

#### Benchmark Districts

- 7.14 The cost of production can be reduced by enhancing productivities. It becomes imperative to study farming practices of the benchmarking countries as well as benchmarking states and emulate those practices which will reduce the production cost and increase profitability of the farmers. In order to reduce the cost and augment the productivity at district levels, Village Level Support Centre (VLSC) should be developed by the State Governments in consultation with PRIs which can be entrusted with dissemination of services ranging from modern scientific cultivation practices, improved seed varieties, soil testing, climate/weather changes and markets besides encouraging resource conservation technology (RCT) such as zero tillage and farm mechanisation. Timely planting with no tills lowers the cost, improves productivities of crops and saves water.

#### Import-Dependence Reduction: A Way Forward

- 7.15 India has been importing edible oils and pulses to meet its domestic demand. For example, huge quantity of edible oils, valued at over Rs. 64000 crore, were imported in 2014-15 alone. In the backdrop of high import-dependence on Indonesia and Malaysia for palm oil, promoting oil palm in the country would

benefit domestic farmers instead of those of Indonesia and Malaysia. In addition, this would be a land saving strategy, as through the current mix of oilseeds, 4 million MT of domestic production of edible oils is being produced by using about 15.80 million hectares of land. This much quantity of palm oil could be produced from just 1 million hectares. It is recommended that CACP's Report on 'Oil Palm: Pricing for Growth, Efficiency & Equity, Towards a Rational Pricing Policy for Fresh Fruit Bunches and Potential Solution for India's Burgeoning Edible Oil Imports' be implemented in the medium to long term interest of the country.

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

- 7.16 Inter-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. 785, Rs. 776, Rs. 2124, Rs. 2015, Rs. 1702, and Rs. 3057 respectively for the 2015-16 crop season whereas per quintal  $C_2$  costs for these crops have been projected at Rs. 1163, Rs.1089, Rs.3102, Rs.3098, Rs.2605 and Rs.3734 respectively. The ratio of agricultural prices to non-agricultural prices (not ToT) has improved substantially from 100.8 in 2005-06 to 157.2 in 2014-15 (with base year 2004-05=100). These costs have been factored in while recommending the MSP of the crops.

#### Price Policy Recommendations

- 7.17 Taking its terms of reference into consideration, the Commission recommends the MSPs for six rabi crops for the RMS 2016-17 as given in the Table-7.1. These MSPs will cover  $A_2+FL$  costs of 100 percent production of barley, gram, lentil, safflower; 99 percent of wheat and 98 percent of R & M.
- 7.18 To augment resource use efficiency, MSP of R&M be linked to the basic 'oil content' of 35 percent. For every 0.25 percent point increase beyond this level, the MSP be increased by Rs.13.27/quintal so as to incentivise the farmers to invest in technology. In its two previous reports submitted in July 2014 and March 2015, the Commission had recommended linking of MSP of certain oilseeds with its oil content. Though this recommendation is based on sound economic principle, it was

not accepted on the ground of non-availability of the equipment which measures oil content. The Commission is not aware whether efforts were made by DAC to explore the possibility of making such equipment available. The Commission recommends that the Government explore the possibility of supply of the equipment by reputed manufacturers and lend initial 'hand holding' to FCI/NAFED /procurement centres to enable them to acquire/purchase the equipment so as to ensure that MSP of R&M seeds is linked to its 'oil content' from ensuing Rabi season. This will go a long way in augmenting the efficiency of resources used in the production process.

**Table-7.1: MSPs Recommended for RMS 2016-17**

(Rs. /quintal, percent)

Crops	Projected Costs 2015 - 16		Average Prices, 2015-16 (April-June)		MSP for RMS		MSP Recomm ended for the RMS 2016-17	Gross Margin over (A <sub>2</sub> +FL) w.r.t. MSP now being recomm ed (percent)	Justification	
	A <sub>2</sub>	A <sub>2</sub> +FL C <sub>2</sub>	Domestic	International	2014-15	2015-16				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Wheat	631	785	1163	1521	1302	1400 (3.70)	1450 (3.57)	1525 (5.17)	94.27	Excess central pool stocks; Recommended MSP fully covers projected cost.
Barley	486	776	1089	1280	1276	1100 (12.24)	1150 (4.55)	1225 (6.52)	57.86	Recommended MSP fully covers projected cost.
Gram	1724	2124	3102	3940	4665	3100 (3.33)	3175 (2.42)	3425 (7.87)	61.25	It will keep pace with increase in MSP of Kharif pulses and help moving towards self sufficiency in pulses.
Lentil	1573	2015	3098	5917	5960	2950 (1.72)	3075 (4.24)	3325 (8.13)	65.01	It will keep pace with increase in MSP of Kharif pulses and help moving towards self sufficiency in pulses.
R & M	1138	1702	2605	3762	2713	3050 (1.67)	3100 (1.64)	3350 # (8.06)	96.83	Recommended MSP will facilitate moving towards self-sufficiency in oilseeds.
Safflo wer	2574	3057	3734	2423	-	3000 (7.14)	3050 (1.67)	3300 (8.20)	7.95	Domestic price below MSP .

#: Corresponding to oil content of 35 percent.  
Note: Figures in parentheses represent increases in MSP over the previous year.

## Considerations and Recommendations for Price Policy

### Incentivizing Efficiency: Linking MSP of R&M with Oil Content

- 7.19 The Commission is of the considered opinion that these non-price and price policy recommendations would steer farmers and 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 and will go a long way in putting the crop husbandry on a higher trajectory of growth.

(Dr. Ashok Vishandass)  
**Chairman**

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

(Kaibalya Pradhan)  
**Member (Non-Official)**

(Dr. Shailja Sharma)  
**Member Secretary**

27<sup>th</sup> July, 2015

# Annex Tables



**Annex Table-1.1: All India Estimates of Area of Agricultural Commodities**

(Million hectares)

S.N.	Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Rice	Kharif	39.60	39.45	40.81	37.62	38.05	40.14	38.91	39.45	39.35
		Rabi	4.21	4.46	4.73	4.30	4.81	3.87	3.84	4.69	4.03
		Total	43.81	43.91	45.54	41.92	42.86	44.01	42.75	44.14	43.38
2	Wheat	Rabi	27.99	28.04	27.75	28.46	29.07	29.86	30.00	30.47	30.37
3	Barley	Rabi	0.65	0.60	0.71	0.62	0.71	0.64	0.70	0.67	0.67
	Coarse Cereals	Kharif	22.39	22.62	20.83	21.31	22.05	20.75	18.82	19.27	18.27
		Rabi	6.31	5.87	6.62	6.37	6.29	5.67	5.94	5.95	5.50
		Total	28.71	28.48	27.45	27.68	28.34	26.42	24.76	25.22	23.77
	Cereals	Kharif	62.00	62.07	61.64	58.92	60.10	60.89	57.73	58.72	57.62
		Rabi	38.52	38.36	39.10	39.13	40.17	39.40	39.78	41.11	39.90
		Total	100.52	100.43	100.74	98.05	100.27	100.29	97.52	99.83	97.52
4	Jowar	Kharif	3.74	3.50	2.89	3.24	3.07	2.62	2.43	2.28	1.96
		Rabi	4.73	4.26	4.64	4.55	4.31	3.63	3.79	3.52	3.31
		Total	8.47	7.76	7.53	7.79	7.38	6.25	6.21	5.79	5.27
5	Bajra	Kharif	9.51	9.57	8.75	8.90	9.61	8.78	7.30	7.81	7.07
6	Maize	Kharif	6.96	7.12	6.89	7.06	7.28	7.38	7.21	7.31	7.47
		Rabi	0.93	1.00	1.28	1.20	1.27	1.40	1.46	1.76	1.52
		Total	7.89	8.12	8.17	8.26	8.55	8.78	8.67	9.07	8.99
7	Ragi	Kharif	1.18	1.39	1.38	1.27	1.29	1.18	1.13	1.19	1.18
8	Tur (Arhar)	Kharif	3.56	3.73	3.38	3.47	4.37	4.01	3.89	3.90	3.71
9	Moong	Kharif	3.19	3.73	2.84	3.07	3.51	3.39	2.72	3.38	2.88
10	Urad	Kharif	3.10	3.23	2.67	2.96	3.25	3.22	3.13	3.06	3.28
11	Gram	Rabi	7.49	7.54	7.89	8.17	9.19	8.30	8.52	9.93	8.39
12	Lentil (Masur)	Rabi	1.47	1.31	1.38	1.48	1.60	1.56	1.42	1.34	
	Pulses	Kharif	10.68	11.49	9.81	10.58	12.32	11.19	9.95	10.33	9.74
		Rabi	12.52	12.14	12.29	12.70	14.08	13.27	13.30	14.88	13.34
		Total	23.19	23.63	22.09	23.28	26.40	24.46	23.26	25.21	23.08
	Foodgrains	Kharif	72.67	73.58	71.45	69.51	72.42	72.08	67.69	69.05	67.36
		Rabi	51.04	50.49	51.39	51.83	54.25	52.67	53.09	55.99	53.25
		Total	123.71	124.07	122.83	121.33	126.67	124.75	120.78	125.04	120.60
13	Groundnut	Kharif	4.78	5.31	5.29	4.62	4.98	4.32	3.93	4.65	3.78
		Rabi	0.83	0.98	0.88	0.86	0.88	0.95	0.79	0.86	0.81
		Total	5.62	6.29	6.16	5.48	5.86	5.26	4.72	5.51	4.59
14	Soyabean	Kharif	8.33	8.88	9.51	9.73	9.60	10.11	10.84	11.72	11.09
15	Sunflower	Kharif	0.86	0.76	0.66	0.57	0.32	0.26	0.30	0.25	0.19
		Rabi	1.30	1.15	1.15	0.91	0.61	0.47	0.53	0.42	0.34
		Total	2.16	1.91	1.81	1.48	0.93	0.73	0.83	0.67	0.52
16	Sesamum	Kharif	1.70	1.80	1.81	1.94	2.08	1.90	1.71	1.68	1.78
17	Nigerseed	Kharif	0.47	0.41	0.39	0.38	0.37	0.36	0.31	0.30	0.28
18	R&M	Rabi	6.79	5.83	6.30	5.59	6.90	5.89	6.36	6.65	6.00
19	Safflower	Rabi	0.38	0.29	0.29	0.29	0.24	0.25	0.18	0.18	0.14
	Total Oilseeds	Kharif	16.77	17.95	18.53	17.97	18.23	18.42	18.32	19.65	18.25
		Rabi	9.74	8.74	9.03	7.99	9.00	7.89	8.16	8.40	7.58
		Total	26.51	26.69	27.56	25.96	27.22	26.31	26.48	28.05	25.82
20	Cotton		9.14	9.41	9.41	10.13	11.24	12.18	11.98	11.96	12.99
	Jute		0.79	0.81	0.79	0.81	0.77	0.81	0.78	0.76	0.75
	Mesta		0.14	0.15	0.12	0.09	0.10	0.10	0.09	0.08	0.06
21	Jute & Mesta		0.94	0.96	0.90	0.91	0.87	0.90	0.86	0.84	0.80
22	Sugarcane		5.15	5.06	4.42	4.17	4.88	5.04	5.00	4.99	5.03

Source : DES

**Annex Table-1.2: All India Estimates of Production of Agricultural Commodities**

(Million tonnes)

S.N.	Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Rice	Kharif	80.17	82.66	84.94	75.95	80.68	92.78	92.36	91.50	89.62
		Rabi	13.18	14.03	14.23	13.14	15.29	12.52	12.87	15.15	12.91
		Total	93.36	96.69	99.17	89.08	95.97	105.30	105.23	106.65	102.53
2	Wheat	Rabi	75.81	78.57	80.68	80.80	86.87	94.88	93.51	95.85	90.78
3	Barley	Rabi	1.33	1.20	1.69	1.35	1.66	1.62	1.75	1.83	1.63
	Coarse Cereals	Kharif	25.61	31.89	28.54	23.83	33.08	32.44	29.80	31.20	29.46
		Rabi	8.31	8.86	11.49	9.72	10.32	9.58	10.25	12.09	10.96
		Total	33.92	40.75	40.04	33.55	43.40	42.01	40.04	43.29	40.42
	Cereals	Kharif	105.78	114.55	113.49	99.78	113.77	125.22	122.16	122.70	119.09
		Rabi	97.30	101.46	106.40	103.65	112.48	116.98	116.63	123.09	114.65
		Total	203.08	216.01	219.89	203.44	226.24	242.20	238.78	245.79	233.74
4	Jowar	Kharif	3.71	4.11	3.05	2.76	3.44	3.29	2.84	2.39	1.93
		Rabi	3.44	3.81	4.19	3.94	3.56	2.69	2.44	3.15	2.85
		Total	7.15	7.93	7.25	6.70	7.00	5.98	5.28	5.54	4.78
5	Bajra	Kharif	8.42	9.97	8.89	6.51	10.37	10.28	8.74	9.25	9.00
6	Maize	Kharif	11.56	15.11	14.12	12.29	16.64	16.49	16.20	17.14	16.26
		Rabi	3.54	3.85	5.61	4.43	5.09	5.27	6.05	7.11	6.48
		Total	15.10	18.96	19.73	16.72	21.73	21.76	22.26	24.26	22.74
7	Ragi	Kharif	1.44	2.15	2.04	1.89	2.19	1.93	1.57	1.98	1.90
8	Tur (Arhar)	Kharif	2.31	3.08	2.27	2.46	2.86	2.65	3.02	3.17	2.71
9	Moong	Kharif	1.12	1.52	1.03	0.69	1.80	1.63	1.19	1.61	1.39
10	Urad	Kharif	1.47	1.49	1.17	1.24	1.76	1.77	1.95	1.70	1.70
11	Gram	Rabi	6.33	5.75	7.06	7.48	8.22	7.70	8.83	9.53	7.59
12	Lentil (Masur)	Rabi	0.91	0.81	0.95	1.03	0.94	1.06	1.13	1.02	-
	Pulses	Kharif	4.80	6.40	4.69	4.20	7.12	6.06	5.92	5.99	5.52
		Rabi	9.40	8.36	9.88	10.46	11.12	11.03	12.43	13.79	11.87
		Total	14.20	14.76	14.57	14.66	18.24	17.09	18.34	19.78	17.39
	Foodgrains	Kharif	110.58	120.96	118.17	103.99	120.89	131.27	128.07	128.69	124.60
		Rabi	106.71	109.82	116.28	114.11	123.60	128.01	129.05	136.88	126.52
		Total	217.28	230.78	234.46	218.10	244.48	259.29	257.12	265.57	251.12
13	Groundnut	Kharif	3.29	7.36	5.62	3.85	6.64	5.13	3.19	8.06	5.06
		Rabi	1.57	1.82	1.55	1.58	1.62	1.84	1.51	1.66	1.59
		Total	4.86	9.18	7.17	5.43	8.26	6.96	4.69	9.71	6.65
14	Soyabean	Kharif	8.85	10.97	9.91	9.96	12.74	12.21	14.67	11.86	10.71
15	Sunflower	Kharif	0.37	0.46	0.36	0.21	0.19	0.15	0.19	0.15	0.10
		Rabi	0.86	1.00	0.80	0.64	0.46	0.37	0.36	0.35	0.28
		Total	1.23	1.46	1.16	0.85	0.65	0.52	0.54	0.50	0.38
16	Sesamum	Kharif	0.62	0.76	0.64	0.59	0.89	0.81	0.69	0.71	0.77
17	Nigerseed	Kharif	0.12	0.11	0.12	0.10	0.11	0.10	0.10	0.10	0.09
18	R&M	Rabi	7.44	5.83	7.20	6.61	8.18	6.60	8.03	7.88	6.76
19	Safflower	Rabi	0.24	0.19	0.19	0.18	0.15	0.15	0.11	0.11	0.06
	Total Oilseeds	Kharif	14.01	20.71	17.81	15.73	21.92	20.69	20.79	22.61	18.54
		Rabi	10.28	9.91	9.91	9.15	10.56	9.11	10.15	10.14	8.84
		Total	24.29	30.62	27.72	24.88	32.48	29.80	30.94	32.75	27.38
20	Cotton\$		28.00	30.70	29.00	30.50	33.91	35.30	36.50	37.50	-
	Cotton\$\$		22.63	25.88	22.28	24.02	33.00	35.20	34.22	35.90	35.33
	Jute##		10.32	10.22	9.63	11.23	10.01	10.74	10.34	11.08	10.97
	Mesta##		0.96	0.99	0.73	0.59	0.61	0.66	0.59	0.61	0.52
21	Jute & Mesta##		11.27	11.21	10.37	11.82	10.62	11.40	10.93	11.69	11.49
22	Sugarcane		355.52	348.19	285.03	292.30	342.38	361.04	341.20	352.14	356.56

## : Million bales of 180 kgs each.

\$ : CAB estimates of million bales of 170 kgs each.

Source : DES

\$\$ : E&S estimates of Million bales of 170 kgs each.

