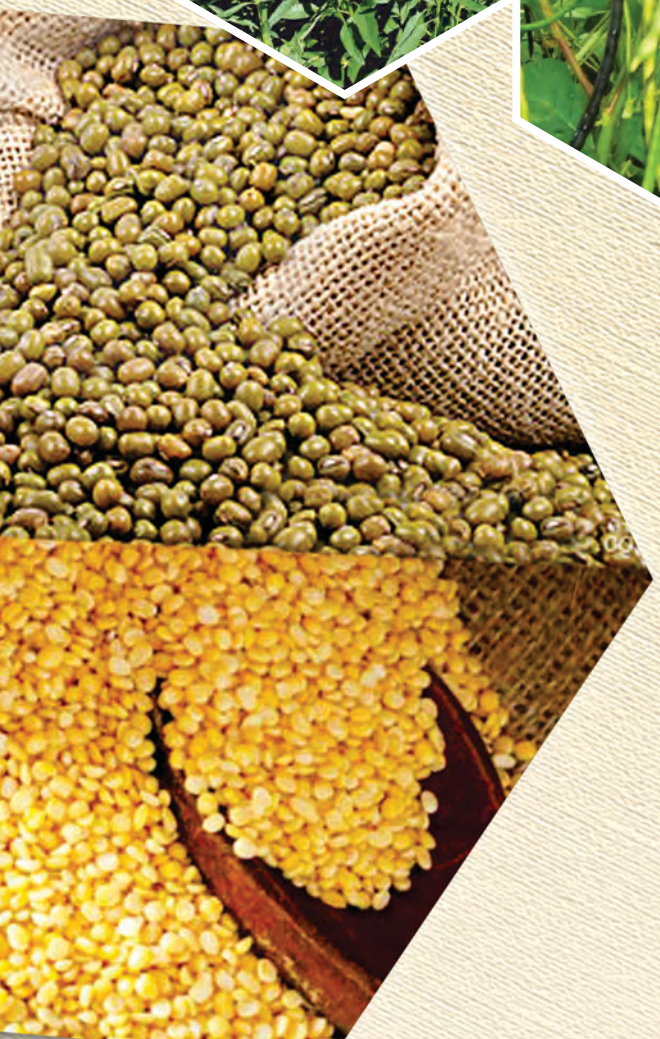
Price Policy for
Kharif Crops

The Marketing Season 2017-18



सत्यमेव जयते

कृषि लागत एवं मूल्य आयोग

Commission for Agricultural Costs and Prices

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

कृषि एवं किसान कल्याण मंत्रालय

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New Delhi

मार्च, 2017

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Preface and Acknowledgements

It is a great honour and privilege for me to present the report of **"Price Policy for Kharif Crops: The Marketing Season 2017-18"**. The report contains Minimum Support Price (MSP) recommendations for the mandated Kharif crops and non-price recommendations. While making price policy recommendations, the Commission has taken into account several factors such as cost of production, overall demand-supply situation, domestic and international prices, inter-crop price parity, terms of trade, likely impact of MSP on general price level and resource use efficiency. I hope that these recommendations will safeguard interests of both producers and consumers, incentivise farmers to adopt new technologies, ensure price stability, and promote sustainable competitiveness of Indian agriculture.

Summary of Recommendations is followed by overview of Indian agriculture in Chapter 1. Chapter 2 of the report provides a general overview of the demand-supply and procurement operations. Productivity of Kharif crops is discussed in Chapter 3 and trade competitiveness of Indian agriculture is presented in Chapter 4. Costs and returns during 2012-13 to 2014-15 and cost projections for Kharif Marketing Season 2017-18 including inter-crop price parity issues are analysed in Chapter 5. Non-price and price policy recommendations are given in the Chapter 6.

Preparation of this report required concerted efforts of a number of individuals and institutions. First and foremost, I would like to express my sincere thanks and gratitude to farmers, farmers' representatives/associations, senior officers from Central and State Governments, representatives of various agencies/organizations involved in post-harvest management and marketing of agricultural commodities, and other stakeholders for providing valuable insights and information during the meetings and preparation of this report. Special thanks to the Directorate of Economics and Statistics, Ministry of Agriculture & Farmers Welfare for providing key data on cost estimates for this report.

Last but not least, credit and special thanks are due to Dr. Shailja Sharma, Member Secretary, who not only contributed greatly to the Report but managed the process and timely completion of the report. The report would not have been possible without the support of Dr. Suresh Pal (Member Official), Mr. S. R. Joshi (Adviser), Mr. S. N. Tobria (Adviser), Smt. Nutan Raj (Adviser), Mr. Anand Krishan, Dr. Harish Kumar Kallega, Mr. Manish Bindal, Mr. Sube Singh, Dr. S. K. Gupta and Mr. Byasadev Naik who worked tirelessly to support the preparation of this report. I would like to sincerely thank them all for their contribution and support.

31st March 2017

(Vijay Paul Sharma)

Contents

Sl. No.	Description	Page No.
	Acronyms	xiii
	Summary of Recommendations	1
	Non-Price Recommendations	1
	Price Policy Recommendations	4
1	**Overview**	6
	Performance of Crop Sector	7
	Consumer Price Index (CPI) Based Inflation	9
	Central Pool Stocks	9
	Pulses	10
	Tapping the Full Potential of Pulses	11
	Oilseeds	12
	Cotton	13
	Investment in Agricultural Sector	13
	Institutional Agricultural Credit	14
	Irrigation Development	16
	Soil Health Management	16
	Farm Mechanization	17
	Fertilizers Sector Initiatives	18
	Risk Management	18
	National Agricultural Market (e-NAM)	19
	Contract Farming	19
	Structure of the Report	20
2	**Demand-Supply Scenario and Procurement Operations**	21
	Stock to Use Ratio	21
	Wholesale Prices and MSP	21
	Paddy	22