**Annex Table-1.3: All India Estimates of Yield of Agricultural Commodities**

(Kgs per hectare)

S.N.	Crops		2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Rice	Kharif	2024	2095	2081	2019	2121	2311	2373	2319	2277
		Rabi	3130	3147	3010	3055	3176	3238	3353	3232	3205
		Total	2131	2202	2178	2125	2239	2393	2461	2416	2363
2	Wheat	Rabi	2708	2802	2907	2839	2989	3177	3117	3145	2989
3	Barley	Rabi	2055	1985	2394	2172	2357	2516	2521	2718	2427
	Coarse Cereals	Kharif	1144	1410	1371	1119	1500	1563	1583	1619	1613
		Rabi	1316	1510	1735	1525	1641	1689	1725	2034	1991
		Total	1182	1431	1459	1212	1531	1590	1617	1717	1700
	Cereals	Kharif	1706	1846	1841	1693	1893	2056	2116	2089	2067
		Rabi	2526	2645	2721	2649	2800	2969	2931	2995	2873
		Total	2020	2151	2183	2075	2256	2415	2449	2462	2397
4	Jowar	Kharif	992	1176	1055	853	1119	1257	1171	1050	985
		Rabi	727	894	904	865	827	741	644	896	860
		Total	844	1021	962	860	949	957	850	957	906
5	Bajra	Kharif	886	1042	1015	731	1079	1171	1198	1184	1273
6	Maize	Kharif	1660	2122	2048	1740	2285	2234	2246	2346	2176
		Rabi	3793	3854	4387	3694	4003	3765	4152	4050	4270
		Total	1912	2335	2414	2024	2540	2478	2566	2676	2529
7	Ragi	Kharif	1226	1552	1477	1489	1705	1641	1396	1661	1609
8	Tur (Arhar)	Kharif	650	826	671	711	655	662	776	813	731
9	Moong	Kharif	349	409	364	225	513	483	436	475	483
10	Urad	Kharif	473	462	440	418	542	549	622	555	518
11	Gram	Rabi	845	762	895	915	895	928	1036	960	905
12	Lentil (Masur)	Rabi	621	622	693	697	591	678	797	759	-
	Pulses	Kharif	449	557	478	397	578	541	594	580	567
		Rabi	751	688	804	823	790	831	934	927	890
		Total	612	625	659	630	691	699	789	785	753
	Foodgrains	Kharif	1522	1644	1654	1496	1669	1821	1892	1864	1850
		Rabi	2091	2175	2263	2202	2278	2430	2431	2445	2376
		Total	1756	1860	1909	1798	1930	2078	2129	2124	2082
13	Groundnut	Kharif	689	1386	1063	835	1335	1188	811	1735	1337
		Rabi	1880	1857	1764	1830	1846	1938	1908	1926	1970
		Total	866	1459	1163	991	1411	1323	994	1764	1448
14	Soyabean	Kharif	1063	1235	1041	1024	1327	1208	1353	1012	966
15	Sunflower	Kharif	425	607	540	378	608	566	622	621	553
		Rabi	661	870	696	700	748	783	674	826	826
		Total	567	765	639	576	701	706	655	750	729
16	Sesamum	Kharif	363	421	354	303	429	426	402	426	434
17	Nigerseed	Kharif	258	269	297	266	290	269	325	328	301
18	R&M	Rabi	1095	1001	1143	1183	1185	1121	1262	1185	1126
19	Safflower	Rabi	637	642	642	621	617	580	591	638	452
	Total Oilseeds	Kharif	836	1154	961	875	1203	1123	1135	1151	1016
		Rabi	1055	1134	1097	1146	1174	1155	1244	1207	1166
		Total	916	1147	1006	958	1193	1133	1168	1168	1060
20	Cotton\$		521	554	524	512	513	493	518	533	-
	Cotton\$\$		421	467	403	403	499	491	486	510	462
	Jute##		2342	2260	2207	2492	2329	2389	2396	2639	2650
	Mesta##		1210	1221	1141	1122	1115	1248	1237	1338	1628
21	Jute & Mesta##		2170	2102	2071	2349	2192	2268	2281	2512	2577
22	Sugarcane		69022	68877	64553	70020	70091	71667	68254	70522	70854

Source : DES

**Annex Table-2.1: List of DCP states for wheat**

Sl. No.	States
(1)	(2)
1	Bihar
2	Chhattisgarh
3	Gujarat
4	Madhya Pradesh
5	Punjab (to the extent of its requirement of 8.69 LMT)
6	Rajasthan (in Alwar district only)
7	Uttarakhand
8	West Bengal

Source: FCI

**Annex Table - 2.2 : Procurement as Percentage of Production of Rabi Crops (Marketing Season)**

(Million Tonnes, Percent)

S.N.	Parameter	Wheat			Gram			Lentil			R&M			Safflower		
		2013-14	2014-15	2015-16	2013-14	2014-15	2015-16	2013-14	2014-15	2015-16	2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	Production	93.51	95.85	90.78	8.83	9.53	7.59	1.13	1.02	-	8.03	7.88	6.76	0.11	0.11	0.06
2	Procurement*	25.09	28.02	27.62	-	0.04	0.28	-	-	-	-	-	0.00	-	-	-
3	% Procurement	26.83	29.24	30.43	-	0.40	3.64	-	-	-	-	-	0.03	-	-	-
4	Socks with FCI (as on 1st July)	42.40	39.80	38.68	Not Available											
5	Storage capacity with FCI (Rice and Wheat as on 1st July)	39.18	38.74	37.30												
6	Storage capacity with States (Rice and Wheat as on 1st July)	37.69	37.55	38.13												
7	Total Storage capacity (Rice and Wheat as on 1st July)	76.87	76.29	75.43												
8	Buffer Stock Norms (as on 1st July)	20.10	20.10	27.58												

Source : DES, FCI and NAFED  
\* As on 30.6.2015

**Annex Table-2.3: States/Centres with Prices of Rabi Crops Below MSP during 2015-16 Marketing Season**

S.No.	State	Centre	MSP	Rs./qtl	
				Month	
(1)	(2)	(3)	(4)	April	May
(1)	(2)	(3)	(4)	(5)	(6)
<b>Wheat</b>			1450		
1	Karnataka	Dharwar		1425	
2	Madhya Pd.	Bhopal		1352	1419
3	Maharashtra	Jalgaon		1400	1350
4	Uttar Pd.	Shahjahanpur		1400	1435
<b>Barley</b>			1150		
1	Haryana	Hissar		1000	1110
2	Rajasthan	Jaipur		1100	1125
<b>Rapeseed &amp; Mustard</b>			3100		
1	Jammu & Kashmir	Jammu			2400
<b>Safflower</b>			3050		
1	Maharashtra	Jalna		2450	2200
2	Karnataka	Gulbarga		2475	2505

Source:DES

**Annex Table-2.4: Possible Savings from Taxes As a Consequence of Freezing MSP for Tax Purpose - Wheat**

Crop Year	Haryana						M.P.				Punjab				Savings {Col.(16)- col.(15)} (Rs. Crore)	
	MSP (Rs./qtl)	Tax Rate (Percent)	Procurement (Million Tonne)	Total Taxes Realised (Rs. Crore)	Taxes at MSP of 2004-05 level (Rs. Crore)*	Savings {Col.(6)- col.(5)} (Rs. Crore)	Tax Rate (Percent)	Procurement (Million Tonne)	Total Taxes Realised (Rs. Crore)	Taxes at MSP of 2004-05 level (Rs. Crore)*	Savings {Col.(11)- col.(10)} (Rs. Crore)	Tax Rate (Percent)	Procurement (Million Tonne)	Total Taxes Realised (Rs. Crore)		Taxes at MSP of 2004-05 level (Rs. Crore)*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
2004-05	640	10.5	5.115	344	344	0	2.2	0.35	4.9	4.9	0.0	11.5	9.240	680.1	680.1	0.0
2005-06	650	10.5	4.529	309	304	5	2.2	0.48	6.9	6.8	0.1	11.5	9.010	673.5	663.1	10.4
2006-07	700	10.5	2.229	164	150	14	2.2	0.00	0.0	0.0	0.0	11.5	6.951	559.6	511.6	48.0
2007-08	1000	10.5	3.350	352	225	127	2.2	0.06	1.3	0.8	0.5	12.5	6.781	847.6	542.4	305.1
2008-09	1080	10.5	5.237	594	352	242	2.2	2.41	57.3	33.9	23.3	13.5	9.941	1449.3	858.9	590.5
2009-10	1100	10.5	6.924	800	465	334	2.2	1.97	47.6	27.7	19.9	13.5	10.725	1592.7	926.6	666.0
2010-11	1120	10.5	6.335	745	426	319	2.2	3.54	87.2	49.8	37.4	13.5	10.205	1543.0	881.7	661.3
2011-12	1285	11.5	6.928	1024	510	514	7.2	4.96	459.4	228.8	230.6	14.5	10.958	2041.7	1016.9	1024.8
2012-13	1350	11.5	8.665	1345	638	708	7.2	8.49	825.5	391.3	434.2	14.5	12.834	2512.3	1191.0	1321.3
2013-14	1400	11.5	5.873	946	432	513	7.2	6.36	640.6	292.8	347.7	14.5	10.897	2212.1	1011.3	1200.9
2014-15	1450	11.5	6.495	1083	478	605	7.2	7.09	740.6	326.9	413.7	14.5	11.641	2447.5	1080.3	1367.2
Total				7705	4324	3381			2871	1364	1507			16559	9364	7195

\*Taxes that would have been Realised if MSP were Frozen at 2004-05 level for tax purpose only

**Annex Table-3.1 : Salient Features of Various Crop Insurance Schemes**

S.N.	Parameter	NAIS	MNAIS	WBCIS
(1)	(2)	(3)	(4)	(5)
1	Farmers Covered	All farmers, including sharecroppers, tenant farmers growing the notified crops in the notified areas are eligible for coverage	Same as NAIS, and also Including farmers under Contract farming, Group of farmers/societies serviced by Fertilizer Companies, Pesticide firms etc.	All the cultivators (including sharecroppers and tenant cultivators) growing any Notified Crop in any Reference Unit Area
2	Crops Covered	Food Crops, Oilseeds and Annual Commercial and Horticultural Crop, for which past yield data is available and CCEs are conducted for yield estimation under General Crop Estimation Survey (GCES) based in minimum number of CCEs	Same as NAIS	Cereals millets, pulses, oilseeds and ACH for which Co-relation of incidences of adverse conditions captured by weather indices is estimated on the expected crop yield.
3	Insurance Unit	Scheme provided for reduction of unit to Village Panchayat (VP)	Unit reduced to Village / Village Panchayat (VP) or cluster of villages for major crops. For other crops the insurance unit can be between Village / VP and Tehsil / Block.	Depends on the availability of weather stations. Preferably each Village Panchayat / Revenue Circle / Mandal / Hobli / Block / Tehsil etc. should be referenced by a Automatic Weather Station.
4	Data Requirement	Past yield data as well as actual yield data based on CCEs is required Minimum no. of per crop CCEs required: Taluka/Tehsil/Block – 16 Mandal/Phirka/Other Unit of 8-10 Villages – 10 Gram Panchayat – 4 (Ground Nut-8)	Past yield data as well as actual yield data based on CCEs is required. Minimum no. of per crop CCEs required: Taluka/Tehsil/Block – 16 Mandal/Phirka/Other Unit of 8-10 Villages – 10 Gram Panchayat – 4 (Ground Nut – 8) Rainfall data may also be required.	Past 25 – 30 yrs' weather data required
5	Indemnity Limit (IL) is based on	(a) Yield variability in the past 10 years measured in terms of Coefficient of Variation (CV) (b) Applied at State level (60, 80 & 90%)	(a) Claim experience (as if) in the past 7 / 10 years measured in terms of 'loss cost' (b) Applied at District level (80 & 90%)	(a) Weather triggers beyond which claims becomes payable are set on the basis of past weather data and the correlation of weather parameters with the yield for each risk covers.
6	Risks covered	Practically 'all risk' insurance	"All risk" with added advantage of sowing failure cover and post-harvest losses in coastal areas.	Not an all risk cover. Only parametric weather exigencies (like rainfall, temperature, humidity etc.), which are specified by the state are covered.
7	Localized calamities	Provides for 'individual assessment' of claims for localized calamities (hailstorm, landslide, flooding) in one or two areas on experimental basis	Individual farm assessment of claims in case of hailstorm and landslide for all areas / crops notified under MNAIS	No provision for individual assessment. Available only for Add-On cover for hail storm and cloud burst.

(continued)



**Annex Table-3.1 : Salient Features of Various Crop Insurance Schemes**

S.N.	Parameter	NAIS	MNAIS	WBCIS
(1)	(2)	(3)	(4)	(5)
8	In-season settlement of claims	The claims are settled based on the final yield estimates submitted by States. There is no provision to provide for in-season / on-account settlement of claims	On-account settlement of claims upto 25% of likely claims is paid during the crop season based on composite index (weather data / crop health report / satellite imagery etc.)	Payouts are made usually within 45 days from end of risk period, subject to receipt of weather data and premium subsidy
9	Prevented / failed Sowing Risk	Presently not covered (covers risk only when sowing is undertaken in insured area)	Prevented / Failed Sowing Risk to be covered with a benefit of upto 25% of sum insured being paid as claim, and the insurance cover gets terminated in the insured area.	Prevented sowing risk to a good extent is correlated with rainfall cover by way of deficit/excess rain triggers.
10	Post-Harvest losses	Presently not covered (as yield are estimated at harvest time)	Coverage is available upto 2 weeks for harvested crop lying in the field in 'cut & spread' condition, against specified perils of cyclone in coastal areas.	Post-harvest losses can be covered by extending unseasonal/excess rainfall risk cover during the period.
11	Basis of Sum Insured	Loanee: Loan disbursed amount / value of TY / 150% value of AY Non-Loanee: value of TY / 150% value of AY	Loanee Sanctioned or Disbursed / value of TY / 150% value of AY Non-Loanee: value of TY / 150% value of AY Sum insured to be scaled down for crops with actuarial premium rate higher than the capped rate.	Pre-defined sum insured based on cost of cultivation Sum insured to be scaled down for crops with premium rate higher than the capped rate.
12	Premium Rate	For Food Crop and Oilseeds Flat premium rates are charged upto normal coverage. For extended coverage, actuarial premium rates apply. (1.5% to 3.5%) For ACH crops – Commercial premium rate	Actuarial Premium rates are charged Upto the value of premium amount equivalent to Capped premium rates, for FCOS crops of 9% for Rabi & 11% for Kharif, and 12% for ACH crops, the Sum Insured is scaled down. On the Scaled down Sum Insured, actuarial premium rates are notified	Actuarial Premium rates are charged Upto the value of premium amount equivalent to Capped premium rates, for FCOS crops, of 8% for Rabi & 10% for Kharif, and 12% for ACH crops, the Sum Insured is scaled down. On the Scaled down Sum Insured, actuarial premium rates are notified
13	Availing insurance	Only through Banks (RFIs) (though option was given but rarely any non-loanee came direct to AIC offices)	Loanee: Banks Non-Loanee: Banks / Channel partners / Insurance Intermediaries / Direct	Loanee: Banks Non-Loanee: Banks / Channel partners / Insurance Intermediaries / Direct
14	Bank Service Charge	2.5% of premium paid under the Scheme	4% of premium paid under the Scheme	4% of premium paid under the Scheme
15	Commission/ Brokerage	Not applicable	As decided by Insurer subject to IRDA capping	As decided by Insurer subject to IRDA capping

(concluded)

**Annex Table-4.1: Benchmarking Productivity of Rabi Crops, 2014-15**

S.N	Crop	Yield (TE 2014-15) (Average All-India) (Tn/ Ha)	Benchmarking States TE 2014-15	Benchmarking Countries TE 2013	Efficiency gap in India's Yield level w.r.t benchmark State (%)	Efficiency gap in India's Yield level w.r.t benchmark Country (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Wheat	3.08	Punjab (4.8, 18.1%), Haryana (4.5, 12.0%), , Uttar Pradesh (3.1, 32.2%), Rajasthan (2.9, 9.1%)	Germany (7.4, 3.4%), UK (7.3, 1.9%), France (7.0, 5.5%), Egypt (6.6, 1.3%), India (3.1, 13.2%)	37.1	58.3
2	Barley	2.55	Punjab (3.7, 3.0%), Haryana (3.5, 8.0%), Uttar Pradesh (2.8, 26.4%)Rajasthan (2.8, 50.6%),	Ireland (7.3, 1.1%), France (6.3, 7.4%), Germany (6.1, 7.2%), UK (5.7, 4.4%), India (2.2, 1.2%)	31.0	65.0
3	Gram	0.97	Andhra Pd. (1.2, 8.0%), Jharkhand (1.2, 2.0%), Madhya Pd. (1.1, 39.0%), Uttar Pradesh (0.9, 6.4%)	Canada (2.1, 1.2%), Mexico (1.9, 1.5%), USA(1.8, 1.1%), Ethiopia (1.8, 2.9%), India (0.9, 67.8%)	19.4	54.0
4	Lentil	0.74	Bihar (1.1, 17.2%), Rajasthan (1.0, 3.0%), Jharkhand (0.9, 3.8%), West Bengal (0.9, 5.2%)	China (2.3, 3.2%), Australia (2.0, 8.3%), Turkey (1.7, 8.9%), Canada(1.7, 35.1%), India (0.6, 22.2%)	32.6	67.7
5	R & M	1.22	Gujarat (1.7, 4.8%), Haryana (1.7, 11.3%), Bihar (1.3, 1.4%)Rajasthan (1.3, 44.9%),	Germany (3.5, 7.2%), UK (3.4, 3.7%), France (3.3, 7.6%), Czech Rep(3.0, 1.8%), India (1.2, 11.3%)	28.1	65.1
6	Safflower	0.57	Karnataka (0.7, 29.8%), Maharashtra (0.5, 51.7%)	China (1.6, 4.9%), Mexico (1.5, 22.0%), Turkey (1.4, 3.8%), USA (1.4, 11.6%), India (0.7, 18.5%)	18.9	64.5