Contents

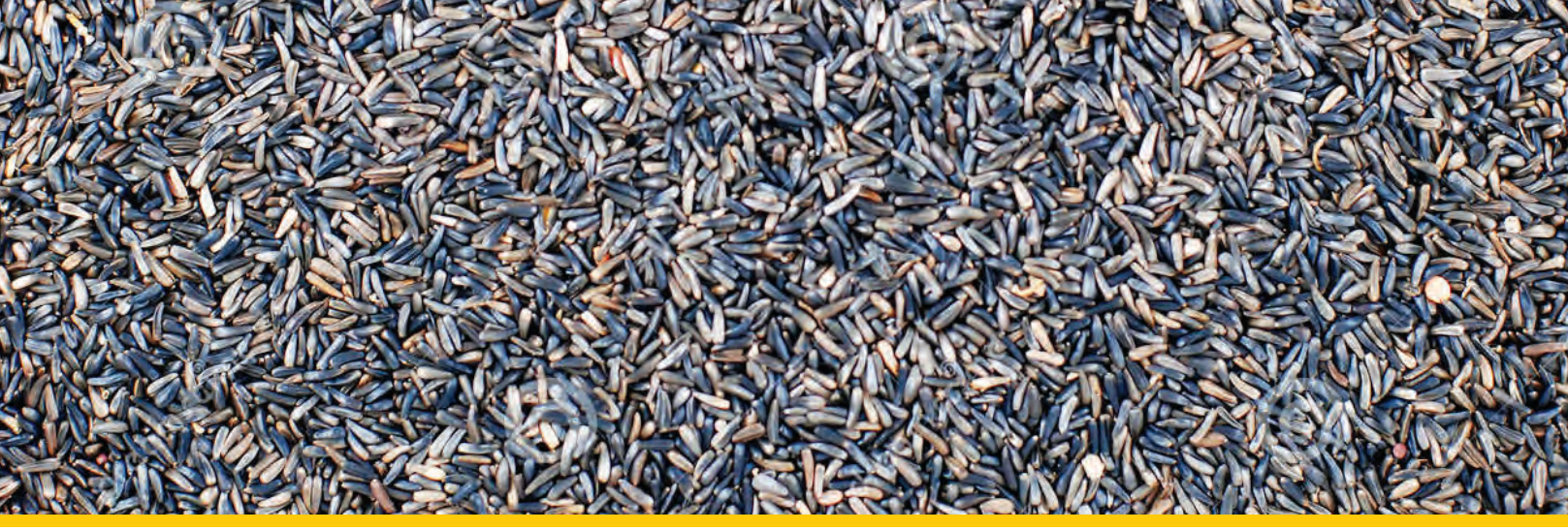
Sl. No.	Description	Page No.
	Maize	23
	Pulses	23
	Oilseeds	27
	Cotton	28
	Market Outlook Forecasting	29
	Procurement Policy and Operations	29
	Rice	29
	Pulses	32
	Oilseeds	32
	Awareness Creation about MSP and FAQ	33
	Economic Cost of Rice and Delinking of Statutory Levies/Taxes from MSP	34
	Bonus on MSP	36
	Stock Limits and Licensing Requirements for Pulses	36
	Towards Achieving Self-Sufficiency in Pulses	36
	Utilization of Rainfed Rice Fallow Lands	37
3	**Crop Productivity**	38
	Decadal Productivity Growth Trends	38
	Labour Productivity	40
	Crop Productivity in the Major Producing States	41
	State Level Productivity Growth Rates	46
	Yield Gap Analysis	48
	Pulses	48
	Oilseeds	50
	Drivers of Yield Growth	52
	Quality Seed Production and Distribution	52
	Irrigation	55
	Farm Mechanization	57
	Linking MSP with Oil Content in Sunflower	59
	Recapitulation	60
4	**Trade Competitiveness of Indian Agriculture**	62
	Trade Performance	62
	Rice	63
	Maize	65

Contents

Sl. No.	Description	Page No.
	Pulses	66
	Oilseeds/Edible Oils	69
	Soybean Complex	70
	Groundnut Complex	74
	Trade Policy – Oilseeds/Edible Oils	78
	Cotton	80
	Trade Outlook	81
5	**Costs, Returns and Inter-Crop Price Parity**	83
	Costs and Returns of Kharif Crops, TE2014-15	84
	Agricultural Wages and Input Price Movement	86
	Cost Projections for KMS 2017-18	89
	Comparison of Projected Cost Estimates with State Estimates	89
	Inter-Crop Price Parity	98
	Recapitulation	99
6	**Considerations for Price Policy and Recommendations**	100
	Non-Price Policy Recommendations	100
	Procurement Efficiency of Rice	100
	Pulses	101
	Oilseeds	101
	Cotton	102
	Soil Health Management	102
	Farm Mechanization	102
	Fertilizers Sector Initiatives	102
	Risk Management	103
	Awareness Creation about MSP and FAQ	103
	Institutional Agricultural Credit	103
	Market Outlook Forecasting	104
	MSPs Recommended for KMS 2017-18	104
	Incentivizing Efficiency: Linking MSP of Sunflower Seeds with Oil Content	104

List of Tables

Table No.	Title	Page No.
Table S.1	MSPs Recommended for KMS 2017-18	5
Table 2.1	Stock-to-Use Ratios (Percent) of Kharif Crops (2014-15 to 2016-17)	21
Table 2.2	Procurement of Pulses by Different Agencies in 2016-17	32
Table 2.3	Procurement of Kharif Oilseeds by NAFED (2012-13 to 2016-17)	33
Table 2.4	Statutory Levies Imposed on Rice by Major States, 2014-15 to 2016-17	35
Table 3.1	Trends in Compound Annual Growth Rates (Percent) of Major Kharif Crops (1991-92 to 2016-17)	40
Table 3.2	State-wise productivity growth of Major Kharif Crops (2001-02 to 2016-17)	47
Table 3.3	Estimated Additional Production of Kharif Pulses by Bridging Yield Gap	50
Table 3.4	Estimated Additional Production of Kharif Oilseeds by Bridging Yield Gaps	52
Table 3.5	Impact of Machine Labour on Crop Yields	59
Table 4.1	India's Trade Policy – Kharif Crops	79
Table 5.1	Gross and Net Returns of Kharif Crops, TE2014-15	85
Table 5.2	Annual Average Growth in Wages of Agricultural Labour	87
Table 5.3	Projected Costs of Production of Mandated Crops during Kharif Marketing Season, 2017-18	89
Table 5.4	All-India Kharif Crops Input Price Index (Base 2004-05 = 100)	91
Table 5.5	Crop-wise Relative Returns (Percent), TE2014-15	99
Table 6.1	Recommended MSPs of Kharif Crops (KMS 2017-18) and their Justification (₹/qtl)	105



List of Charts

Chart No.	Title	Page No.
Chart 1.1	Growth in GVA at Basic Constant Prices (Percent)	6
Chart 1.2	Share and Growth (y-o-y) of Gross State Value Added by Agriculture and Allied Sectors (at 2011-12 Prices) 2011-12 to 2014-15	7
Chart 1.3	India's Exports, Imports and Net Trade of Agri-Commodities, 2005-06 to 2015-16	8
Chart 1.4	Trends in CPI based Food Inflation	9
Chart 1.5	Central Pool Stocks with FCI, January 2015 to January 2017	10
Chart 1.6	GCF in Agriculture-Aggregate and Percent of GVA in Agriculture	14
Chart 1.7	Trends in Institutional Credit to Agricultural Sector and Share of Term Loans in Total Agricultural Credit	15
Chart 2.1	Wholesale Prices vis-à-vis MSP of Paddy, 2012 to 2016	22
Chart 2.2	Wholesale Prices vis-à-vis MSP of Maize, 2012 to 2016	23
Chart 2.3a to c	Wholesale Prices vis-à-vis MSP of Pulses, 2012 to 2016	24
Chart 2.4a to c	Comparison of Market Prices and MSP of Kharif Pulses during KMS 2016-17	26
Chart 2.5a & b	Wholesale Prices vis-à-vis MSP of Oilseeds, 2012 to 2016	27
Chart 2.6	Wholesale Prices vis-à-vis MSP of Cotton, 2012 to 2016	28
Chart 2.7	Rice Procurement as Percent of Production and Marketed Surplus, 2002-03 to 2016-17	30
Chart 2.8	Shares of Major States in Marketed Surplus and Procurement of Rice, TE2015-16	31
Chart 2.9	Procurement of Rice in DCP & Non-DCP States	31
Chart 2.10	Farmer Awareness about MSP of Major Crops: July-December 2012	33

List of Charts

Chart No.	Title	Page No.
Chart 2.11	Farmer Awareness about MSP of Paddy (July-December 2012)	34
Chart 2.12	Economic Cost of Rice, 2008-09 to 2016-17	35
Chart 3.1	Declining Workforce in Agriculture (1999-2000 to 2011-12)	41
Chart 3.2a to g	Crop Productivity of Kharif Crops in the Major Producing States	43
Chart 3.3	Constraints of Yield Gaps	48
Chart 3.4a to c	Yield Gap Analysis of Pulses in Major Producing States	49
Chart 3.5a to c	Yield Gap Analysis of Oilseeds in Major Producing States	51
Chart 3.6	Production of Breeder and Foundation Seeds (2010-11 to 2016-17)	53
Chart 3.7a to d	Distribution of Certified/Quality Seeds of Major Kharif Crops (2010-11 to 2014-15)	53
Chart 3.8	Trends and Growth in Gross Irrigated Area (GIA) in India	55
Chart 3.9	Trends in Irrigation Potential Created and Utilized (Cumulative) (1980-2012)	56
Chart 3.10	Consumption of Fertilizers ('000 tonnes)	56
Chart 3.11a to c	Trends in Farm Mechanization in Paddy, Maize and Cotton in Major States : TE2014-15	57
Chart 3.12	MSP based on Oil Content of Sunflower	60
Chart 4.1	India's Exports of Rice, 2005-06 to 2015-16	63
Chart 4.2	MSP, Domestic and International Prices of Paddy, 2012 to 2016.	64
Chart 4.3	India's Exports of Maize, 2005-06 to 2015-16	65
Chart 4.4	MSP, Domestic and International Prices of Maize, 2012 to 2016	66
Chart 4.5	India's Imports of Pulses, 2005-06 to 2015-16	67
Chart 4.6	MSP, Domestic and International Prices of Arhar, 2012 to 2016	68
Chart 4.7	MSP, Domestic and International Prices of Urad, 2012 to 2016	68
Chart 4.8	MSP, Domestic and International Prices of Moong, 2012 to 2016	69
Chart 4.9	India's Imports of Edible Oils, 2005-06 to 2015-16	70

List of Charts

Chart No.	Title	Page No.
Chart 4.10	India's Imports of Soybean Oil, 2005-06 to 2015-16	71
Chart 4.11	MSP, Domestic and International Prices of Soybean, 2012 to 2016	72
Chart 4.12	Domestic and International Prices of Soybean Oil, 2012 to 2016	72
Chart 4.13	India's Exports of Soybean Meal, 2005-06 to 2015-16	73
Chart 4.14	Domestic and International Prices of Soybean Meal, 2012 to 2016	73
Chart 4.15	India's Exports of Groundnut, 2005-06 to 2015-16	74
Chart 4.16	MSP, Domestic and International Prices of Groundnut, 2012 to 2016	75
Chart 4.17	Domestic and International Prices of Groundnut Oil, 2012 to 2016	75
Chart 4.18	India's Imports of Sunflower Oil, 2005-06 to 2015-16	76
Chart 4.19	MSP, Domestic and International Prices of Sunflower Seed, 2012 to 2016	77
Chart 4.20	Domestic and International Prices of Sunflower Oil, 2012 to 2016	77
Chart 4.21	India's Exports of Cotton, 2005-06 to 2015-16	80
Chart 4.22	MSP, Domestic and International Prices of Cotton (Raw), 2012 to 2016	81
Chart 5.1	Gross and Net Returns of Kharif Crops, TE2014-15	86
Chart 5.2	Average Daily Wages of Agricultural Labour 2015-16 and Growth in Wages 2015-16 over 2014-15	88
Chart 5.3	Movements in Prices of Farm Inputs	88
Chart 5.4a to m	Supply Curve and Projected Costs, KMS 2017-18	92

List of Annex Tables

Table No.	Title	Page No.
Table 1.1	All India Estimates of Production of Agricultural Commodities	109
Table 1.2	All India Estimates of Area of Agricultural Commodities	111
Table 1.3	All India Estimates of Yield of Agricultural Commodities	113
Table 1.4	Share of Kharif Crops (under MSP) in Total Production, TE2016-17	115
Table 1.5	Trends in WPI based Inflation (percent)	116
Table 1.6	Soil Testing Labs and their Capacity	117
Table 2.1	Stock-to-Use Ratios (Percent) of Kharif Crops (2014-15 to 2016-17)	118
Table 2.2	Possible Savings from Taxes as a Consequence of Delinking MSP from Taxes/ Levies - Paddy	119
Table 2.3	States/Centres with Prices of Kharif Crops Below MSP During 2016-17 Marketing Season	121
Table 2.4	Centres with Wholesale Prices below MSP for Tur and Moong	125
Table 3.1	Simulation-Impact of Oil Content on MSP of Sunflower	126
Table 4.1	Quarterly Domestic and International Prices of Kharif Crops	128
Table 4.2	India's Agricultural Exports of Major Commodities	130
Table 4.3	India's Agricultural Imports of Major Commodities	131
Table 5.1	State-wise Gross and Net returns of Kharif crops, TE2014-15	132
Table 5.2	Month-wise and State-wise Average Daily Wage Rates for Agricultural Labour (Man)	138
Table 5.3	Farm Inputs - Wholesale Price Index (Base 2004-05=100)	141
Table 5.4	Projected Cost of Production (A_2, A_2+FL & C_2) for Kharif 2017-18 and Production Shares	144
Table 5.5 a to n	Break-up of Cost of Cultivation	148
Table 5.6	Comparison of Cost Projections of Kharif Crops, 2017-18 KMS	164
Table 5.7	All India Projected Costs of Production of Kharif Crops for 2017-18 over 2016-17 KMS	166
Table 6.1	MSP Suggested by State Governments for the Kharif Crops of 2017-18	167

Acronyms

A_2	Actual paid out cost
A_2+FL	Actual paid out cost plus imputed value of family labour
AE	Advance Estimates
AGMARKNET	Agriculture Marketing Information System Network
APEDA	Agricultural and Processed Food Products Export Development Authority
APMC	Agricultural Produce Marketing Committee
BSP	Basic Constant Prices
C_2	Comprehensive cost including imputed rent and interest on owned land and capital
CACP	Commission for Agricultural Costs and Prices
CAGR	Compound Annual Growth Rates
CBEC	Central Board of Excise and Customs
CCI	Cotton Corporation of India
CHC	Custom Hiring Centre
CIP	Central Issue Price
CIPI	Composite Input Price Index
CoC	Cost of Cultivation
CoP	Cost of Production
CPI	Consumer Price Index
CS	Comprehensive Scheme of Studying Cost of Cultivation of Principal Crops in India
CSO	Central Statistical Organization
DAC&FW	Department of Agriculture, Cooperation and Farmers Welfare
CWC	Central Warehousing Corporation

Acronyms

DBT	Direct Benefit Transfer
DCCBs	District Central Cooperative Banks
DCP	Decentralized Procurement Scheme
DES	Directorate of Economics and Statistics
DFPD	Department of Food and Public Distribution
DGCIS	Directorate General of Commercial Intelligence and Statistics
DTA	Domestic Tariff Area
ECA	Essential Commodities Act
EDI	Electronic Data Interchange
e-NAM	National Agricultural Market
EU	European Union
FAI	Fertilizer Association of India
FAQ	Fair Average Quality
FCI	Food Corporation of India
FLD	Front Line Demonstration
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GIA	Gross Irrigated Area
GSVA	Gross State Value Added
GVA	Gross Value Added
GVO	Gross Value of output
HSD	High Speed Diesel
ICAR	Indian Council of Agricultural Research
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IIOR	Indian Institute of Oilseeds Research
IIPR	Indian Institute of Pulses Research
IPC	Irrigation Potential Created