Source: CACP, data from FAO and DES

Notes: 1. Figures in col. (3) & (4) are based on TE 2014-15 (except Lentil which is for TE 2013-14) and in col. (5) are based on TE 2013

2. Figures in parentheses indicate yield (Tn./Ha.) and share of production (%) respectively.

3. Countries and States with less than 1% share in total production have not been considered.

4. Yield of India in col. (3) relates to agriculture year whereas that in col. 5 relates to calendar year.

5. Efficiency Gap=(1-Avg. yield/Max. Yield)\*100

**Annex Table-4.2 : 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/qlt= Rs.  1980 {col(3)*Price of Oil cake}/100	Cost of Oil Content i.e. oilseeds without cake (Rs/qlt.), assuming MSP/qlt.=  3350 MSP-Col(4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (Rs/qlt.) {col(5)/col(2)}*0.25	MSP 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	1287	2063	14.74	3350
2	35.25	64.75	1282	2068	14.67	3365
3	35.50	64.50	1277	2073	14.60	3379
4	35.75	64.25	1272	2078	14.53	3394
5	36.00	64.00	1267	2083	14.46	3409
6	36.25	63.75	1262	2088	14.40	3423
7	36.50	63.50	1257	2093	14.33	3437
8	36.75	63.25	1252	2098	14.27	3452
9	37.00	63.00	1247	2103	14.21	3466
10	37.25	62.75	1242	2108	14.14	3480
11	37.50	62.50	1238	2113	14.08	3494
12	37.75	62.25	1233	2117	14.02	3508
13	38.00	62.00	1228	2122	13.96	3522
14	38.25	61.75	1223	2127	13.90	3536
15	38.50	61.50	1218	2132	13.85	3550
16	38.75	61.25	1213	2137	13.79	3564
17	39.00	61.00	1208	2142	13.73	3578
18	39.25	60.75	1203	2147	13.68	3592
19	39.50	60.50	1198	2152	13.62	3605
20	39.75	60.25	1193	2157	13.57	3619
21	40.00	60.00	1188	2162	13.51	3633
22	40.25	59.75	1183	2167	13.46	3646
23	40.50	59.50	1178	2172	13.41	3660
24	40.75	59.25	1173	2177	13.35	3673
25	41.00	59.00	1168	2182	13.30	3686
26	41.25	58.75	1163	2187	13.25	3700
27	41.50	58.50	1158	2192	13.20	3713
28	41.75	58.25	1153	2197	13.15	3726
29	42.00	58.00	1148	2202	13.10	3739

(continued)

**Annex Table-4.2 : 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.  1980 {col(3)*Price of Oil cake}/100	Cost of Oil Content i.e. oilseeds without cake (Rs/qtl.), assuming MSP/qtl.=  3350 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+{Avera ge of col.(6)* percent points of oil content that is over & above 35%}}/(0.25)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
30	42.25	57.75	1143	2207	13.06	3752
31	42.50	57.50	1139	2212	13.01	3765
32	42.75	57.25	1134	2216	12.96	3778
33	43.00	57.00	1129	2221	12.92	3791
34	43.25	56.75	1124	2226	12.87	3804
35	43.50	56.50	1119	2231	12.82	3817
36	43.75	56.25	1114	2236	12.78	3830
37	44.00	56.00	1109	2241	12.73	3843
38	44.25	55.75	1104	2246	12.69	3855
39	44.50	55.50	1099	2251	12.65	3868
40	44.75	55.25	1094	2256	12.60	3881
41	45.00	55.00	1089	2261	12.56	3893
42	45.25	54.75	1084	2266	12.52	3906
43	45.50	54.50	1079	2271	12.48	3918
44	45.75	54.25	1074	2276	12.44	3931
45	46.00	54.00	1069	2281	12.40	3943
46	46.25	53.75	1064	2286	12.36	3956
47	46.50	53.50	1059	2291	12.32	3968
48	46.75	53.25	1054	2296	12.28	3980
49	47.00	53.00	1049	2301	12.24	3993
50	47.25	52.75	1044	2306	12.20	4005
51	47.50	52.50	1040	2311	12.16	4017
52	47.75	52.25	1035	2315	12.12	4029
53	48.00	52.00	1030	2320	12.09	4041
Average increase in MSP with 0.25 percent increase in oil content					13.27	

(concluded)

**Annex Table – 5.1 : Quarterly Domestic and International Prices of Rabi crops**

S.No.	Quarter	Wheat		Barley		Gram		Lentil		R&M Oilseed		R&M Oil	
		D	I	D	I	D	I	D	I	D	I	D	I
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	2011 Q1	1305	1453	1202	897	2285	2433	3440	3848	2452	3052	6067	6433
2	2011 Q2	1248	1350	1166	937	2276	2671	3241	3651	2461	3042	6055	6366
3	2011 Q3	1190	1238	1068	963	2747	3174	3303	2846	2633	2936	6576	6209
4	2011 Q4	1186	1275	1019	1074	3122	3454	3170	3149	2821	3021	6863	6479
5	2012 Q1	1229	1301	1136	1084	3164	3423	3233	3235	3164	3083	7687	6442
6	2012 Q2	1261	1362	1218	1286	3659	3859	3363	3539	3401	3379	7822	6718
7	2012 Q3	1370	1604	1199	1186	4304	4280	3692	3516	3879	3489	8423	6838
8	2012 Q4	1449	1826	1223	1350	4161	3818	3659	3177	3847	3364	7990	6489
9	2013 Q1	1495	1612	1241	1282	3571	3665	3691	3137	3465	3408	7369	6502
10	2013 Q2	1475	1538	1203	1289	3263	3654	3890	4167	3131	3202	6654	6208
11	2013 Q3	1477	1604	1211	1186	2961	3154	4026	4098	3146	3050	6756	6231
12	2013 Q4	1561	1715	1267	935	2908	3127	4087	3790	3301	3173	7152	6305
13	2014 Q1	1615	1630	1303	800	2872	3202	4303	4211	3175	3332	6833	6069
14	2014 Q2	1491	1577	1266	824	2797	3239	4687	4464	3106	3242	6539	5776
15	2014 Q3	1536	1296	1330	789	2655	3303	4780	4618	3271	2575	7044	5276
16	2014 Q4	1541	1483	1396	947	2781	3162	4970	4717	3437	2597	7303	5023
17	2015 Q1	1575	1390	1398	1175	3200	3755	5368	5185	3467	2529	7096	4716
18	2015 Q2	1521	1302	1280	1276	3940	4665	5917	5960	3762	2713	7689	4897

D: Domestic and I: International

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

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

3. R&M Oil, Rotterdam Dutch, Ex Mill, Oil World.

4. R&M Oilseed, Hamburg CIF.

5. Domestic Price from DES.

Sources: NAFFED, DES, USDA, SEAI, and World Bank.

**Annex Table-6.1: State-wise Gross and Net returns of Rabi crops  
(Average of 2011-12 to 2013-14)**

S. No.	Crops	Cost A <sub>2</sub>	Cost A <sub>2</sub> + FL	Cost C <sub>2</sub>	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> + FL		Net Returns	
						Rs./ha. (Col.6- Col.3)	Percent (Col.7/Col.3* 100)	Rs./ha. (Col.6- Col.4)	Percent (Col.9/Col.4* 100)	Rs./ha. (Col.6- Col.5)	Percent (Col.11/Col.5 *100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<b>Wheat</b>											
1	Bihar	17405	21358	29437	42592	25186	145	21234	99	13155	45
2	Chhattisgarh	13915	18226	26195	25258	11343	82	7032	39	-937	-4
3	Gujarat	23176	28367	39580	57325	34149	147	28958	102	17744	45
4	Haryana	24327	31412	55080	76165	51838	213	44752	142	21085	38
5	Himachal Pradesh	10304	17109	26084	25110	14806	144	8001	47	-974	-4
6	Jharkhand	19085	20383	26563	35302	16217	85	14919	73	8739	33
7	Maharashtra	27658	33444	44892	47710	20052	72	14266	43	2818	6
8	Madhya Pradesh	15884	20210	36007	53654	37770	238	33444	165	17647	49
9	Punjab	25001	27497	51072	72997	47995	192	45500	165	21925	43
10	Rajasthan	19600	30408	45963	70343	50743	259	39935	131	24381	53
11	Uttarakhand	15537	22885	34124	43423	27886	179	20538	90	9299	27
12	Uttar Pradesh	22680	28090	43875	55177	32497	143	27087	96	11301	26
13	West Bengal	26747	32858	43329	37404	10657	40	4546	14	-5925	-14
	ALL-INDIA	21225	26687	42899	58342	37117	175	31655	119	15443	36
<b>Barley</b>											
1	Rajasthan	16987	29882	43824	60106	43118	254	30223	101	16282	37
2	Uttar Pradesh	18739	25153	39043	46300	27561	147	21147	84	7257	19
	ALL-INDIA	17605	28187	42111	55226	37621	214	27039	96	13115	31
<b>Gram</b>											
1	Andhra Pradesh	19992	21562	34810	37083	17091	85	15521	72	2273	7
2	Bihar	11552	13318	21736	31611	20058	174	18293	137	9875	45
3	Chhattisgarh	13118	16171	23640	25347	12229	93	9175	57	1706	7
4	Haryana	9261	14472	25618	28217	18956	205	13745	95	2599	10
5	Karnataka	14528	16305	23883	28866	14338	99	12561	77	4983	21
6	Maharashtra	20954	24886	35040	40363	19409	93	15477	62	5323	15
7	Madhya Pradesh	15363	18483	29896	38869	23507	153	20387	110	8973	30
8	Rajasthan	10040	15857	24094	33534	23494	234	17677	111	9441	39
9	Uttar Pradesh	14640	19027	29175	30790	16149	110	11762	62	1615	6
	ALL-INDIA	15317	18875	29030	35846	20529	134	16971	90	6816	23

(continued)

**Annex Table-6.1: State-wise Gross and Net returns of Rabi crops  
(Average of 2011-12 to 2013-14)**

S. N.	Crops	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	Cost C <sub>2</sub>	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL		Net Returns	
(1)	(2)	(3)	(4)	(5)	(6)	Rs./ha. (Col.6- Col.3)	Percent (Col.7/Col.3* 100)	Rs./ha. (Col.6- Col.4)	Percent (Col.9/Col.4* 100)	Rs./ha. (Col.6- Col.5)	Percent (Col.11/Col.5 *100)
<b>Lentil</b>											
1	Bihar	8957	11193	20749	32738	23781	266	21545	192	11989	58
2	Madhya Pradesh	10456	12582	21232	29820	19364	185	17238	137	8588	40
3	Uttar Pradesh	11942	15654	25967	33631	21689	182	17977	115	7664	30
4	West Bengal	13679	20022	28103	29748	16069	117	9726	49	1645	6
	ALL-INDIA	10975	13941	23343	31660	20685	188	17719	127	8317	36
<b>Rapeseed/Mustard</b>											
1	Assam	10470	19872	25655	20749	10278	98	876	4	-4907	-19
2	Bihar	15277	19298	26986	30965	15687	103	11667	60	3978	15
3	Gujarat	16002	21426	33086	52611	36609	229	31185	146	19525	59
4	Haryana	16801	22882	44485	61598	44796	267	38716	169	17113	38
5	Madhya Pradesh	12104	16405	31198	49274	37171	307	32869	200	18076	58
6	Rajasthan	12114	19792	30730	45950	33836	279	26158	132	15220	50
7	Uttar Pradesh	14554	20886	35547	42892	28338	195	22006	105	7345	21
8	West Bengal	18542	25177	35630	38656	20114	108	13478	54	3026	8
	ALL-INDIA	13406	20203	32756	45892	32485	242	25689	127	13136	40
<b>Safflower</b>											
1	Maharashtra	14516	18483	24358	25343	10827	75	6860	37	985	4
	ALL-INDIA	14516	18483	24358	25343	10827	75	6860	37	985	4

Source: CACP calculations based on CS data

(concluded)



**Annex Table-6.2: Month-wise Average Daily Wage Rates for Agricultural Labour (Man)**

S.No.	Daily Wage Rates	(Rupees)															
		A. P.	Assam	Bihar	Gujarat	Haryana	H. P.	Karnataka	Kerala	M. P.	Maharashtra	Odisha	Punjab	Rajasthan	T. N.	U. P.	W. B.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1	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
2	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
3	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
4	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
5	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
6	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
7	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
8	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
9	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
10	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
11	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
12	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
13	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
14	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
15	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
16	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
17	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
18	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
19	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
20	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
21	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
22	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

(continued)

**Annex Table-6.2: Month-wise Average Daily Wage Rates for Agricultural Labour (Man)**

(Rupees)

S.No.	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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
23	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
24	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
25	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
26	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
27	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
28	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
29	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
30	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
31	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
32	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
33	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
34	October	198.55	145.43	145.81	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
35	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
36	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
37	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
38	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
39	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
40	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
41	May	222.85	150.01	167.22	130.93	244.86	266.25	192.39	489.16	137.83	197.24	141.25	277.78	243.76	265.94	169.44	184.85
42	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
43	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
44	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

(continued)



Annex Table-6.2: Month-wise Average Daily Wage Rates for Agricultural Labour (Man)

		(Rupees)																	
S.No.	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.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
45	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		
46	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		
47	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		
48	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		
49	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		
50	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		
51	March	221.77	189.42	201.92	175.46	333.44	341.11	242.86	593.63	161.12	218.68	163.91	279.29	269.60	355.74	194.60	222.69		
52	April	221.62	198.60	203.83	178.54	335.00	352.22	240.30	593.63	163.25	222.96	160.24	305.63	290.57	360.78	200.62	226.35		
53	May	224.60	203.47	206.17	178.54	345.56	334.58	241.69	593.63	164.72	223.23	172.95	307.06	283.45	364.12	202.26	224.89		
54	June	217.26	204.06	206.90	178.65	347.38	340.55	240.90	593.63	164.47	230.36	191.15	304.28	280.20	361.98	198.90	226.92		
55	July	230.29	208.23	217.58	185.45	345.24	345.31	240.96	598.84	172.56	224.55	200.97	301.68	320.16	372.06	199.98	225.66		
56	August	225.57	220.14	220.18	190.24	348.46	342.61	241.31	598.84	172.69	226.17	208.40	304.19	304.59	371.10	202.11	230.34		
57	September	239.34	225.18	220.36	190.23	349.82	342.93	241.83	585.81	179.80	222.16	204.31	310.04	295.88	417.20	197.95	233.76		
58	October	241.45	225.96	222.06	197.99	353.74	338.92	241.61	586.26	171.23	222.39	201.94	310.04	296.76	411.64	200.91	236.53		
59	November	247.01	237.90	220.38	197.99	357.07	330.40	243.84	597.03	170.33	222.85	199.58	311.96	305.49	421.45	199.10	235.61		
60	December	235.90	233.92	220.29	192.36	344.47	349.49	251.80	603.78	175.56	222.42	193.86	307.45	306.94	417.49	198.56	236.86		
61	January, 2015	246.45	234.74	219.31	193.74	338.36	363.19	253.74	642.84	177.59	224.76	200.76	285.55	297.62	429.69	199.55	240.73		
62	February	249.63	234.18	221.40	194.08	335.45	363.33	252.42	642.84	178.89	225.27	201.62	290.13	287.37	439.56	202.49	241.16		
63	March	245.08	226.40	227.80	194.43	340.75	363.33	252.90	641.56	179.12	226.05	201.51	280.62	284.44	429.04	204.84	242.07		
64	April	244.70	224.60	229.54	194.55	340.36	363.33	252.90	652.28	181.88	230.87	200.91	277.48	290.78	403.34	208.69	242.09		

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

(concluded)