IPU	Irrigation Potential Utilized
KMS	Kharif Marketing Season
KVKs	Krishi Vigyan Kendras
LCS	Land Custom Stations
LTIF	Long Term Irrigation Fund
MEP	Minimum Export Price
MMTC	Metals and Minerals Trading Corporation
MSP	Minimum Support Price
MSR	Marketed Surplus Ratio
NABARD	National Bank For Agriculture and Rural Development
NAFED	National Agricultural Cooperative Marketing Federation of India
NBS	Nutrient Based Subsidy
NCAER	National Council of Applied Economic Research
NCCF	National Cooperative Consumers Federation of India Ltd.
NSSO	National Sample Survey Office
OGL	Open General License
OWS	Other Welfare Schemes
PACS	Primary Agricultural Credit Societies
PDS	Public Distribution System
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PPP	Public-Private-Partnership
PSS	Price Support Scheme
R&D	Research and Development
SEZs	Special Economic Zones
SFAC	Small Farmers Agribusiness Consortium
SHC	Soil Health Card

STL	Soil Testing Labs
STR	Stock-to-Use Ratio
TE	Triennium Ending
TPDS	Targeted Public Distribution System
TPDS	Targeted Public Distribution System
USDA	United States Department of Agriculture
WPI	Wholesale Price Index
y-o-y	year on year

Acronyms

Summary of Recommendations

S.1 Indian agriculture is likely to register a growth of 4.4 percent in GVA during 2016-17 as against 0.8 percent achieved in the previous year. The foodgrains production is estimated at an all-time high of 272 million tonnes in 2016-17, with kharif foodgrains production at 137.5 million tonnes. Thus, the country is likely to maintain a comfortable position in terms of food stocks. There is unprecedented increase of 6 million tonnes in pulses production and the country is likely to produce more than 22 million tonnes during this year. Despite significant increase (about 33 percent) in production of oilseeds, demand-supply gap in edible oils is likely to continue and imports will be an instrument to bridge this gap.

Non-Price Recommendations

Focus on Improving Crop Yields

S.2 Crop output and productivity growth rates in many crops have decelerated in the recent period (2010s) due to two consecutive droughts in 2014-15 and 2015-16. Since growth in productivity has to be a main driver of agricultural output growth, deceleration in the growth rates of yield should be a matter of great concern for the researchers and policy makers. While efforts need to be made to improve the yields, there is a more pressing need to address the problem of yield gap and reduction in the yield gap alone can provide an additional production of about 3.5 million tonnes of pulses and 4-8 million tonnes of oilseeds. A special programme on 'Bridging the Yield Gap' with effective participation of farmers, researchers and extension agencies need to be implemented.

Push Towards Pulses and Oilseeds

S.3 Production of pulses is likely to register a significant increase and the Government policy to improve productivity, area expansion and remunerative prices along with market intervention has paid dividends. This strategy must continue in future but

procurement of pulses needs to be strengthened to ensure that market prices don't fall below MSP. In addition to bridging the gap between potential and actual farm yields, cultivation of pulses on rice fallows in eastern India and as inter crops should be accorded high priority. Since pulses and legume oilseeds fix nitrogen in soil, it is recommended that the farmers should be provided incentives to the extent of ₹ 1800-2700 per hectare as payment for this ecosystem service. Initially this has been paid in terms of bonus on MSP, but now there is a need to design a mechanism for regular payment.

S.4 Edible oil imports at 14.6 million tonnes in 2015-16 account for nearly 70 percent of total consumption in the country. About two-third of this import is of palm oil from Indonesia and Malaysia. The share of soft oils, namely, soybean, sunflower and rapeseed, has more than doubled during the last four years. Although the imports are necessary to meet the domestic demand, but too much dependence on imports will have significant impact on the domestic prices, which may erode incentive for oilseeds producers. Therefore, import duty on the edible oils need to be linked to domestic availability and international price trends. The import duty on refined oils should be significantly higher than crude oils to improve capacity utilization of domestic refining industry, which can create additional jobs. Import duty on edible oils particularly soft oils should be increased in the event of decline in international prices. This should be supported by interventions to address the supply side constraints through technological interventions and appropriate incentives.

Effective Procurement Operations

S.5 Rice procurement has become more diversified and quite effective in the non-traditional states, where presence of FCI was rather limited. The efforts of decentralized procurement must continue and extended to eastern Uttar Pradesh, Bihar, West Bengal and Assam, where market prices fall below MSP. In order to strengthen MSP operations, awareness campaigns about MSP and quality norms (FAQ) should be conducted in these states. The procurement of pulses in 2016-17 has been able to ensure MSP to farmers in some markets and therefore their interest for growing pulses. However, such efforts must continue and be scaled-up to ensure that market prices do not fall below MSP.

Review Stock Limits and EXIM Policy for Pulses

S.6 Restrictions regarding stock limits/licensing requirements of pulses, which were imposed when prices of pulses were very high, need to be removed in view of a record production and market prices ruling below MSP in many markets. Export

restrictions on pulses as well as unrestricted imports of pulses also need to be reviewed.

Extend Interest Subvention to Investment Credit

S.7 Capital formation in agriculture is crucial for the development of irrigation infrastructure, farm mechanization, agriculture research, roads, markets and communications. However, declining investment in agriculture in general and public investment in particular is a matter of great concern and needs to be reversed urgently, especially keeping in view the target of doubling farmers' income by 2022. The Commission recommends that scheme of interest subvention should be extended to investment credit to make the term loans attractive to farmers.

Soil Health Management and Fertilizer Usage

S.8 Price distortions resulting from the partial decontrol of fertiliser sector have resulted in serious imbalance in the use of major plant nutrients, which could have a detrimental effect on soil health and crop productivity. There is a need to promote balanced use of primary nutrients and address deficiency of secondary and micro-nutrients. The Commission recommends increase in urea prices and higher subsidy on P and K fertilisers to promote balanced use of fertiliser nutrients without putting any additional burden on farmers as well as on subsidy. Soil Health Card based recommendations of nutrients/fertilizers requirements will help farmers to improve productivity by promoting appropriate use of nutrients.

Managing Risks

S.9 Farmers generally face multiple sources of risk such as weather, market prices, disease, and insect pests but wild animals have become a major problem in crop production in many states. The Pradhan Mantri Fasal Bima Yojana (PMFBY) is a major step towards providing insurance to the farmers in the event of failure of the crop but issue of crop losses due to wild animals needs to be addressed.

Irrigation Development and Management

S.10 The Government has made massive investments in irrigation development but inefficient use and poor management of water resources has become a major problem. The increasing gap between irrigation potential created and utilised must be bridged. Rational pricing of irrigation water and power is needed to encourage farmers to adopt water efficient practices like drip and sprinkler irrigation, which would also help in crop diversification.

Market Reforms and Infrastructure Development

S.11 Market infrastructure in the eastern region is inadequate and market prices are often less than the Minimum Support Prices in this region. There is a need for development of market infrastructure in this region, which includes connectivity through rural roads, market yards etc. This is essential for effective functioning of e-NAM and other market development schemes. Also, efforts should be made for promotion of practices of product grading, sorting and dissemination of real time price and market information to farmers. This will facilitate price discovery, empower farmers and promote market integration. Market taxes should also be reduced and remain fixed for the next five years in order to facilitate inter-market transactions and reduce the cost of procurement. Market reforms such as single license, single point levy of market fee etc. need to be undertaken to make e-NAM a successful initiative.

Promote Special Varieties/Crops

S.12 Crop varieties having strong consumer preference like basmati rice are invaluable biological resources, and they contribute in a big way to increase income of the farmers. It is important that these premium products and varieties for other crops like jowar (maldandi), extra-long staple cotton, improved land races of bajra, etc. should be promoted in the supply chains, so that farmers have incentive to continue to grow these varieties of national importance. The Commission reiterates its earlier recommendation of maintenance of adequate database on the production of such products and their promotion in value-chains on the pattern of basmati rice.

Doubling Farmers' Income

S.13 'Doubling farmers' income' by 2022 is a major development challenge and success received in record foodgrains production and pulses production builds on the confidence to meet the income target also. This can be achieved through developing a comprehensive strategy and mobilising the resources and capacity at the state level for its implementation.

Price Policy Recommendations

S.14 Taking into consideration the terms of reference, the Commission recommends the MSPs for 14 kharif crops for the KMS 2017-18 as given below in Table S.1.

Table S.1: MSPs Recommended for KMS 2017-18

(₹/qtl)

Crops	Projected Costs for Crop Season 2017-18		MSP (Marketing Season)		Recommended MSP for KMS 2017-18	Gross Margin over (A_2+FL) w.r.t. recommended MSP (percent)
	A_2+FL	C_2	2015-16	2016-17		
Paddy Common	1117	1484	1410 (3.68)	1470 (4.26)	1550 (5.44)	38.76
Paddy Grade A	-	-	1450 (3.57)	1510 (4.14)	1590 (5.30)	-
Jowar- Hybrid	1556	2089	1570 (2.61)	1625 (3.50)	1700 (4.62)	9.25
Jowar- Maldandi	-	-	1590 (2.58)	1650 (3.77)	1725 (4.55)	-
Bajra	949	1278	1275 (2.00)	1330 (4.31)	1425 (7.14)	50.16
Ragi	1861	2351	1650 (6.45)	1725 (4.55)	1900 (10.14)	2.10
Maize	1044	1396	1325 (1.15)	1365 (3.02)	1425 (4.40)	36.49
Arhar (Tur)	3318	4612	4425#(1.72)	4625@(4.52)	5250 (13.51)	58.23
Moong	4286	5700	4650#(1.09)	4800@(3.23)	5375 (11.98)	25.41
Urad	3265	4517	4425#(1.72)	4575@(3.39)	5200 (13.66)	59.26
Groundnut	3159	4089	4030 (0.75)	4120^(2.23)	4250 (3.16)	34.54
Sunflower Seed*	3481	4526	3800 (1.33)	3850^(1.32)	4000 (3.90)	14.91
Soyabean (Yellow)	2121	2921	2600 (1.56)	2675^(2.28)	2850 (6.54)	34.37
Sesamum	4067	5706	4700 (2.17)	4800#(2.13)	5200 (8.33)	27.86
Nigerseed	3912	5108	3650 (1.39)	3725^(2.05)	3950 (6.04)	0.97
Cotton (Medium Staple)	3276	4376	3800 (1.33)	3860 (1.58)	4020 (4.15)	22.71
Cotton (Long Staple)	-	-	4100 (1.23)	4160 (1.46)	4320 (3.85)	-

Note: Figures in parenthesis represent increase in MSP over the previous year.

 # Additional bonus of ₹ 200

@ Additional bonus of ₹ 425

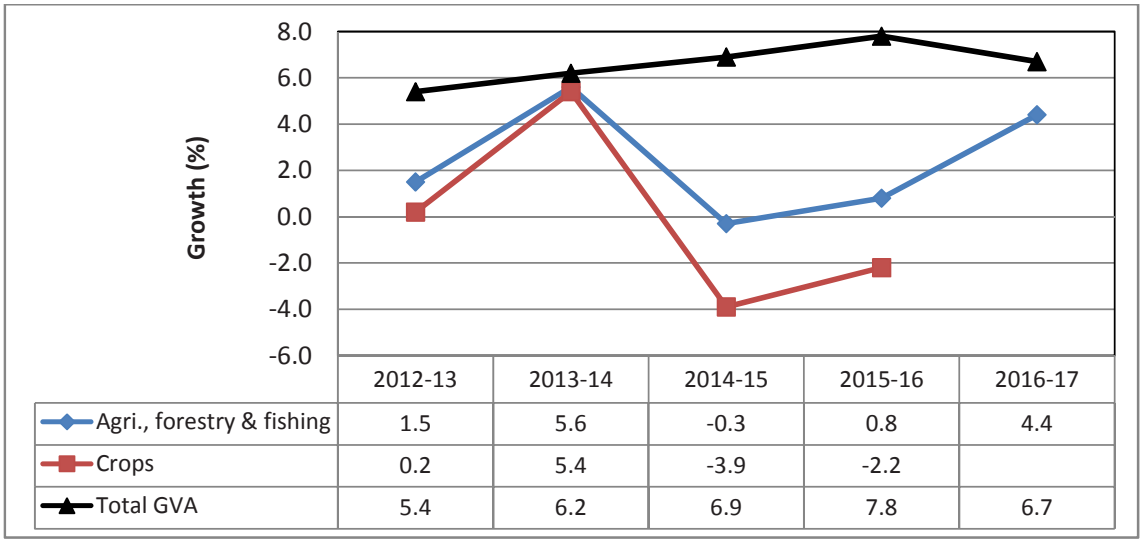
^ Additional bonus of ₹ 100

**Corresponding to oil content of 35 percent*

Chapter 1
Overview

1.1 Indian agriculture is expected to witness a remarkable achievement with an all-time record production of foodgrains at 271.98 million tonnes and pulses at 22.14 million tonnes (as per 2nd Advance Estimates) in 2016-17 due to good monsoon, committed efforts of farmers and government, along with enabling policy environment. As per the CSO (2ndAdvance Estimates) agriculture, forestry and fishing sector is estimated to register a growth rate of about 4.4 percent in Gross Value Added (GVA) at Basic Constant Prices (2011-12) during 2016-17, following normal monsoon in the current year, which was preceded by two successive droughts in 2014-15 and 2015-16. At a disaggregated level, among agriculture and allied sectors, fishing and aquaculture grew by 6.7 percent and livestock sector grew by 6.5 percent, while crop sector recorded a negative growth rate (-2.2 percent) in 2015-16. The growth in agriculture and allied sectors has been much lower than overall GVA growth in the economy (Chart 1.1). However, current year offers bright prospects for agriculture sector as kharif foodgrains production is up by 9.9 percent (from 125.09 million tonnes in 2015-16 to 137.51 million tonnes in 2016-17) and rabi acreage has increased by about 5.7 percent in 2016-17 over 2015-16.