**Annex Table-6.3: Farm Inputs- Wholesale Prices Index ( Base 2004-05=100)**

S.No.	Month/Year	Fertilisers	Electricity (Irrigation)	Pesticides	Non-Electrical Machinery	Tractors	Lubricants	High Speed Diesel (HSD)	Fodder	Cattle Feed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Annual Average (July - June)									
1	2011-12	137.2	136.8	116.0	123.7	137.9	235.3	167.8	195.9	190.3
2	2012-13	151.1	170.9	122.2	123.0	142.7	248.3	192.7	237.8	220.0
3	2013-14	153.0	206.4	128.4	124.4	147.3	262.1	224.9	281.6	248.7
4	2014-15*	155.2	212.4	136.8	127.5	152.2	274.7	217.9	301.6	262.9
<b>2010</b>										
5	January	108.9	117.4	110.2	117.7	123.5	174.5	133.9	182.3	173.1
6	February	109.0	117.4	110.2	118.0	123.5	174.5	136.6	176.5	175.6
7	March	109.8	117.4	111.8	118.6	123.7	174.5	144.6	199.1	175.8
8	April	114.6	117.4	114.6	118.8	123.5	174.5	145.6	182.2	177.0
9	May	115.2	126.2	113.6	117.6	123.9	194.2	145.6	165.2	177.0
10	June	115.3	126.2	113.6	117.8	124.0	194.2	147.4	171.3	177.0
11	July	115.3	126.2	113.4	117.9	124.0	194.2	153.5	173.4	177.6
12	August	116.5	126.2	113.3	117.9	124.0	194.2	153.5	180.7	177.8
13	September	116.5	126.2	113.4	118.0	124.2	194.2	153.5	186.5	178.0
14	October	116.3	126.2	113.7	118.0	125.0	194.2	153.5	192.7	178.2
15	November	116.6	126.2	114.0	118.2	125.6	194.2	153.6	190.7	178.6
16	December,2010	116.3	126.2	113.9	118.1	125.6	194.2	153.6	190.1	178.5
<b>2011</b>										
17	January	117.8	128.1	112.9	121.0	128.0	194.2	153.6	193.9	181.3
18	February	120.3	128.1	113.1	122.9	128.3	194.2	153.6	198.5	181.4
19	March	120.7	128.1	113.9	123.2	128.9	194.2	153.6	205.8	180.5
20	April	122.9	128.1	114.1	123.6	131.4	214.0	153.6	200.6	183.8
21	May	125.2	128.1	113.9	123.1	134.8	220.8	153.6	176.8	181.2
22	June	125.7	128.1	113.8	123.5	134.8	220.8	157.1	179.5	180.0
23	July	127.0	128.1	114.5	123.5	136.0	221.8	167.8	182.7	184.9
24	August	127.9	128.1	114.6	123.5	136.4	231.2	167.8	188.2	186.3
25	September	130.4	133.8	114.8	123.8	137.2	236.6	167.8	189.8	186.4
26	October	134.9	135.7	114.6	124.2	137.5	236.6	167.8	191.2	186.4
27	November	137.6	135.7	114.6	125.9	137.8	236.6	167.8	196.9	186.2
28	December,2011	138.7	135.7	115.3	125.8	137.8	236.6	167.8	198.9	186.2
<b>2012</b>										
29	January	139.5	135.7	115.9	123.6	137.9	236.6	167.8	198.5	187.3
30	February	140.1	135.7	115.9	124.0	138.0	236.6	167.8	197.4	191.8
31	March	141.1	135.7	116.2	122.8	138.4	236.6	167.8	202.2	197.3
32	April	142.3	135.7	118.9	122.1	138.3	236.6	167.8	205.7	195.4
33	May	142.4	135.7	118.7	122.6	138.3	236.6	167.8	203.4	195.6
34	June	144.3	166.3	117.9	122.6	140.7	241.4	167.8	196.0	199.7
35	July	148.3	166.3	120.4	122.7	140.7	241.4	167.8	208.4	199.7
36	August	149.1	166.3	121.0	122.9	140.9	241.4	168.6	217.8	199.7
37	September	150.5	166.3	122.1	122.9	141.2	241.4	182.8	228.1	201.8
38	October	150.7	166.3	122.1	123.0	141.5	241.4	192.3	236.1	209.3
39	November	151.0	166.3	122.1	123.1	142.4	241.4	192.3	239.6	214.3
40	December,2012	152.1	166.3	122.3	123.0	143.7	253.3	192.3	237.5	225.2

(continued)

**Annex Table-6.3: Farm Inputs- Wholesale Prices Index ( Base 2004-05=100)**

S.No.	Month/Year	Fertilisers	Electricity (Irrigation)	Pesticides	Non-Electrical Machinery	Tractors	Lubricants	High Speed Diesel (HSD)	Fodder	Cattle Feed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>2013</b>										
41	January	152.6	166.3	123	123	143.7	253.3	198.8	241.9	225.2
42	February	152.5	166.3	122.9	123.5	143.7	253.3	202.7	246.2	231.1
43	March	152.3	166.3	122.5	123.1	143.7	253.3	201.7	250.4	232.2
44	April	152.4	184.8	122	123	143.7	253.3	202.3	246	233.8
45	May	151.5	184.8	123	122.9	143.7	253.3	203.4	244.2	233.3
46	June	150.5	184.8	123.5	122.9	143.7	253.3	207	257.1	234.1
47	July	151.5	184.8	123.6	123.1	143.7	253.3	212	265.3	238.2
48	August	152	203	124.5	123.8	143.8	253.3	215.4	267.6	237.7
49	September	152.4	206.9	125.7	123.9	144.3	263.9	219.8	270.1	238.8
50	October	152.7	209.1	127.7	124.1	144.7	263.9	220.4	270.7	238.4
51	November	152.8	209.1	127.9	124.1	144.7	263.9	222.4	274.1	239
52	December,2013	152.6	205.5	127.5	124.3	145	263.9	225	278.3	246.6
<b>2014</b>										
53	January	153	205.5	127.2	124.3	149	263.9	226.6	285.5	244.9
54	February	152.9	205.5	128.2	124.4	149.6	263.9	228.6	299	251.4
55	March	153.1	211.3	130.5	124.4	150.1	263.9	231.2	316.8	259.4
56	April	154.4	212.1	130.6	124.5	150.8	263.9	230.1	296.5	263.4
57	May	154.3	212.1	131.7	124.5	150.8	263.9	232.3	275.6	263.7
58	June	154.2	212.1	135.2	126.8	150.9	263.9	235.2	280	262.8
59	July	154.4	211.3	135.4	127.3	151.4	263.9	238.8	277.6	262.8
60	August	154.2	211.3	135.4	127.1	151.5	263.9	240.4	285.9	262.8
61	September	154.6	211.5	137.2	127.2	152	275.2	242	308.4	262.2
62	October	154.9	211.5	136.6	127.3	152.3	277.8	239.2	313.5	264.7
63	November	155.4	211.5	136.3	127.3	152.2	277.8	218.1	318.3	262.1
64	December,2014	155.3	211.5	137	127.3	152.1	277.8	210.8	322.4	260.3
<b>2015</b>										
65	January	155.3	211.5	138.6	127.8	152.2	277.8	200.7	319.6	262.9
66	February	155.6	217.9	138.1	127.9	152.3	277.8	188.4	306.6	262.9
67	March	156.1	211.5	137.3	127.8	152.6	277.6	203.2	286.1	263.8
68	April	156.3	214.7	135.9	127.6	153	277.5	197	277.4	264
% change of April,2015 over April,2014		1.2	1.2	4.1	2.5	1.5	5.2	-14.4	-6.4	0.2

\* For the year 2014-15 average is from July,2014 to April,2015

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

(concluded)

**Annex Table-6.4: Projected Cost of Production ( $C_2$  &  $A_2+FL$ ) for Rabi 2015-16 and Production Shares**  
(Rs./qtl, percent)

S.No.	States	Cost of Production			Shares in Production
		$A_2$	$A_2+FL$	$C_2$	
(1)	(2)	(3)	(4)	(5)	(6)
<b>Wheat</b>					
1	Bihar	731	892	1127	5
2	Chhattisgarh	1069	1385	1836	1
3	Gujarat	758	927	1234	4
4	Haryana	565	723	1143	12
5	Himachal Pradesh	841	1371	1845	1
6	Jharkhand	810	863	1084	1
7	Madhya Pradesh	582	741	1162	14
8	Maharashtra	1225	1475	1864	1
9	Punjab	583	638	1073	18
10	Rajasthan	497	765	1074	9
11	Uttar Pradesh	649	801	1163	31
12	Uttarakhand	598	882	1207	1
13	West Bengal	1515	1860	2190	1
All India Wtd. Avg.		<b>631</b>	<b>785</b>	<b>1163</b>	
<b>Barley</b>					
1	Rajasthan	437	776	1062	66
2	Uttar Pradesh	580	776	1141	34
All India Wtd. Avg.		<b>486</b>	<b>776</b>	<b>1089</b>	
<b>Gram</b>					
1	Andhra Pradesh	2168	2377	3637	8
2	Bihar	1728	1982	2975	1
3	Chhattisgarh	1629	2004	2809	3
4	Haryana	1314	2084	3469	1
5	Karnataka	2380	2763	3705	8
6	Madhya Pradesh	1614	1930	2943	41
7	Maharashtra	2193	2604	3441	14
8	Rajasthan	1083	1723	2544	17
9	Uttar Pradesh	1769	2303	3477	7
All India Wtd. Avg.		<b>1724</b>	<b>2124</b>	<b>3102</b>	

(continued)

**Annex Table-6.4: Projected Cost of Production ( $C_2$  &  $A_2+FL$ ) for Rabi 2015-16 and Production Shares**

(Rs./qtl, percent)

S.No.	States	Cost of Production			Shares in Production
		$A_2$	$A_2+FL$	$C_2$	
(1)	(2)	(3)	(4)	(5)	(6)
<b>Lentil</b>					
1	Bihar	1384	1754	2821	18
2	Madhya Pradesh	1501	1850	2895	29
3	Uttar Pradesh	1678	2169	3298	48
4	West Bengal	1654	2413	3321	5
All India Wtd. Avg.		<b>1573</b>	<b>2015</b>	<b>3098</b>	
<b>Rapeseed/Mustard</b>					
1	Assam	1869	3475	4199	2
2	Bihar	1659	2089	2825	2
3	Gujarat	1211	1600	2296	5
4	Haryana	1020	1368	2539	13
5	Madhya Pradesh	908	1225	2149	12
6	Rajasthan	1042	1691	2520	50
7	Uttar Pradesh	1240	1760	2880	10
8	West Bengal	1876	2526	3361	7
All India Wtd. Avg.		<b>1138</b>	<b>1702</b>	<b>2605</b>	
<b>Safflower</b>					
1	Maharashtra	2574	3057	3734	100
All India Wtd. Avg.		<b>2574</b>	<b>3057</b>	<b>3734</b>	

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

(concluded)



**Annex Table-6.5(a): Wheat-Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Bihar		Chhattisgarh		Gujarat		Haryana	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Operational Cost		23055.77	21315.03	21237.24	17067.00	31088.61	27866.71	34251.73	31487.82
Human Labour									
1	Casual	3487.00	3271.69	1794.76	1380.64	4401.62	4703.96	5084.91	4676.28
2	Attached	22.38	24.35	154.24	45.92	116.04	25.45	332.03	229.63
3	Family	3933.64	3745.27	5038.46	4002.39	5829.01	5306.39	8514.40	6753.16
4	Total	7443.02	7041.31	6987.46	5428.95	10346.67	10035.80	13931.34	11659.07
Bullock Labour									
5	Hired	90.87	69.48	5.30	0.00	85.95	80.52	0.13	0.19
6	Owned	381.65	712.31	765.18	1532.68	508.77	539.00	202.39	193.53
7	Total	472.52	781.79	770.48	1532.68	594.72	619.52	202.52	193.72
Machine Labour									
8	Hired	4877.70	4135.53	4116.59	2563.57	4759.29	3739.09	6550.29	6290.24
9	Owned	38.33	23.54	271.85	156.54	431.05	416.37	1172.35	1671.73
10	Total	4916.03	4159.07	4388.44	2720.11	5190.34	4155.46	7722.64	7961.97
11	Seed	2546.09	2525.71	2089.91	1955.09	4125.54	2975.34	2375.86	2025.23
Fertilisers and Manure									
12	Fertilisers	4066.48	3476.23	3324.22	2046.18	4359.69	4221.60	4383.15	4364.94
13	Manure	16.24	69.41	0.00	0.00	285.86	242.30	0.00	15.46
14	Total	4082.72	3545.64	3324.22	2046.18	4645.55	4463.90	4383.15	4380.40
Other Inputs									
15	Insecticides	0.00	0.00	46.34	22.61	386.71	276.49	748.67	683.66
16	Irrigation charges	3015.93	2729.09	3139.52	2965.48	5033.64	4656.54	4107.39	3819.72
17	Interest on working capital	579.46	532.42	490.87	395.90	765.44	683.66	779.92	749.54
18	Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.24	14.51
Fixed Cost		9220.83	8268.64	8344.24	8824.43	13638.02	12306.36	26105.55	22223.00
19	Rental value of owned land	7546.11	6463.05	6335.86	6789.77	9818.52	8559.85	22944.22	18419.86
20	Rent paid for leased-in land	0.00	0.00	0.00	0.00	1097.12	1046.72	0.00	0.00
21	Land revenue, cesses & taxes	28.12	25.18	2.24	3.03	6.36	6.28	0.00	0.18
22	Depreciation on implements & Farm buildings	398.44	352.70	456.82	405.56	165.35	200.20	343.90	407.90
23	Interest on fixed capital	1248.16	1427.71	1549.32	1626.07	2550.67	2493.31	2817.43	3395.06
Total Cost		32276.60	29583.67	29581.48	25891.43	44726.63	40173.07	60357.28	53710.82

(continued)

**Annex Table-6.5(a): Wheat-Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Himachal Pradesh		Jharkhand		Madhya Pradesh		Maharashtra	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Operational Cost		19685.41	16288.09	21021.39	20275.94	21452.27	20620.67	36208.50	32790.62
Human Labour									
1	Casual	1227.71	592.28	3797.04	3215.02	2013.87	1695.85	3860.25	4557.85
2	Attached	16.46	18.36	0.00	0.00	160.93	111.33	728.20	919.19
3	Family	8504.07	7046.78	1440.13	1151.07	4678.97	4591.75	6293.26	6174.97
4	Total	9748.24	7657.42	5237.17	4366.09	6853.77	6398.93	10881.71	11652.01
Bullock Labour									
5	Hired	312.76	345.46	0.00	0.00	12.14	21.95	404.55	375.51
6	Owned	263.34	142.45	0.00	0.00	511.96	346.17	1225.41	662.88
7	Total	576.10	487.91	0.00	0.00	524.10	368.12	1629.96	1038.39
Machine Labour									
8	Hired	4215.52	3515.48	7999.79	8131.12	5177.07	5015.45	7828.27	7294.30
9	Owned	70.20	25.26	16.27	165.34	274.58	270.35	897.43	181.53
10	Total	4285.72	3540.74	8016.06	8296.46	5451.65	5285.80	8725.70	7475.83
11	Seed	1778.59	1434.55	2726.00	2504.61	2685.59	2281.43	3604.52	3036.64
Fertilisers and Manure									
12	Fertilisers	1013.63	875.13	3123.27	3083.94	2567.87	2823.91	4818.99	4299.48
13	Manure	1795.18	1862.98	0.00	0.00	0.00	20.84	0.00	0.00
14	Total	2808.81	2738.11	3123.27	3083.94	2567.87	2844.75	4818.99	4299.48
Other Inputs									
15	Insecticides	92.83	75.23	0.00	0.00	28.47	6.22	510.55	427.85
16	Irrigation charges	56.29	74.09	1325.52	1445.30	2832.35	2949.36	5130.55	4053.89
17	Interest on working capital	338.83	280.04	593.37	579.54	508.28	0.34	906.52	806.53
18	Miscellaneous	0.00	0.00	0.00	0.00	0.19	485.72	0.00	0.00
Fixed Cost		10913.67	9593.15	7052.34	6476.15	16052.46	16499.27	11462.39	11962.43
19	Rental value of owned land	7323.46	5826.60	5559.04	5045.30	13569.87	13853.93	8418.76	7973.16
20	Rent paid for leased-in land	58.20	49.87	0.00	0.00	0.00	0.00	0.00	0.00
21	Land revenue, cesses & taxes	9.21	9.10	9.92	9.85	5.31	5.20	15.26	14.30
22	Depreciation on implements & Farm buildings	703.37	700.91	427.57	345.06	327.34	347.36	341.32	386.17
23	Interest on fixed capital	2819.43	3006.67	1055.81	1075.94	2149.94	2292.78	2687.05	3588.80
Total Cost		30599.08	25881.24	28073.73	26752.09	37504.73	37119.94	47670.89	44753.05

(continued)

**Annex Table-6.5(a): Wheat-Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Punjab		Rajasthan		Uttar Pradesh		Uttarakhand		West Bengal	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
Operational Cost		23904.98	22032.69	33226.02	29256.81	27501.27	26527.78	20548.98	22956.16	34709.13	31668.63
Human Labour											
1	Casual	2235.11	1934.05	3035.48	2754.12	3364.80	3004.77	3274.75	3258.49	10514.44	7809.56
2	Attached	625.15	602.97	171.22	171.39	32.31	31.40	1.37	4.57	132.94	272.18
3	Family	2760.61	2292.53	12119.11	10217.88	5801.81	5325.32	6942.79	7356.72	5797.21	6535.29
4	Total	5620.87	4829.55	15325.81	13143.39	9198.92	8361.49	10218.91	10619.78	16444.59	14617.03
Bullock Labour											
5	Hired	1.04	0.10	72.92	46.55	10.08	8.89	1067.72	2298.16	509.99	671.12
6	Owned	67.39	78.31	458.33	246.78	518.83	570.01	334.95	68.12	883.50	1192.44
7	Total	68.43	78.41	531.25	293.33	528.91	578.90	1402.67	2366.28	1393.49	1863.56
Machine Labour											
8	Hired	5999.05	5240.32	5153.37	4612.07	6009.35	5475.36	2069.16	2093.38	3483.14	2929.79
9	Owned	2208.69	2109.15	333.95	387.04	581.42	434.84	292.20	374.26	2.92	11.79
10	Total	8207.74	7349.47	5487.32	4999.11	6590.77	5910.20	2361.36	2467.64	3486.06	2941.58
11	Seed	2054.19	1869.43	3286.77	2868.27	2788.73	2664.45	2222.92	2021.27	3466.17	2758.01
Fertilisers and Manure											
12	Fertilisers	5227.26	5246.99	3309.87	3112.77	4295.89	4392.54	2537.12	2955.41	5603.40	5261.03
13	Manure	8.43	7.23	161.79	404.98	33.35	1.95	867.83	1278.11	424.32	431.74
14	Total	5235.69	5254.22	3471.66	3517.75	4329.24	4394.49	3404.95	4233.52	6027.72	5692.77
Other Inputs											
15	Insecticides	1679.03	1624.12	16.32	56.20	114.37	152.45	298.30	21.86	146.11	168.14
16	Irrigation charges	350.78	378.23	4467.29	3801.82	3292.77	3822.14	227.56	753.1	2865.08	2862.52
17	Interest on working capital	640.74	598.19	639.60	576.94	657.56	642.50	412.31	472.71	876.12	761.62
18	Miscellaneous	47.51	51.07	0.00	0.00	0.00	1.16	0.00	0.00	3.79	3.40
Fixed Cost		30941.00	27037.69	17807.57	17312.29	18042.98	17170.57	11677.67	13093.45	12433.56	10597.16
19	Rental value of owned land	21071.42	19114.15	12650.92	12066.05	13001.50	13059.42	10482.76	9284.66	11129.40	9198.84
20	Rent paid for leased-in land	5971.40	4189.43	350.76	704.12	2029.59	890.10	0.00	2086.61	24.39	0.00
21	Land revenue, cesses & taxes	0.00	0.00	10.29	10.62	6.11	21.04	1.66	1.55	33.26	36.75
22	Depreciation on implements & Farm buildings	343.22	337.23	371.60	374.07	670.20	623.18	453.26	654.27	246.04	317.80
23	Interest on fixed capital	3554.96	3396.88	4424.00	4157.43	2335.58	2576.83	739.99	1066.36	1000.47	1043.77
Total Cost		54845.98	49070.38	51033.59	46569.10	45544.25	43698.35	32226.65	36049.61	47142.69	42265.79

Source: DES

(concluded)

### Annex Tale-6.5(b): Barley-Break-up of Cost of Cultivation

(Rs./ha.)