Chart 1.1: Growth in GVA at Basic Constant Prices (Percent)

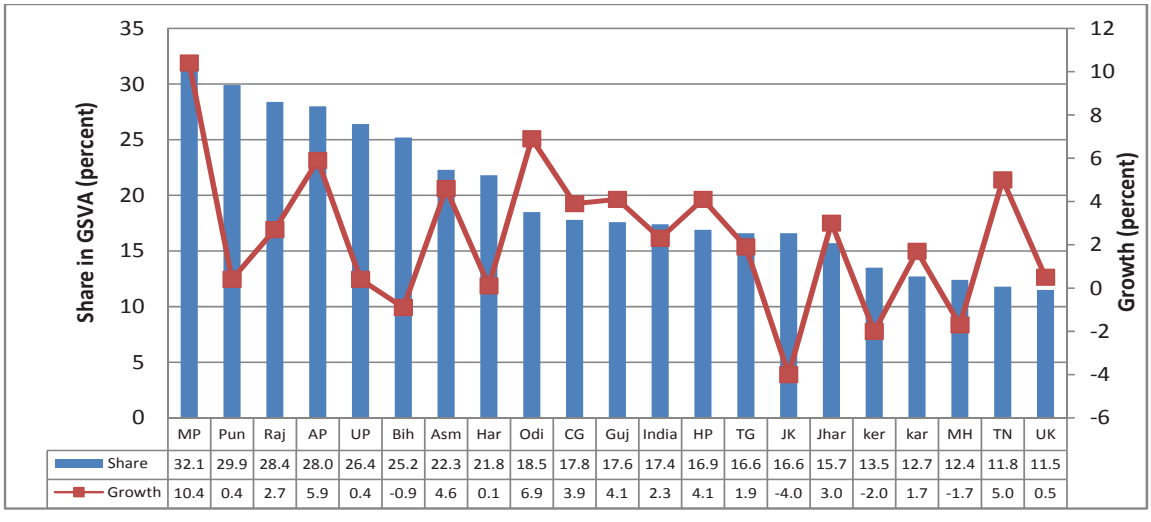


	2012-13	2013-14	2014-15	2015-16	2016-17
Agri., forestry & fishing	1.5	5.6	-0.3	0.8	4.4
Crops	0.2	5.4	-3.9	-2.2	
Total GVA	5.4	6.2	6.9	7.8	6.7

Source: CSO

1.2 The growth of agriculture and allied sectors at the state level differs from that at all-India level. For example, at the national level, the GVA from the agriculture and allied sectors grew at the rate of 2.3 percent between 2011-12 and 2014-15, but the states of Madhya Pradesh, Odisha, Andhra Pradesh and Tamil Nadu registered more than 5 percent growth during the same period (Chart 1.2). Ten states experienced more than all-India average growth while four states registered negative growth rate. Agriculture contributes over 20 percent to Gross State Value Added (GSVA) in 8 states and only 5 states earn less than 15 percent of their GSVA from agriculture and allied sectors. States like Punjab (0.4 percent), Uttar Pradesh (0.4 percent), Haryana (0.1 percent) and Bihar (-0.9 percent), where agriculture and allied sectors contribute more than 20 percent to total GSVA, recorded very low growth rates and it should be a matter of concern for policy makers. Punjab, Haryana and Western Uttar Pradesh, beneficiaries of green revolution, are still dependent on traditional crops, mainly rice and wheat, in which there is low yield growth, so efforts are needed for crop diversification.

Chart 1.2: Share and Growth (y-o-y) of Gross State Value Added by Agriculture and Allied Sectors (at 2011-12 Prices), 2011-12 to 2014-15



	MP	Pun	Raj	AP	UP	Bih	Asm	Har	Odi	CG	Guj	India	HP	TG	JK	Jhar	ker	kar	MH	TN	UK
Share	32.1	29.9	28.4	28.0	26.4	25.2	22.3	21.8	18.5	17.8	17.6	17.4	16.9	16.6	16.6	15.7	13.5	12.7	12.4	11.8	11.5
Growth	10.4	0.4	2.7	5.9	0.4	-0.9	4.6	0.1	6.9	3.9	4.1	2.3	4.1	1.9	-4.0	3.0	-2.0	1.7	-1.7	5.0	0.5

Source: CSO

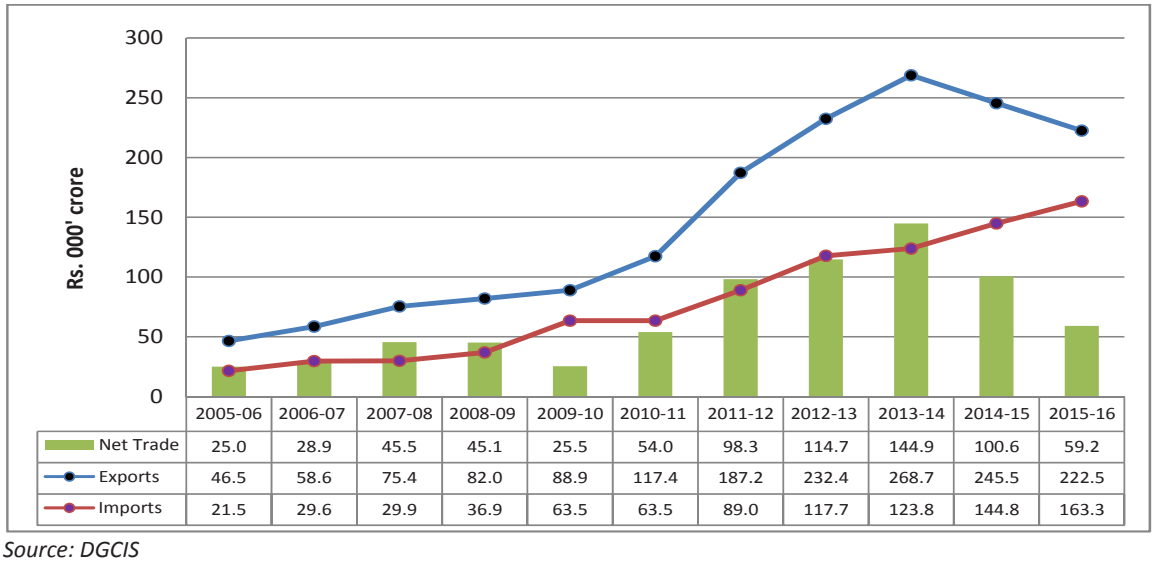
Performance of Crop Sector

1.3 The country has achieved a record production of about 272 million tonnes of foodgrains against the target of 270.1 million tonnes in 2016-17. This is a significant increase of 20.4 million tonnes over 252 million tonnes produced in 2015-16. The production of kharif foodgrains is anticipated at 137.5 million tonnes, 10 percent higher than 125.1 million tonnes achieved in 2015-16. The kharif rice production is expected to be 96 million tonnes, coarse cereals at 32.8 million tonnes, pulses at 8.7 million tonnes, oilseeds at 23.9 million tonnes and cotton at 32.5 million bales in 2016-17. In terms of percentage

increase, the production of kharif pulses is expected to be higher by 57.7 percent, oilseeds by 43.4 percent, coarse cereals by 16.4 percent and cotton by 8.3 percent during 2016-17, compared with 2015-16. Productivity was a major driver of growth in rice and cotton production as area under rice and cotton decreased by 1.6 percent and 4.1 percent, respectively during 2016-17. Area under kharif pulses recorded the highest increase (32.2 percent) due to significant increase in market prices and MSP of pulses during 2016-17 as well as good monsoon. The maximum area expansion is under tur (29.5 percent), followed by urad (23.3 percent) and moong (19.4 percent). Groundnut acreage increased by 18.9 percent.

1.4 Although India is net exporter of agri-commodities, agri-exports declined for two consecutive years (2014-15 and 2015-16) due to lower domestic production and depressed world prices mainly due to higher output and currency depreciation in competing origins. Total value of agricultural exports declined from a peak of ₹ 268.7 thousand crores in 2013-14 to ₹ 245.5 thousand crores in 2014-15 with a steeper decline to ₹ 222.5 thousand crores in 2015-16 (Chart 1.3). On the other hand, agri-imports increased from ₹ 123.8 thousand crores in 2013-14 to ₹ 163.3 thousand crores in 2015-16. As a result, trade surplus declined from ₹144.9 thousand crores to ₹59.2 thousand crores during the corresponding period. The reason for this is steep decline in exports of guargum meal, oilmeals, wheat, maize, rice and cotton and rise in imports of edible oils, pulses, fresh fruits, cashew, spices, raw sugar and cotten in the country. India's agri-exports have marginally improved during April-Dec 2016 compared with April-Dec 2015, and imports have also increased. The agri-trade in 2016-17 is anticipated to have marginal recovery from the 2015-16 depressed level.

Chart 1.3: India's Exports, Imports and Net Trade of Agri-Commodities (2005-06 to 2015-16)



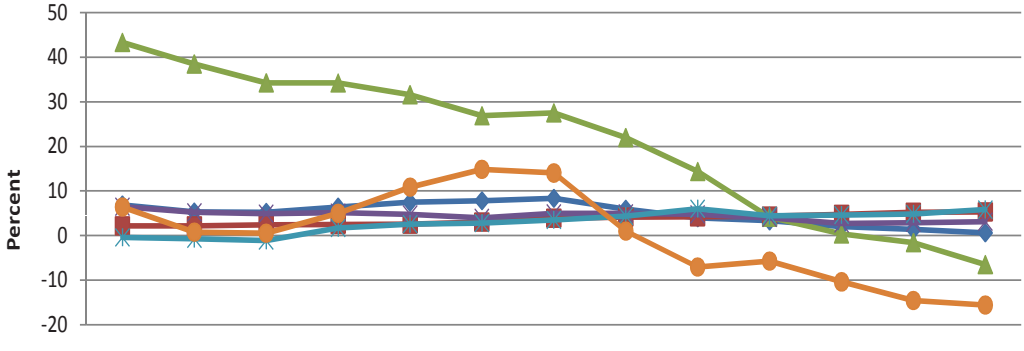
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Net Trade	25.0	28.9	45.5	45.1	25.5	54.0	98.3	114.7	144.9	100.6	59.2
Exports	46.5	58.6	75.4	82.0	88.9	117.4	187.2	232.4	268.7	245.5	222.5
Imports	21.5	29.6	29.9	36.9	63.5	63.5	89.0	117.7	123.8	144.8	163.3

Source: DGCIS

Consumer Price Index (CPI) Based Inflation

1.5 Food inflation, which remained high during 2016, has moderated. The CPI food Inflation shows that food prices have decelerated in last quarter of 2016 and January 2017 reaching a lowest level of 0.6 percent in January 2017. This is mainly attributed to declining prices of pulses and products and vegetables. There was a sharp decline in inflation of pulses and products from 43.3 percent in January 2016 to (-)6.6 percent in January 2017 and vegetables from 6.4 percent to (-)15.6 percent. CPI inflation of cereals and products has shown some increasing trend and reached a level of 5.3 percent in Dec 2016. CPI inflation of oils and fats showed a declining trend in 2016 (Chart 1.4). Fruit prices also showed an increasing trend during last year. Similar trend in WPI based inflation is observed in case of pulses and vegetables. WPI inflation of pulses was positive but decreasing while WPI inflation of vegetables showed negative trend after September 2016 (Annex Table 1.5).

Chart 1.4: Trends in CPI based Food Inflation



	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17
Food Price Index	6.8	5.3	5.2	6.4	7.5	7.8	8.4	5.9	4.0	3.3	2.0	1.4	0.6
Cereals and products	2.2	2.2	2.4	2.5	2.6	3.1	3.9	4.1	4.3	4.4	4.8	5.3	5.3
Pulses and products	43.3	38.5	34.2	34.2	31.6	26.9	27.5	21.9	14.3	4.1	0.3	-1.6	-6.6
Oils and fats	6.5	5.2	4.9	5.1	4.7	4.0	5.0	4.9	4.7	4.0	2.7	2.9	3.1
Fruits	-0.4	-0.7	-1.1	1.7	2.6	2.8	3.5	4.4	6.0	4.4	4.6	4.8	5.8
Vegetables	6.4	0.7	0.5	5.0	10.8	14.8	14.0	1.0	-7.1	-5.7	-10.4	-14.6	-15.6

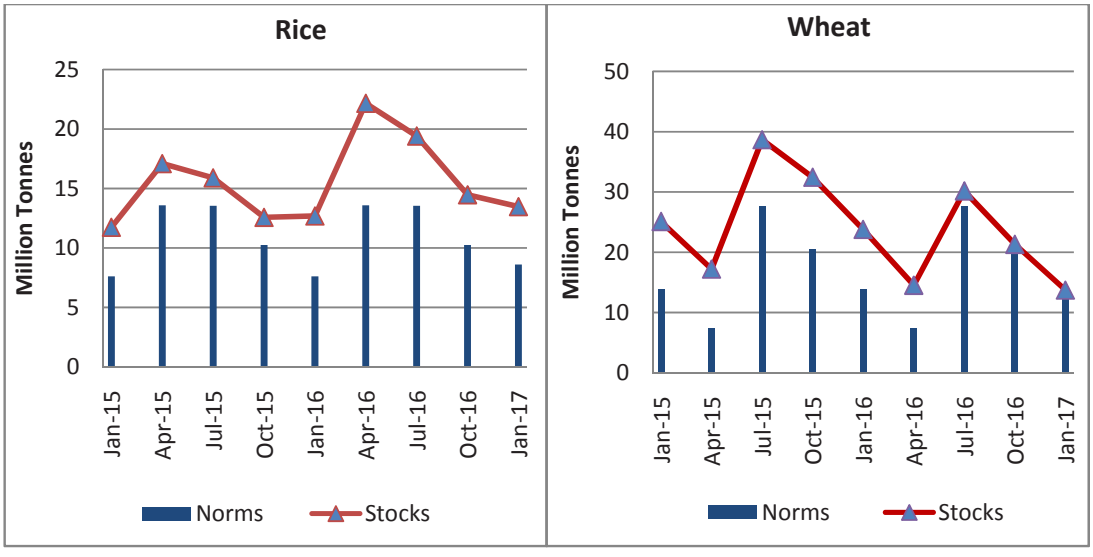
Source: MoSPI, Government of India

Central Pool Stocks

1.6 The stocks of rice with the central pool were higher than stocking norms but witnessed a declining trend during April to December 2016, where actual stocks declined from 22.16 million tonnes in April 2016 to 11.06 million tonnes in December 2016 (Chart 1.5). The stock position of rice improved in January 2017 and reached a level

of 13.47 million tonnes, which is 56.8 percent in excess of the revised norm of 8.61 million tonnes. Stocks position in respect of rice and wheat during January 2015 to January 2017 is given in Chart 1.5. Procurement of rice was about 10 percent higher during KMS 2016-17 (as on 28th February 2017) compared with KMS 2015-16. Total allocation of rice under Targeted Public Distribution System (TPDS), Other Welfare Schemes (OWS) and other additional allocations is 35.37 million tonnes during 2016-17.