S.No.	Cost Items	Rajasthan		Uttar Pradesh	
		2013-14	2012-13	2013-14	2012-13
(1)	(2)	(3)	(4)	(5)	(6)
Operational Cost		31969.46	28872.03	26510.19	25816.37
Human Labour					
1	Casual	2406.69	2475.30	2340.44	3361.69
2	Attached	178.84	124.17	197.29	156.30
3	Family	14116.04	12530.26	7752.66	5957.51
4	Total	16701.57	15129.73	10290.39	9475.50
Bullock Labour					
5	Hired	26.20	31.31	0.00	0.00
6	Owmed	457.44	849.57	66.69	850.57
7	Total	483.64	880.88	66.69	850.57
Machine Labour					
8	Hired	5374.97	3738.00	3788.20	3554.66
9	Owmed	183.92	261.63	1480.70	1603.58
10	Total	5558.89	3999.63	5268.90	5158.24
11	Seed	2364.94	2332.34	2608.55	2919.82
Fertilisers and Manure					
12	Fertilisers	2091.69	1990.65	3714.13	3700.29
13	Manure	185.91	121.26	0.00	0.00
14	Total	2277.60	2111.91	3714.13	3700.29
Other Inputs					
15	Insecticides	76.01	35.70	0.00	0.00
16	Irrigation charges	3965.80	3886.63	3993.12	3110.17
17	Interest on working capital	541.01	495.21	568.41	601.78
18	Miscellaneous	0.00	0.00	0.00	0.00
Fixed Cost		14296.12	15381.51	14827.67	14719.15
19	Rental value of owned land	10596.67	10107.98	12520.80	11929.12
20	Rent paid for leased-in land	86.75	22.04	0.00	133.73
21	Land revenue, cesses & taxes	13.48	12.98	9.76	12.84
22	Depreciation on implements & Farm buildings	348.14	411.78	341.99	381.36
23	Interest on fixed capital	3251.08	4826.73	1955.12	2262.10
Total Cost		46265.58	44253.54	41337.86	40535.52

Source: DES

**Annex Table- 6.5 (c):Gram - Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Andhra Pradesh		Bihar		Chhattisgarh		Haryana	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Operational Cost		25378.77	21683.45	13337.06	14672.80	17436.97	17194.67	16033.90	15592.93
Human Labour									
1	Casual	8104.67	6086.81	2945.09	3009.78	1461.46	1351.94	4398.04	4802.63
2	Attached	42.26	75.00	62.46	84.27	0.00	0.00	0.00	0.00
3	Family	1516.91	1864.35	1836.60	2151.24	4031.83	2648.59	6896.69	4109.43
4	Total	9663.84	8026.16	4844.15	5245.29	5493.29	4000.53	11294.73	8912.06
Bullock Labour									
5	Hired	987.94	460.30	164.75	102.97	73.66	30.05	35.37	14.66
6	Owmed	756.19	479.39	0.00	526.38	853.11	665.92	0.00	0.00
7	Total	1744.13	939.69	164.75	629.35	926.77	695.97	35.37	14.66
Machine Labour									
8	Hired	2788.01	3254.46	2756.74	4156.14	3442.16	3583.09	2701.44	2704.76
9	Owmed	814.73	376.82	27.33	6.99	2.58	0.00	444.55	784.05
10	Total	3602.74	3631.28	2784.07	4163.13	3444.74	3583.09	3145.99	3488.81
11	Seed	4348.28	4441.55	3606.58	2982.99	2952.23	3634.41	1225.88	1779.17
Fertilisers and Manure									
12	Fertilisers	2358.40	1236.40	1464.76	1257.28	2111.76	1990.65	0.00	492.42
13	Manure	1864.81	1182.74	0.00	0.00	0.00	0.00	0.00	0.00
14	Total	4223.21	2419.14	1464.76	1257.28	2111.76	1990.65	0.00	492.42
Other Inputs									
15	Insecticides	1073.48	1618.32	108.22	11.87	762.24	1345.27	55.04	0.00
16	Irrigation charges	0.00	5.03	16.03	3.45	1323.07	1496.61	0.00	557.83
17	Interest on working capital	723.09	600.58	348.50	379.44	406.22	440.79	276.89	347.98
18	Miscellaneous	0.00	1.70	0.00	0.00	16.65	7.35	0.00	0.00
Fixed Cost		13091.25	15667.02	10502.20	7072.82	6304.08	8498.55	10818.41	13735.85
19	Rental value of owned land	10767.66	13301.64	9015.38	5850.44	5054.40	7706.49	6682.92	9925.89
20	Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Land revenue, cesses & taxes	0.07	0.23	34.37	29.32	2.34	2.13	0.00	0.00
22	Depreciation on implements & Farm buildings	355.16	292.19	293.09	281.80	319.30	200.22	288.10	197.25
23	Interest on fixed capital	1968.36	2072.96	1159.36	911.26	928.04	589.71	3847.39	3612.71
Total Cost		38470.02	37350.47	23839.26	21745.62	23741.05	25693.22	26852.31	29328.78

(continued)

**Annex Table- 6.5 (c):Gram - Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Karnataka		Madhya Pradesh		Maharashtra		Rajasthan		Uttar Pradesh	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Operational Cost		17468.44	17080.27	19184.87	19279.41	27308.92	24721.93	16038.54	16873.18	18070.37	18708.94
Human Labour											
1	Casual	4334.75	3631.75	2689.27	2364.97	5594.69	5197.57	2244.03	1769.23	2850.96	2997.41
2	Attached	0.00	0.00	151.71	121.38	747.47	712.84	128.08	103.50	3.17	3.32
3	Family	2178.56	1781.55	3410.50	3249.07	3898.69	4154.37	6440.37	5997.08	3525.25	4143.11
4	Total	6513.31	5413.30	6251.48	5735.42	10240.85	10064.78	8812.48	7869.81	6379.38	7143.84
Bullock Labour											
5	Hired	545.48	493.44	13.25	32.32	193.76	86.46	7.12	6.65	21.39	28.88
6	Owned	1119.14	987.63	384.13	361.38	1732.95	1370.43	113.59	74.38	66.67	212.22
7	Total	1664.62	1481.07	397.38	393.70	1926.71	1456.89	120.71	81.03	88.06	241.10
Machine Labour											
8	Hired	1989.75	1943.43	3742.13	3325.77	4632.18	3826.31	2806.44	2602.92	4155.35	3266.17
9	Owned	871.94	254.50	230.18	300.08	459.34	128.37	197.68	200.30	497.14	178.58
10	Total	2861.69	2197.93	3972.31	3625.85	5091.52	3954.68	3004.12	2803.22	4652.49	3444.75
11	Seed	2610.89	3855.80	4041.08	4893.85	3760.88	4031.91	1972.90	2905.47	5094.83	4991.21
Fertilisers and Manure											
12	Fertilisers	1962.04	1803.49	1593.87	1691.40	2331.20	1878.08	604.44	877.59	864.12	1105.49
13	Manure	0.00	566.54	0.00	0.00	0.00	158.85	0.00	2.78	0.00	0.00
14	Total	1962.04	2370.03	1593.87	1691.40	2331.20	2036.93	604.44	880.37	864.12	1105.49
Other Inputs											
15	Insecticides	1338.56	1235.09	736.52	740.04	890.74	764.46	40.66	515.98	23.18	6.93
16	Irrigation charges	54.00	63.45	1659.23	1668.96	2357.62	1789.01	1192.38	1487.72	527.55	1334.23
17	Interest on working capital	463.33	463.60	478.00	485.77	709.40	623.27	290.85	329.58	440.76	441.39
18	Miscellaneous	0.00	0.00	55.00	44.42	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost		8438.31	6867.75	8949.70	12325.30	11286.46	10247.77	8247.54	8895.59	8028.90	11969.64
19	Rental value of owned land	6911.70	5521.24	7256.55	10384.97	7204.80	6612.30	5644.37	5899.13	5313.65	8852.38
20	Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.16	61.64	386.78
21	Land revenue, cesses & taxes	6.07	6.88	5.00	5.56	19.92	17.02	3.37	3.28	8.19	7.20
22	Depreciation on implements & Farm buildings	134.26	179.70	348.51	344.41	400.88	414.59	292.19	266.06	552.91	438.76
23	Interest on fixed capital	1386.28	1159.93	1339.64	1590.36	3660.86	3203.86	2307.61	2700.96	2092.51	2284.52
Total Cost		25906.75	23948.02	28134.57	31604.71	38595.38	34969.70	24286.08	25768.77	26099.27	30678.58

Source: DES

(concluded)

**Annex Table-6.5(d): Lentil (Masur) - Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Bihar		Madhya Pradesh		Uttar Pradesh		West Bengal	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Operational Cost		11489.13	11571.46	13247.58	12374.50	17570.78	15470.73	21899.43	20504.02
Human Labour									
1	Casual	2636.21	2828.05	2461.12	2543.08	2541.47	2710.33	4281.25	6277.00
2	Attached	35.81	93.85	208.36	206.70	151.16	96.65	219.52	87.76
3	Family	2291.14	2272.37	2647.41	1922.24	4182.74	3587.52	9872.34	4736.67
4	Total	4963.16	5194.27	5316.89	4672.02	6875.37	6394.50	14373.11	11101.43
Bullock Labour									
5	Hired	182.79	103.46	137.50	207.51	55.02	170.22	978.30	666.72
6	Owned	500.27	910.38	711.01	146.10	1533.83	1311.45	514.88	517.27
7	Total	683.06	1013.84	848.51	353.61	1588.85	1481.67	1493.18	1183.99
Machine Labour									
8	Hired	2507.54	2505.96	2326.36	2792.26	3718.50	2784.27	2514.79	1733.69
9	Owned	66.70	20.84	257.90	204.72	550.05	504.21	30.62	157.91
10	Total	2574.24	2526.80	2584.26	2996.98	4268.55	3288.48	2545.41	1891.60
11	Seed	1545.66	1339.90	2035.84	1866.45	2672.97	2335.11	2152.40	2795.93
Fertilisers and Manure									
12	Fertilisers	1437.52	1211.63	1031.20	808.16	641.46	559.23	910.21	2996.11
13	Manure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.69
14	Total	1437.52	1211.63	1031.20	808.16	641.46	559.23	910.21	3006.80
Other Inputs									
15	Insecticides	0.00	0.00	259.72	165.00	6.72	1.27	16.10	15.57
16	Irrigation charges	6.76	3.23	807.88	1128.65	1111.16	1050.37	44.56	28.63
17	Interest on working capital	278.73	281.79	321.22	316.74	405.70	360.10	364.46	477.80
18	Miscellaneous	0.00	0.00	42.06	66.89	0.00	0.00	0.00	2.27
Fixed Cost		11780.95	8937.94	8473.09	10064.71	10250.01	11457.41	8107.41	9904.67
19	Rental value of owned land	10476.98	7110.82	6815.06	8913.25	8416.27	7762.48	7059.96	8848.00
20	Rent paid for leased-in land	0.00	0.00	0.00	0.00	47.50	0.00	0.00	0.00
21	Land revenue, cesses & taxes	35.44	27.52	5.10	6.93	15.26	10.39	56.95	79.47
22	Depreciation on implements & Farm buildings	218.53	221.16	340.73	236.90	498.08	671.57	399.20	382.50
23	Interest on fixed capital	1050.00	1578.44	1312.20	907.63	1272.90	3012.97	591.30	594.70
Total Cost		23270.08	20509.40	21720.67	22439.21	27820.79	26928.14	30006.84	30408.69

Source: DES



**Annex Table-6.5(e): Rapeseed & Mustard - Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Assam		Bihar		Gujarat		Haryana	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Operational Cost		22049.45	19490.44	20747.99	19261.95	25615.68	19701.11	26817.03	22555.60
Human Labour									
1	Casual	1055.51	1272.24	5082.87	4723.56	4074.76	2507.66	4158.88	3367.04
2	Attached	845.25	678.67	11.82	159.06	107.48	33.72	175.61	94.85
3	Family	10637.20	9327.12	4692.19	3758.94	6752.38	5257.42	7479.84	5729.68
4	Total	12537.96	11278.03	9786.88	8641.56	10934.62	7798.80	11814.33	9191.57
Bullock Labour									
5	Hired	24.32	17.79	0.00	0.00	568.73	103.80	21.12	0.04
6	Owned	6013.74	4216.71	0.00	915.45	358.97	214.89	50.77	43.40
7	Total	6038.06	4234.50	0.00	915.45	927.70	318.69	71.89	43.44
Machine Labour									
8	Hired	609.07	1161.44	2378.07	2040.54	4119.46	2874.60	4709.51	4234.15
9	Owned	122.21	72.11	311.88	97.48	102.61	133.87	1450.84	1574.77
10	Total	731.28	1233.55	2689.95	2138.02	4222.07	3008.47	6160.35	5808.92
11	Seed	458.60	434.89	776.94	891.19	895.85	631.37	752.75	720.83
Fertilisers and Manure									
12	Fertilisers	984.71	1300.49	3061.18	3140.86	3645.98	3358.17	3615.58	3638.28
13	Manure	902.00	686.70	1189.84	968.95	309.01	271.48	0.00	20.34
14	Total	1886.71	1987.19	4251.02	4109.81	3954.99	3629.65	3615.58	3658.62
Other Inputs									
15	Insecticides	51.01	3.36	741.53	433.95	95.69	138.30	75.36	26.37
16	Irrigation charges	0.00	10.94	2015.13	1662.18	4013.14	3738.15	3740.79	2589.31
17	Interest on working capital	345.83	307.98	486.54	469.79	571.62	437.68	585.98	509.88
18	Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.66
Fixed Cost		7058.22	6192.62	8126.39	7377.77	12484.69	10651.01	19572.67	22573.74
19	Rental value of owned land	5060.83	4269.33	6623.29	6035.65	8873.03	7147.82	16375.75	17068.51
20	Rent paid for leased-in land	78.32	6.27	0.00	0.00	156.08	326.72	0.00	0.00
21	Land revenue, cesses & taxes	40.22	37.68	24.22	23.94	3.60	4.21	0.00	0.00
22	Depreciation on implements & Farm buildings	571.50	482.57	249.83	154.76	268.29	278.51	332.27	501.48
23	Interest on fixed capital	1307.35	1396.77	1229.05	1163.42	3183.69	2893.75	2864.65	5003.75
Total Cost		29107.67	25683.06	28874.38	26639.72	38100.37	30352.12	46389.70	45129.34

(continued)

**Annex Table-6.5(e): Rapeseed & Mustard-Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Madhya Pradesh		Rajasthan		Uttar Pradesh		West Bengal	
		2013-14	2012-13	2013-14	2012-13	2013-14	2012-13	2013-14	2012-13
(1)	(2)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Operational Cost		17262.98	16335.66	20820.10	19416.45	23266.78	19808.45	27168.58	26160.26
Human Labour									
1	Casual	1548.87	1680.19	1826.07	1489.67	3120.34	2767.58	8173.05	8430.02
2	Attached	0.00	0.00	65.77	110.35	56.10	55.32	25.23	52.07
3	Family	5438.68	3927.12	8394.65	7706.13	7972.32	5693.79	7506.38	6069.28
4	Total	6987.55	5607.31	10286.49	9306.15	11148.76	8516.69	15704.66	14551.37
Bullock Labour									
5	Hired	0.00	129.79	30.67	20.22	11.44	267.11	725.40	331.98
6	Owned	76.37	0.00	229.33	141.30	896.84	698.61	908.50	1011.01
7	Total	76.37	129.79	260.00	161.52	908.28	965.72	1633.90	1342.99
Machine Labour									
8	Hired	5236.76	5143.10	3676.05	3224.19	3882.99	3331.21	2260.21	2124.55
9	Owned	4.67	11.13	582.89	518.64	1054.92	1137.55	20.41	91.78
10	Total	5241.43	5154.23	4258.94	3742.83	4937.91	4468.76	2280.62	2216.33
11	Seed	279.77	287.47	658.31	717.84	674.26	703.16	456.15	470.21
Fertilisers and Manure									
12	Fertilisers	2864.79	2682.48	2213.44	2300.79	3345.50	3049.72	4083.43	4948.89
13	Manure	0.00	0.00	0.00	15.00	15.14	28.88	203.63	136.01
14	Total	2864.79	2682.48	2213.44	2315.79	3360.64	3078.60	4287.06	5084.90
Other Inputs									
15	Insecticides	256.15	202.18	39.66	86.94	90.49	17.97	307.74	289.46
16	Irrigation charges	1195.64	1896.18	2726.73	2730.52	1682.97	1596.69	1896.60	1592.65
17	Interest on working capital	358.31	376.02	376.53	354.86	463.47	427.72	595.82	608.82
18	Miscellaneous	2.97	0.00	0.00	0.00	0.00	33.14	6.03	3.53
Fixed Cost		14919.52	16184.91	12071.96	11839.84	16391.32	15922.63	11000.37	11669.38
19	Rental value of owned land	12362.80	12713.83	6871.14	7697.60	12856.89	11328.36	9828.43	10497.09
20	Rent paid for leased-in land	0.00	0.00	1146.06	440.82	179.43	748.37	114.94	61.83
21	Land revenue, cesses & taxes	8.22	8.43	9.50	9.45	11.00	11.43	33.78	30.60
22	Depreciation on implements & Farm buildings	241.80	274.25	347.22	339.13	609.77	461.78	300.31	282.55
23	Interest on fixed capital	2306.70	3188.40	3698.04	3352.84	2734.23	3372.69	722.91	797.31
Total Cost		32182.50	32520.57	32892.06	31256.29	39658.10	35731.08	38168.95	37829.64

Source: DES

(concluded)

**Annex Table-6.5(f): Safflower - Break-up of Cost of Cultivation**

(Rs./ha.)

S.No.	Cost Items	Maharashtra	
		2013-14	2012-13
(1)	(2)	(3)	(4)
Operational Cost		19647.68	20031.39
Human Labour			
1	Casual	5875.41	5694.30
2	Attached	2847.76	2927.24
3	Family	3153.55	3770.66
4	Total	11876.72	12392.20
Bullock Labour			
5	Hired	121.48	0.00
6	Owned	3713.69	4017.05
7	Total	3835.17	4017.05
Machine Labour			
8	Hired	1106.03	222.30
9	Owned	32.04	46.85
10	Total	1138.07	269.15
11	Seed	506.56	633.59
Fertilisers and Manure			
12	Fertilisers	1556.63	1168.71
13	Manure	0.00	0.00
14	Total	1556.63	1168.71
Other Inputs			
15	Insecticides	151.85	58.89
16	Irrigation charges	82.85	999.04
17	Interest on working capital	499.83	492.76
18	Miscellaneous	0.00	0.00
Fixed Cost		6256.69	6030.36
19	Rental value of owned land	4575.67	3855.93
20	Rent paid for leased-in land	0.00	0.00
21	Land revenue, cesses & taxes	30.90	14.71
22	Depreciation on implements & Farm buildings	281.31	265.89
23	Interest on fixed capital	1368.81	1893.83
Total Cost		25904.37	26061.75

Source: DES

**Annex Table-6.6: Index of Terms of Trade Between Agriculture and Non-Agriculture Sectors**

TE 2011-12=100

S.No.	Year	Index of Prices Received (IPR)	Index of Prices Paid (IPP)	Index of Terms of Trade (ITT)
(1)	(2)	(3)	(4)	(5)
1	2004-05	62.4	71.0	87.8
2	2005-06	61.4	72.4	84.8
3	2006-07	64.0	73.5	87.1
4	2007-08	72.1	78.2	92.2
5	2008-09	82.1	82.1	100.0
6	2009-10	90.9	90.8	100.2
7	2010-11	101.3	98.4	102.9
8	2011-12	107.8	110.9	97.3
9	2012-13	119.5	122.8	97.3
10	2013-14*	130.7	136.8	95.5

Source: Committee's Report on Terms of Trade (TOT)

\* Provisional

**Annex Table-6.7: Cases where MSPs recommended by CACP and fixed by Government were different**

S. No.	Commodity	2000-01		2001-02		2005-06		2006-07		2007-2008		2008-2009		2009-2010		2010-11		2011-12		2012-13		2013-14		2015-16	
		Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed	Reco	Fixed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1	Paddy Common			520	530	560	570	570	580 <sub>μ</sub>	645	645\$	1000	850&	950	950&										
2	Paddy Grade A									675	675\$	1050	880&	980	980&					NR	1280				
3	Jowar-Maladandi																			NR	1520				
4	Bajra																				1175	1250			
5	Tur (Arhar)									1550	1550 <sub>μ</sub>					2800	3000*	3100	3200*			3850	4300	4425	4625 #
6	Moong									1700	1700 <sub>μ</sub>					3170	3170*	3400	3500*					4650	4850 #
7	Urad									1700	1700 <sub>μ</sub>					2900	2900*	3300	3300*					4425	4625 #
8	Wheat	580	610	610	620	650	650&	700	750 <sub>α</sub>							1120	1120 &			1285 <sub>£</sub>	1350				
9	Barley	460	500																						
10	R & M							1600	1715																

&: Additional bonus of Rs 50 per quintal

\$ : Additional bonus of Rs 100 per quintal. MSP was raised to Rs.850/ql. for Common variety & to Rs.880/ql. for Grade A w.e.f. 12 June, 2008

α: Additional bonus of Rs 100 per quintal is subject to the condition that state Government fully exempt this bonus amount from all state taxes and levies

\*: Additional Bonus of Rs 500 per quintal for market arrivals within the first two months of harvesting

£: 10 percent bonus if exports are banned and in a revised recommendation bonus of Rs 40 per quintal subject to liquidation of 15 million tones of Central Pool stocks

μ: Additional bonus of Rs 40 per quintal

# : Additional bonus of Rs 200 per quintal

**Annex Table-7.1:MSP Recommended by State Governments for the Rabi Crops of 2015-2016  
to be Marketed in 2016-17**

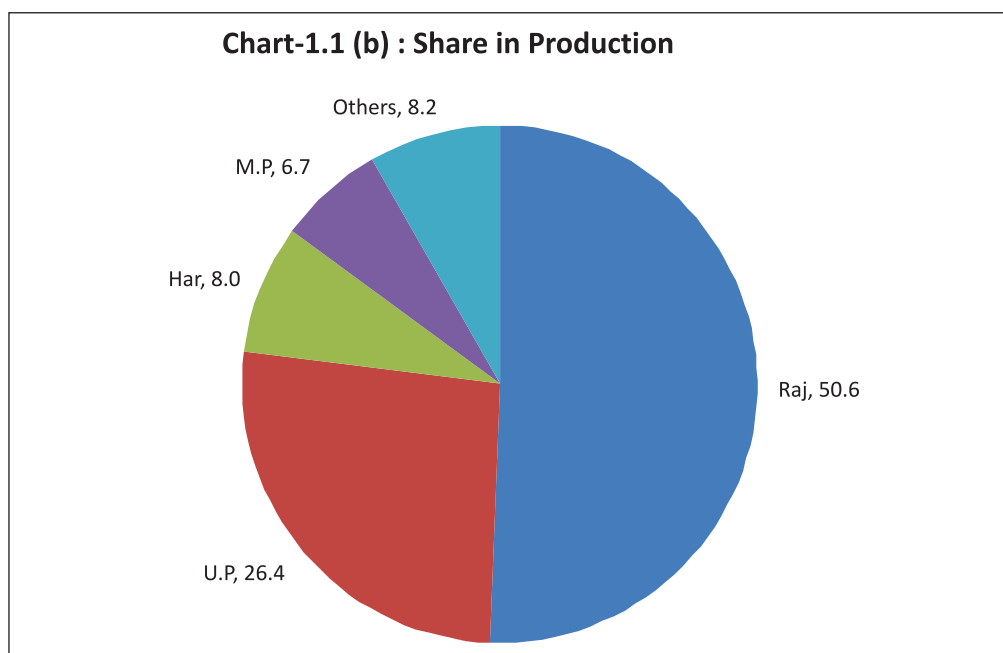
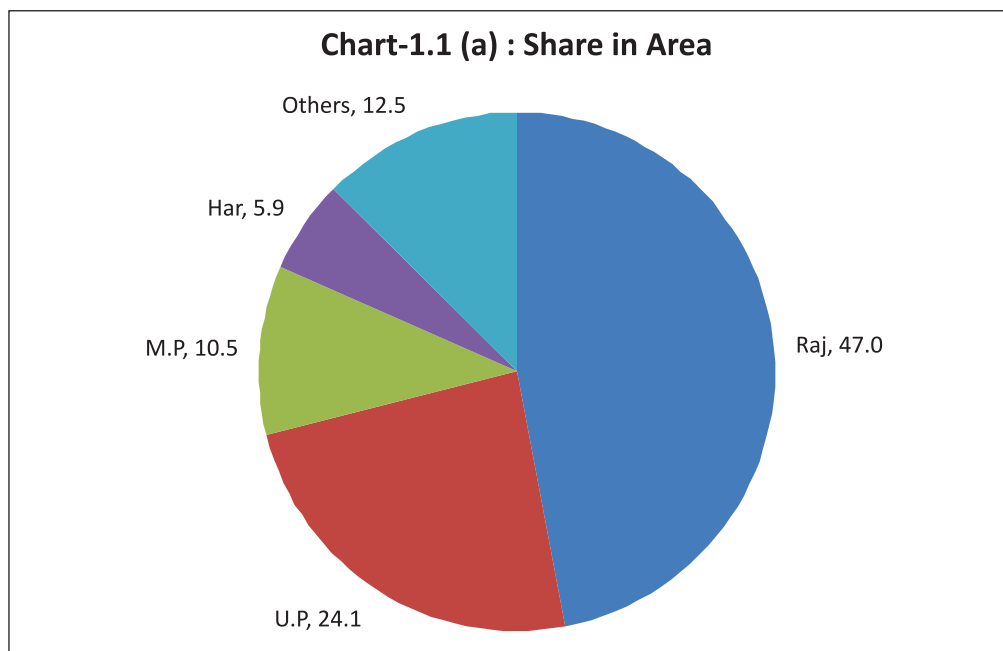
S.No.	State	Wheat (Common)	Wheat (Sharbati/Durum)	Wheat (Irrigated)	Wheat (Unirrigated)	Barley	Gram	Lentil/Masur	R & M	Safflower
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Andhra Pradesh						5779		4731	4745
2	Bihar	1804					3618	3466	4282	
3	Chhattisgarh	2000				1200	3400	3400	3200	3200
4	Gujarat			2000	2075		3800		3400	
5	Haryana	2172				1951	5168		4643	
6	Himachal Pd.	1450				1150	3175	3075	3100	3050
7	Jharkhand	1900-2100				1300-1350	3500-3600	3600-3700	4250-4350	3000-3300
8	Karnataka	2650					3900			4500
9	Madhya Pradesh	2800	3000				4100	3700	3900	
10	Odisha	1500					3250	3200	3150	3080
11	Punjab	1970				1640	3800		3600	
12	Rajasthan	1900				1700	4000		3800	
13	Tamil Nadu						4200			
14	Telangana	4540					6502		5231	5074
15	Uttar Pradesh	2590				2215	4340	4865	4970	
16	West Bengal	2680							4460	

Source: State Governments

# Annex Charts

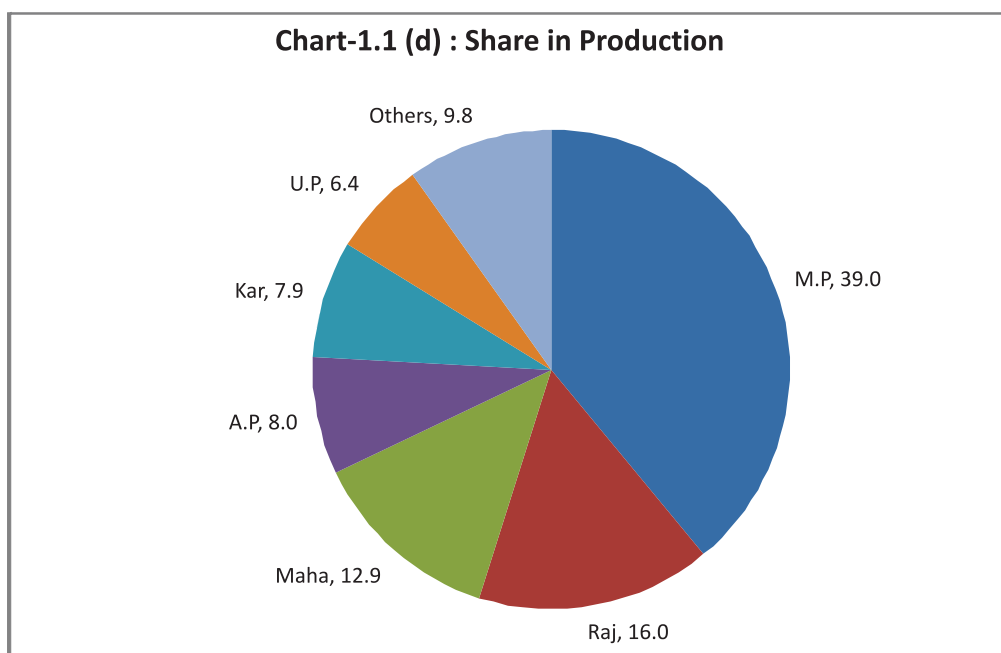
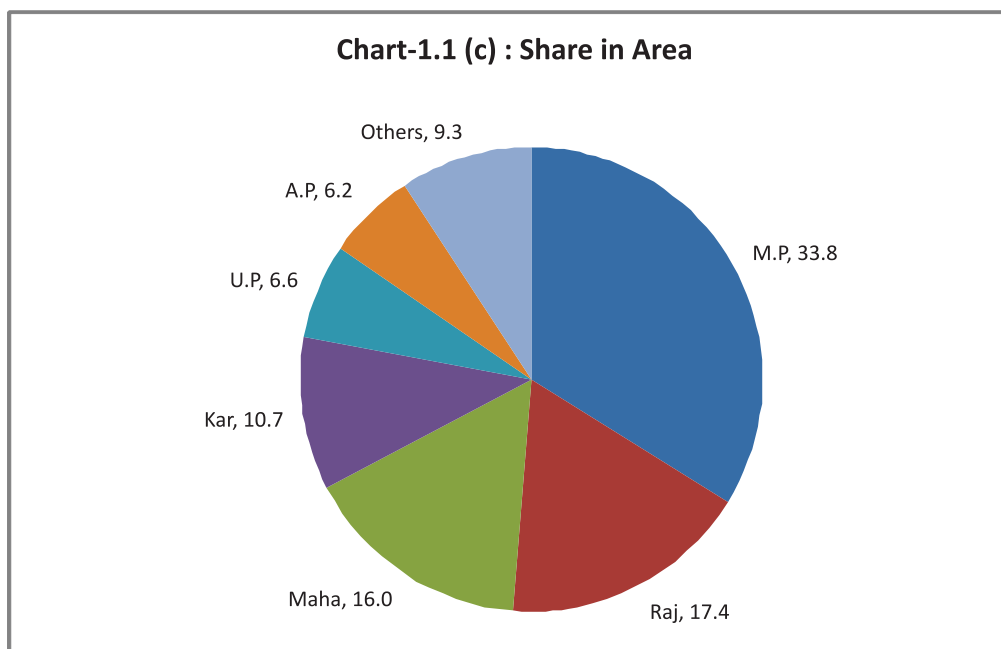


**Annex Chart-1.1(a) & (b): Share in Area and Production of Barley, TE 2014-15**



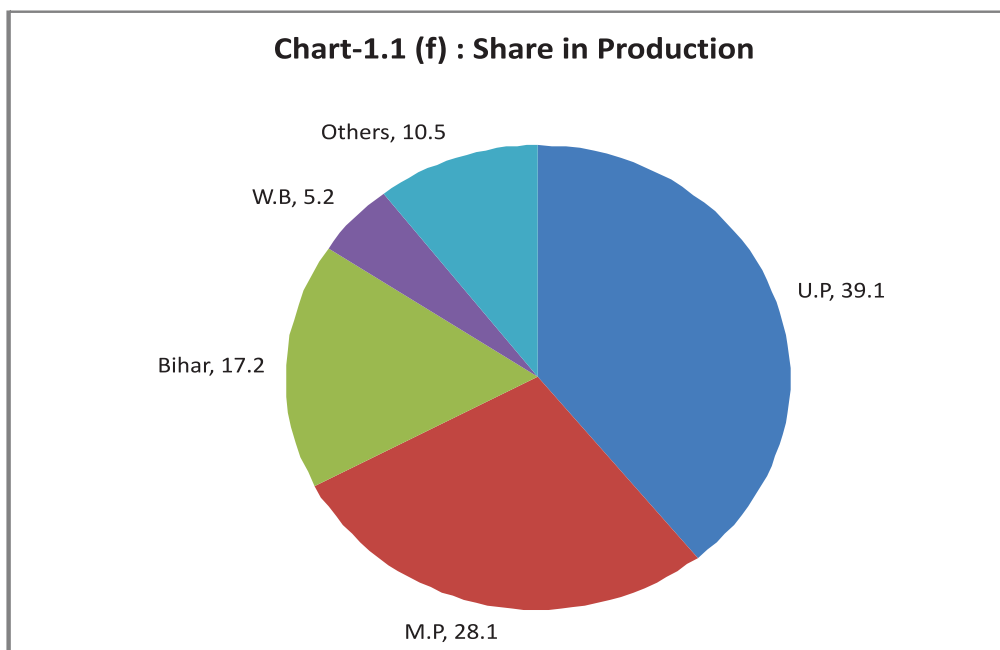
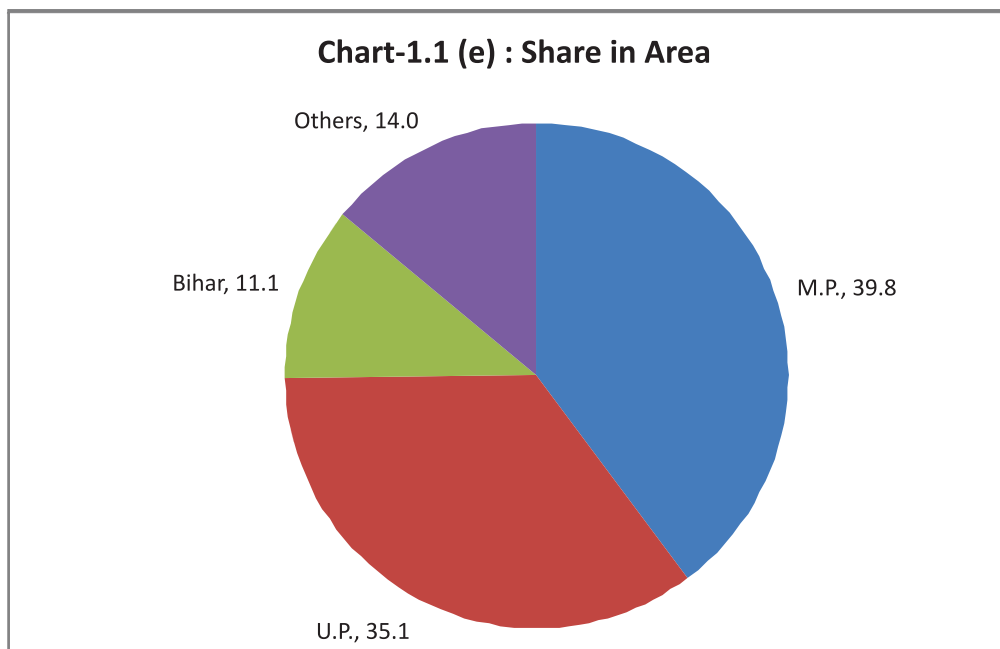
Source: DES

**Annex Chart-1.1(c) & (d): Share in Area and Production of Gram, TE 2014-15**



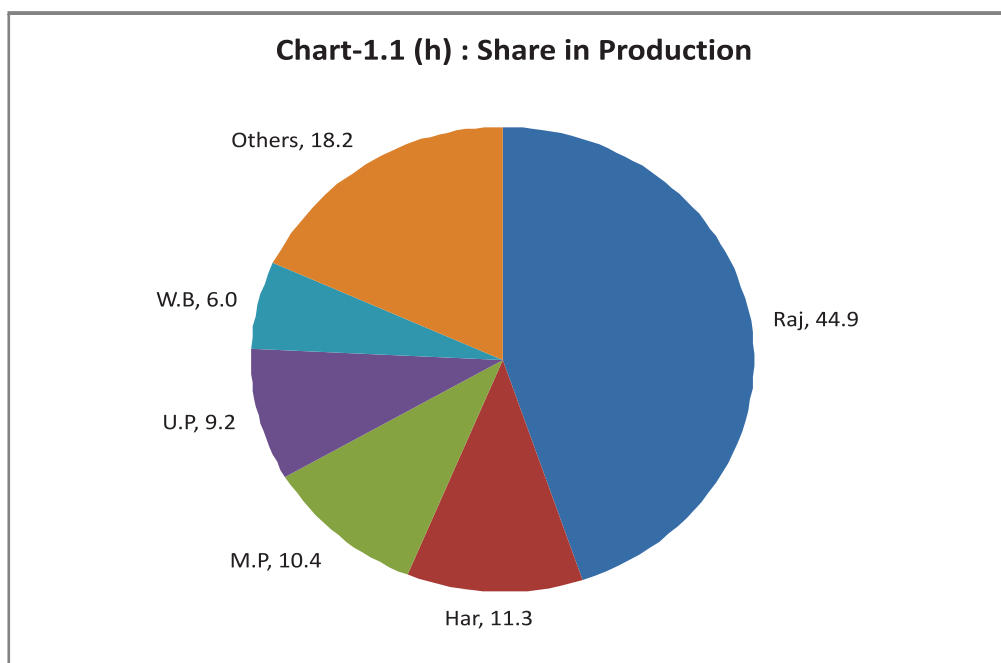
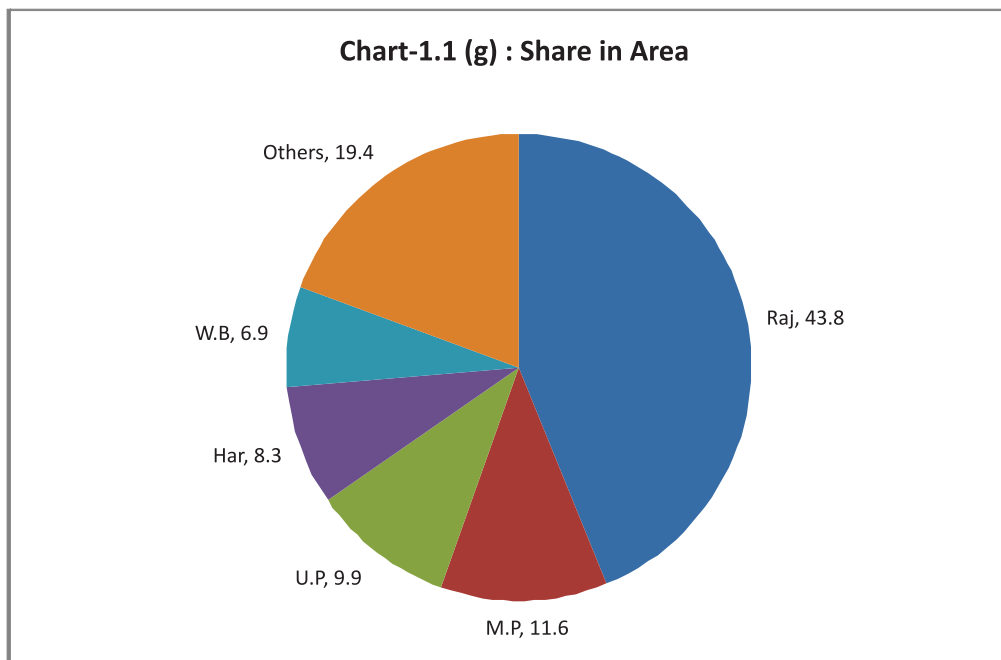
Source: DES

**Annex Chart-1.1(e) & (f): Share in Area and Production of Lentil, TE 2013-14**



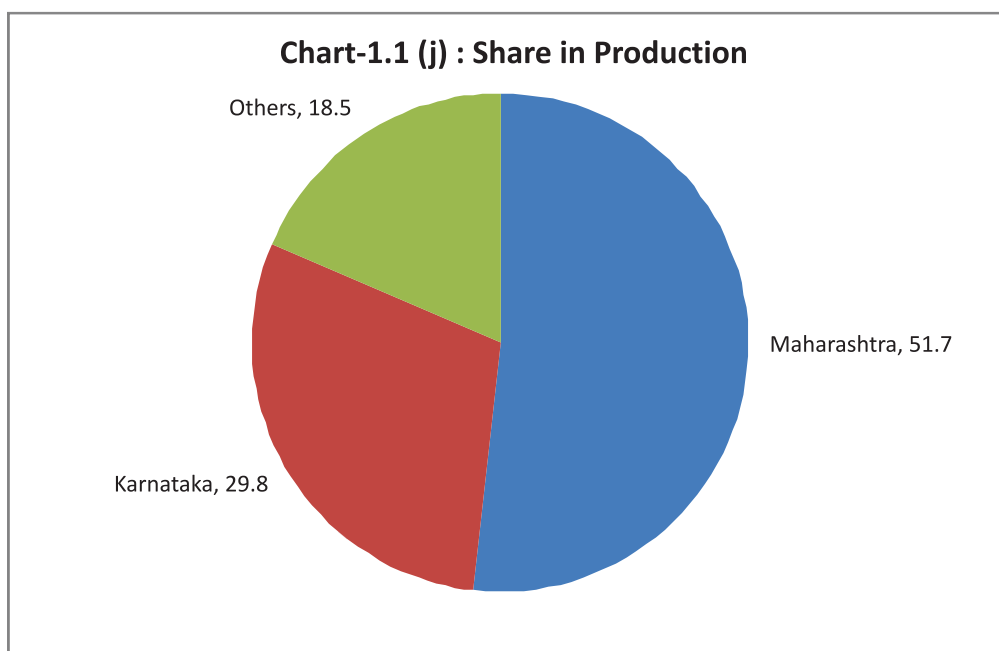
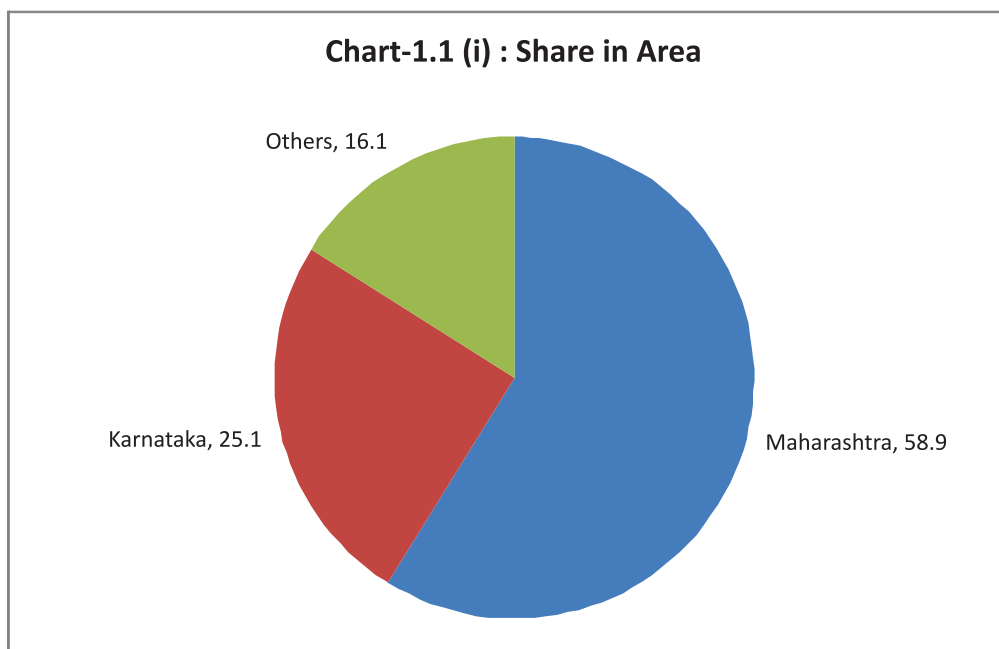
Source: DES

**Annex Chart-1.1(g) & (h): Share in Area and Production of R & M, TE 2014-15**



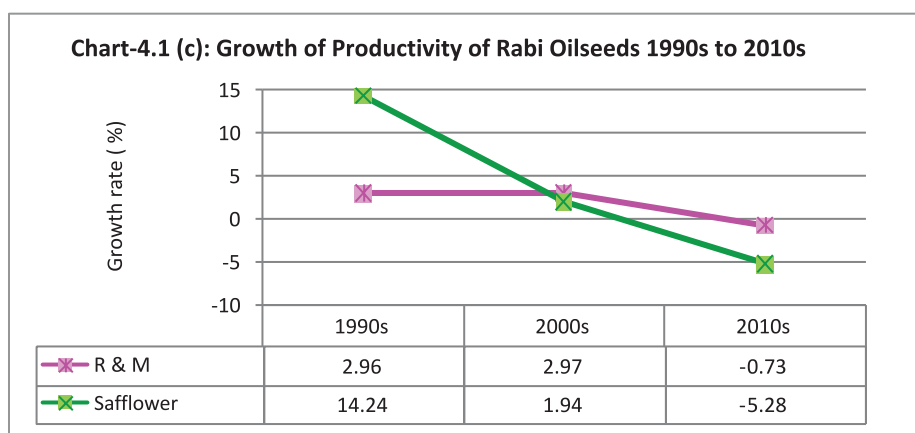
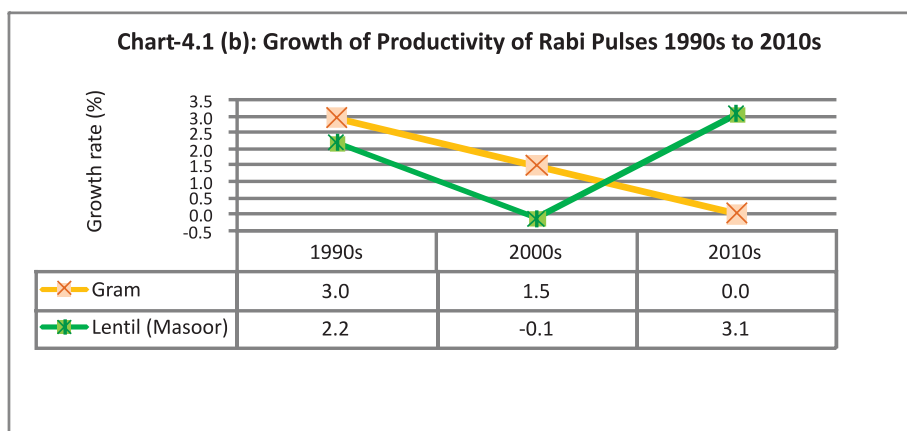
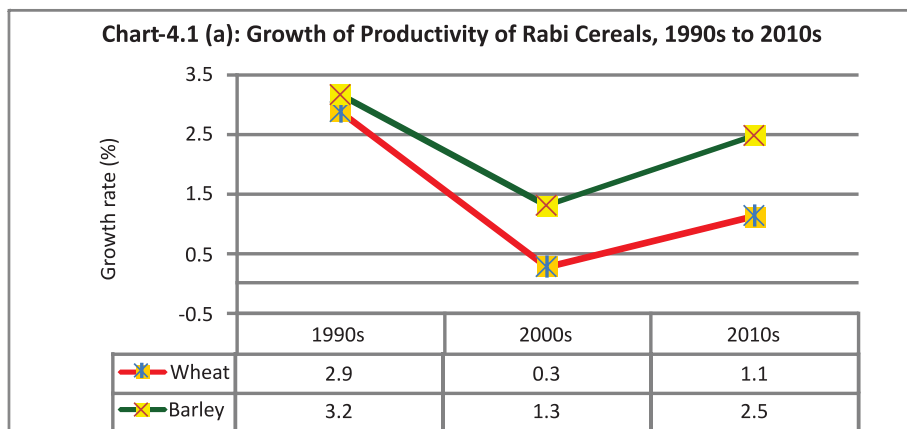
Source: DES

**Annex Chart-1.1(i) & (j): Share in Area and Production of Safflower, TE 2014-15**



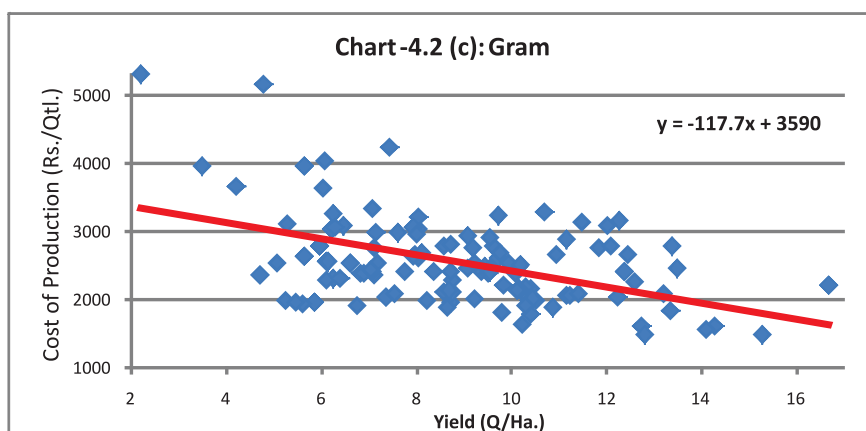
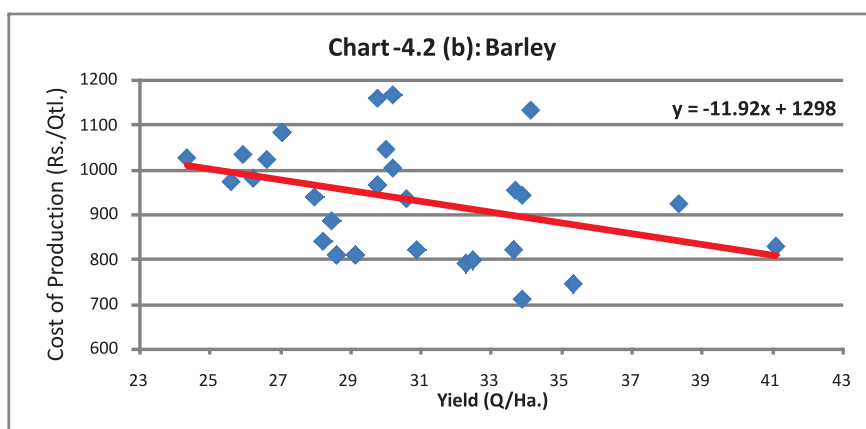
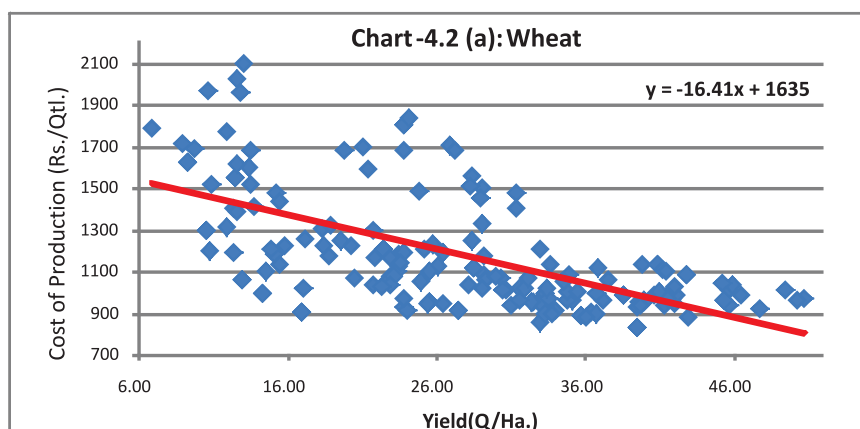
Source: DES

**Annex Chart-4.1 (a) to (c): Growth of Productivity of Rabi Crops, 1990s to 2010s**



Source: DES

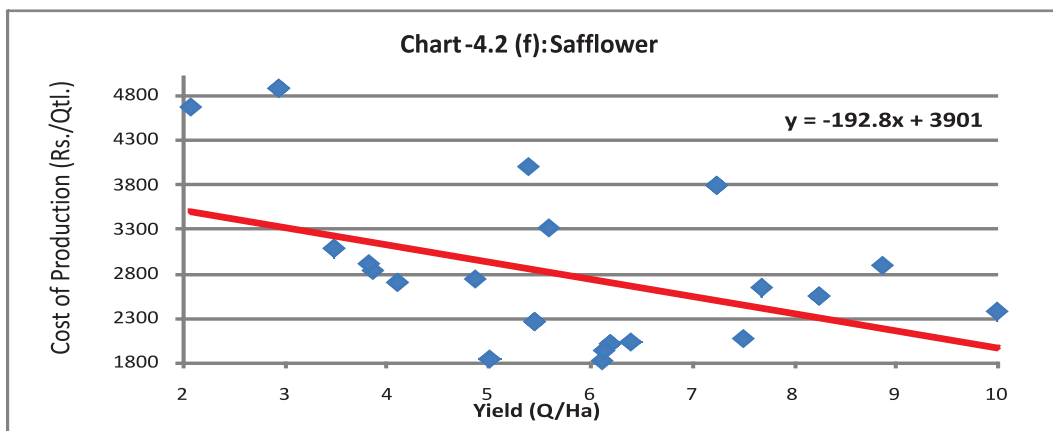
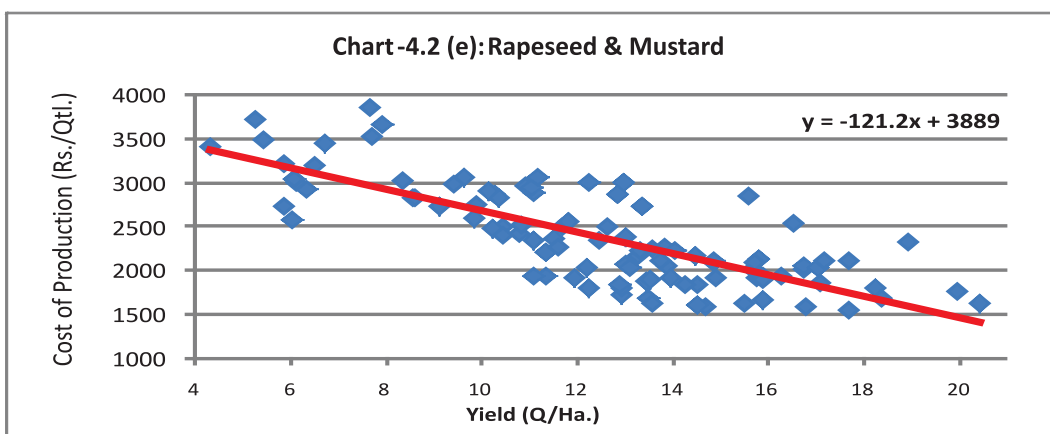
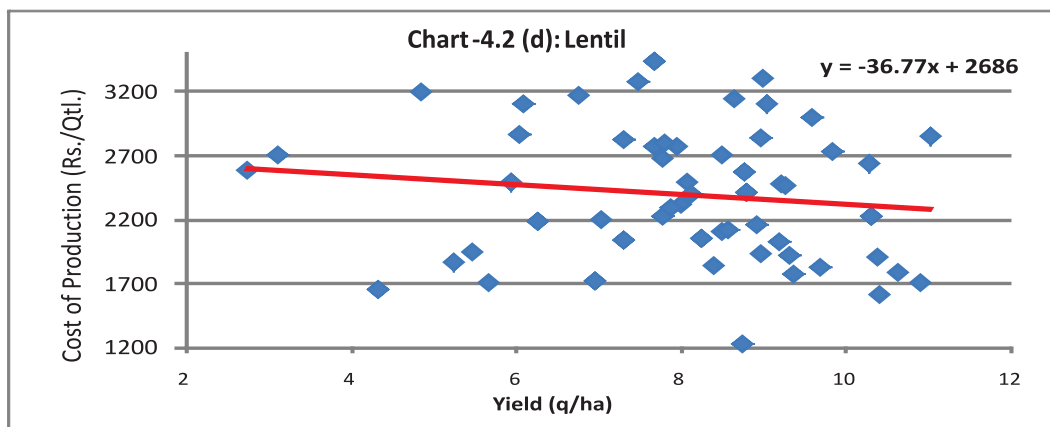
**Annex Chart-4.2 (a) to (c): Relationship between Cost of Production and Productivity Levels**



Source: DES

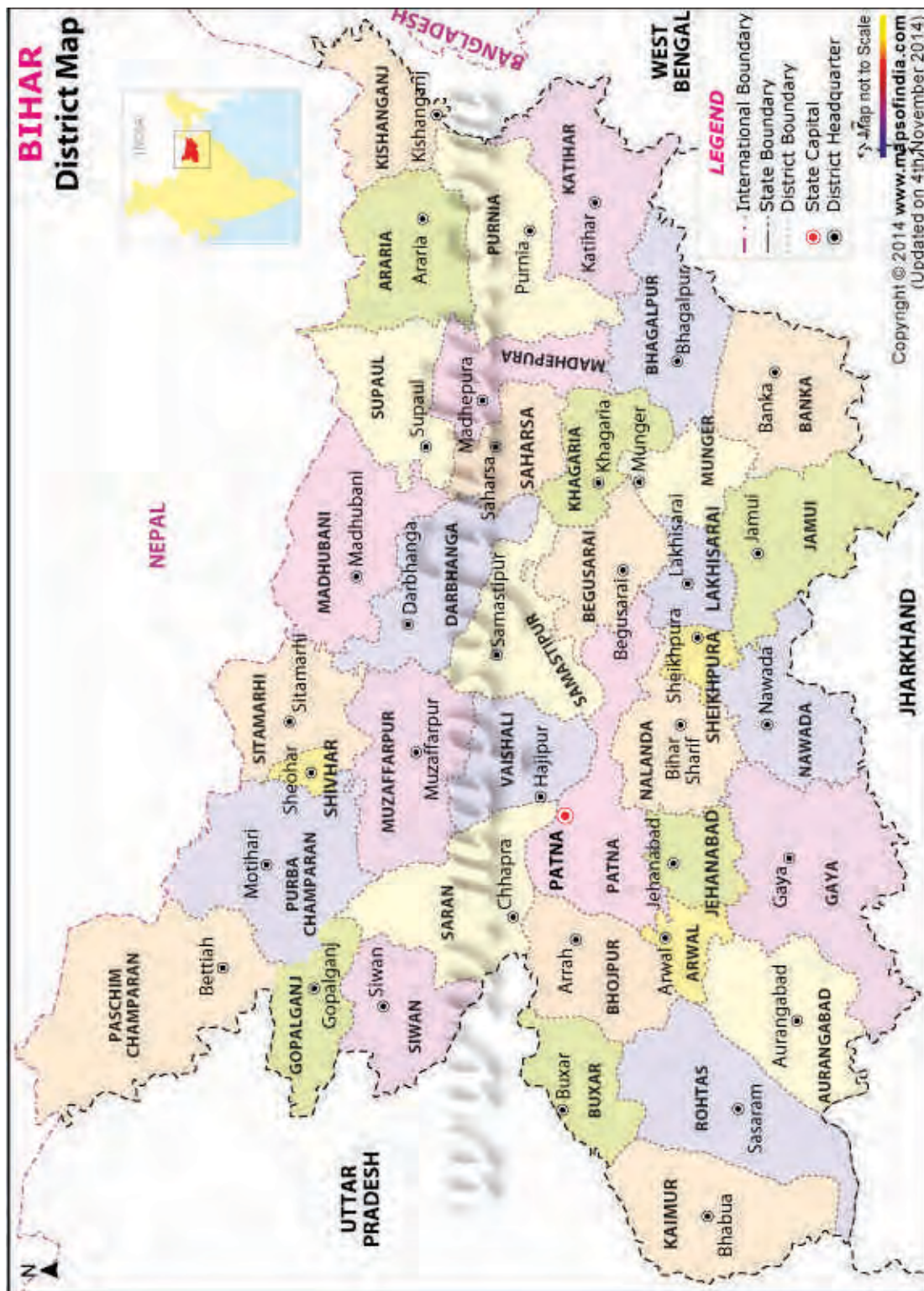


**Annex Chart-4.2 (d) to (f): Relationship between Cost of Production and Productivity Levels**



Source: DES

# Maps









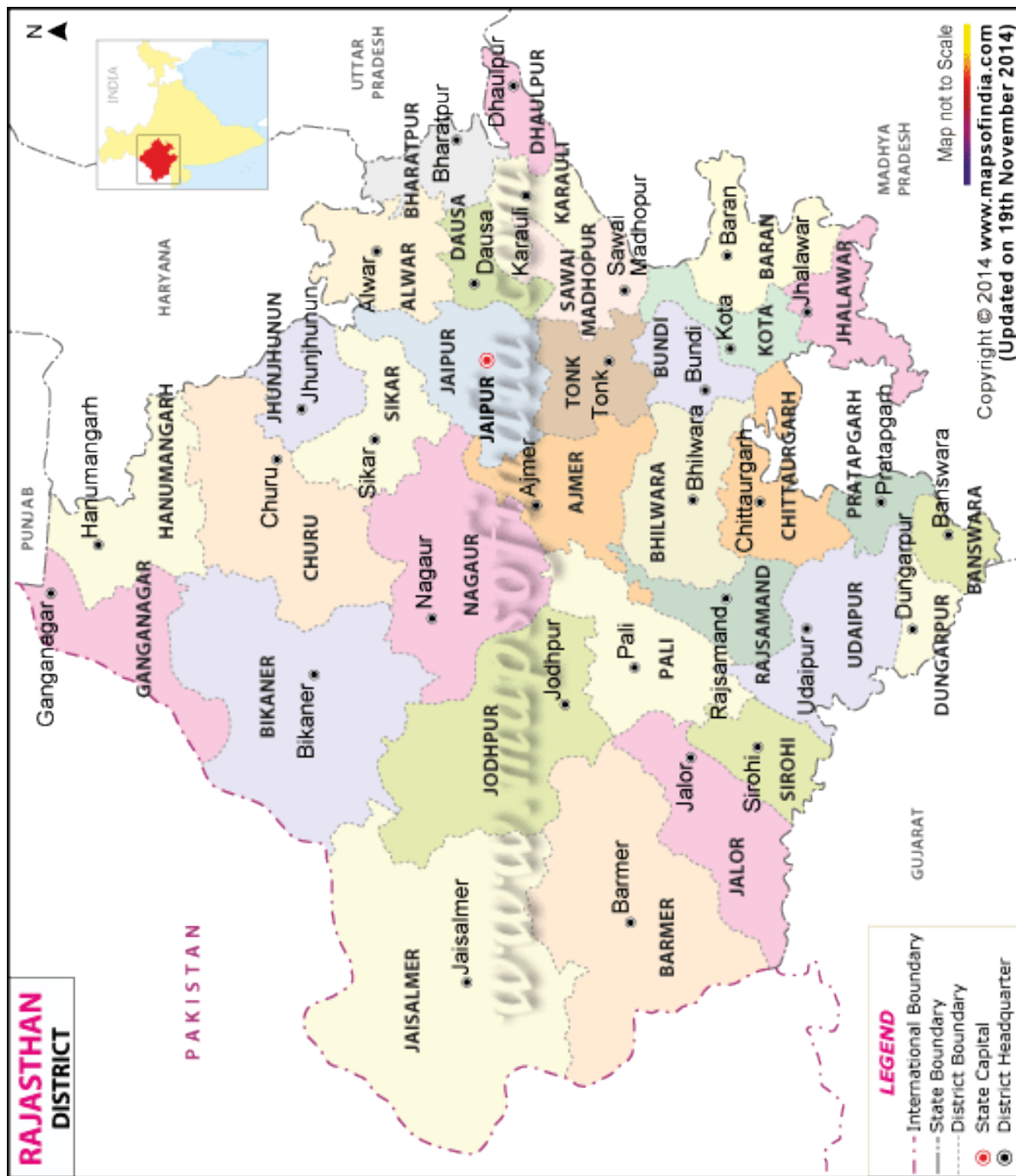




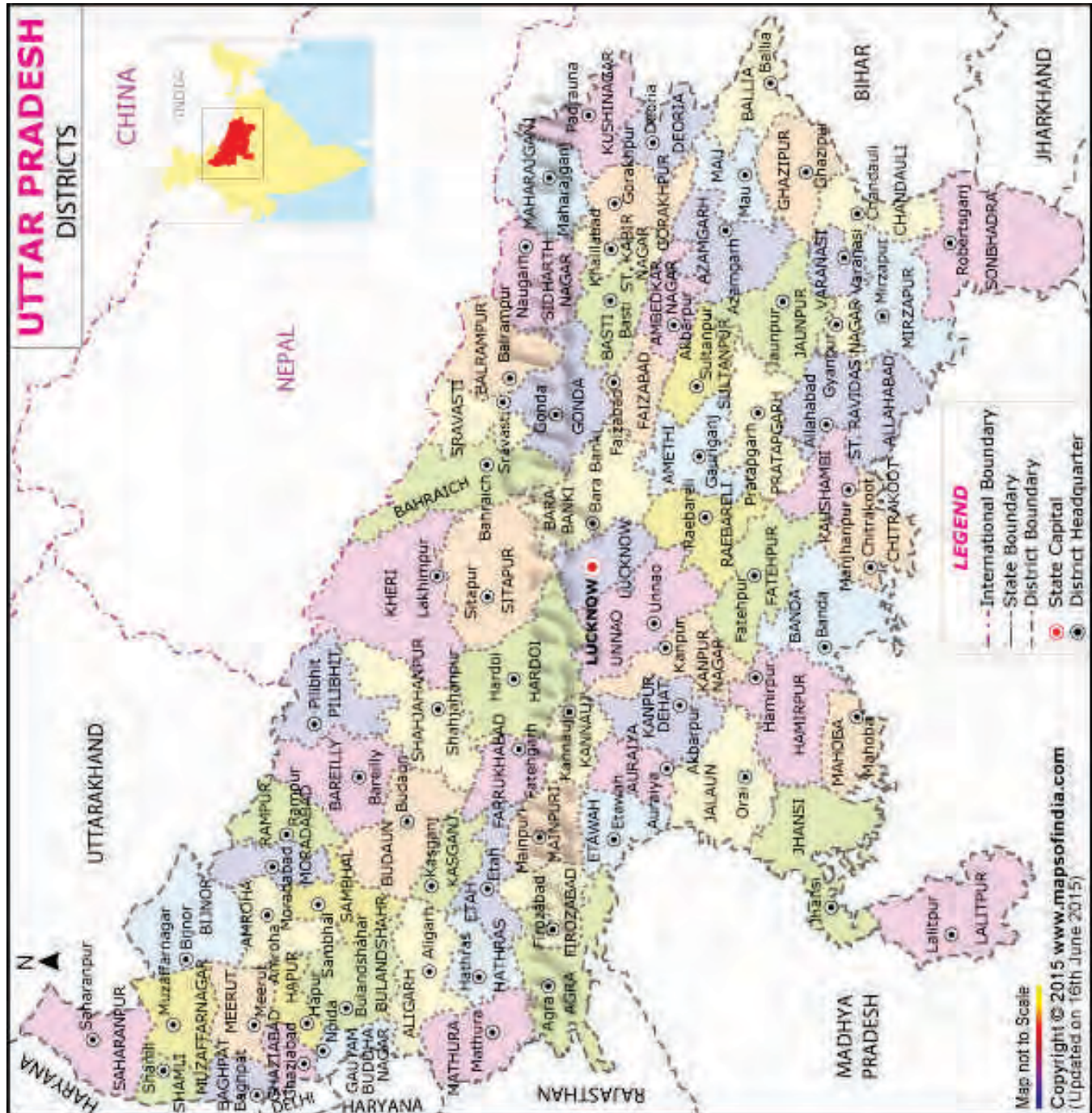


















सत्यमेव जयते

**Commission for Agricultural Costs and Prices**  
**Department of Agriculture and Cooperation**  
**Ministry of Agriculture**  
**Government of India**  
**New Delhi**  
**July 2015**