Chart 1.5: Central Pool Stocks with FCI, January 2015 to January 2017



Note: Norms for January 2017 is as per revised norms from November 2016 to June 2017

Source: DFPD

Pulses

1.7 The demand supply gap in pulses ranges from 4 to 6 million tonnes depending on domestic production. This mismatch had resulted in high prices in 2014 and 2015 due to significant fall in production. To incentivise farmers, government announced a high bonus of ₹ 425 for Kharif pulses and ₹ 200 for Rabi pulses in 2016-17 over and above MSP to boost production of pulses. This led to an increase in area under Kharif pulses by 22.8 percent from 11.3 million hectares to 13.9 million hectares, resulting in an increase of 57.7 percent in production in 2016-17 over the previous year.

1.8 To ensure that the market prices of pulses do not fall below MSP, government made special efforts for procurement of pulses and set a target of procuring 1.5 million tonnes of pulses in 2016-17 by FCI, NAFED and SFAC. Out of this, about

11 lakh tonnes (as on 21.03.2017) have already been procured. To ensure that farmers get remunerative prices and there is no distress sale particularly during harvesting season, strategic intervention by government in the following forms is necessary:

i. Procurement of pulses should be strengthened and states should be encouraged to participate in pulses procurement.

ii. In view of higher production and falling domestic prices, the stock holding limits on pulses imposed under ECA, 1955 need to be removed/relaxed as they constrain alternative markets to function to the advantage of the farmers. Export of pulses should be allowed and imports be monitored closely and stopped, if necessary. Since prices in many markets are ruling below MSP, such restrictions create market barriers and adversely affect farmers.

iii. Domestic and trade policies have to be in sync with domestic demand-supply situation. For example, when pulses market arrivals are at peak, MMTC has floated a tender for sale of 5400 tonnes of tur and 6000 tonnes of urad on 25th January 2017. Sale of these stocks in open market will further depress prices, which are already below MSP.

1.9 Production of pulses has limited response to price factors due to lack of major technological breakthrough and high risks as pulses are grown under rainfed conditions and more prone to diseases and insect pests. A long term solution to increase production of pulses lies in increasing productivity, which can be achieved by using good quality seeds, appropriate quantity of fertilizers, protective irrigation and better extension services.

Tapping the Full Potential of Pulses

1.10 Pulses are important sources of protein in the country but are mostly grown on marginal lands under rainfed conditions (only 18% area is irrigated). The experience in the past has shown that cultivation of pulses has witnessed a significant geographical shift, triggered mainly by assured irrigation facilities particularly in Indo-Gangetic plains. However, provision of protective irrigation can help in increasing production and productivity of pulses. Therefore, pulse-growing regions should be targeted under PMKSY for providing protective irrigation.

1.11 Pulses play an important role in maintaining soil health as they have unique ability to fix atmospheric nitrogen, which enhances soil fertility and productivity. Studies have also reported improvements in availability of other nutrients like P, K, S, Zn and B in the soils as well as contribution to soil organic matter. Assuming two commonly

reported levels on nitrogen fixation by pulses (40 kg N/ha and 60 kg N/ha), pulses can save cost on nitrogenous fertilizer by ₹ 1792 – ₹ 2688 per hectare. The Commission recommends that a financial assistance of at least ₹ 1800 per hectare may be given to farmers growing pulses. Pulses also provide other ecosystem services as pulses have the lowest carbon and water footprints. Therefore, farmers growing pulses can be given a direct incentive for their contribution towards positive externality in the form of nitrogen fixation rather than distorting output prices as recommended by the Committee on incentivizing Pulse Production through MSP and related polices.

Box 1.1: Valuation of Eco-services provided by Pulses

	Variable	Value (Rs)
1.	Retail Price of N (Rs/kg)	11.65
2.	Subsidy on N (Rs/kg)	33.15
3.	Market Price (without subsidy) of N (1+2)	44.80
4.	Value of Nitrogen fixed by Pulses @ 40 kg N/ha (3x4)	1792
5.	Value of Nitrogen fixed by Pulses @ 60 kg N/ha (3x5)	2688

Note: N prices are based on Urea (46 percent N) prices

Oilseeds

1.12 With almost stagnant production and low productivity of oilseeds, India's dependence on import to meet edible oil requirement has reached alarming proportions. Imports have increased from 11.0 million tonnes in 2012-13 to 15.6 million tonnes (valued at ₹ 68700 crores) in 2015-16. Other issue, which needs attention, is increasing share of soft oils, from 20 percent in 2012-13 to 42 percent in 2015-16. The imports of soybean, rapeseed and sunflower oils have increased phenomenally during last five years. For example soybean oil imports have increased from about one million tonnes in 2012-13 to about 4.2 million tonnes in 2015-16 and rapeseed from about 13000 tonnes to nearly 3.8 lakh tonnes. Rising imports of soft oils like soybean have adverse impact on domestic producers.

1.13 Since the scope for expansion in the area is limited, the only way to increase oilseeds production is through increasing productivity. However, average productivity of kharif oilseeds in India is 12.63 quintal per hectare, which is well below the world average and there is an urgent need to address this issue.

1.14 The main factors affecting productivity are climate change, scanty as well as excessive rains, non-availability of quality seeds and lack of irrigation facilities. To increase production, there is a need for a time bound result-oriented programme for increasing oilseed productivity. To finance this programme, the Commission suggests to impose a cess of 0.25-0.50 percent on import of edible oils to create an

"Oilseed Development Fund" which should be managed by Ministry of Agriculture and Farmers Welfare. Also there is need for the alignment of trade policies with the domestic production. Import duty on soft oils such as soybean, sunflower and rapeseed should be linked to domestic availability and international prices. Tariff on refined oils should be substantially higher compared with crude oil to improve capacity utilization of domestic refining industry, which will create more jobs.

Cotton

1.15 The textile industry in India is the second largest employment provider in the country next only to agriculture. Cotton production in the country has witnessed a declining trend after a peak production of 35.9 million bales in 2013-14, due to falling area under the crop and declining productivity due to pest attack (pink bollworm in Gujarat and whitefly in Punjab). In 2016-17, production is estimated at 32.5 million bales, lower than the target of 36 million bales. Productivity of cotton in the country is stagnant and well below the world average, which is a matter of serious concern for the entire textile value-chain. Hence, there is a need to encourage farmers to adopt better management practices, use water conservation techniques for optimum utilization of water and replenishing soil nutrients through balanced fertilization for long-term sustainability. Development of pest resistant varieties, mechanised farming and high-density planting are some areas, which can provide much needed impetus to increase productivity level.

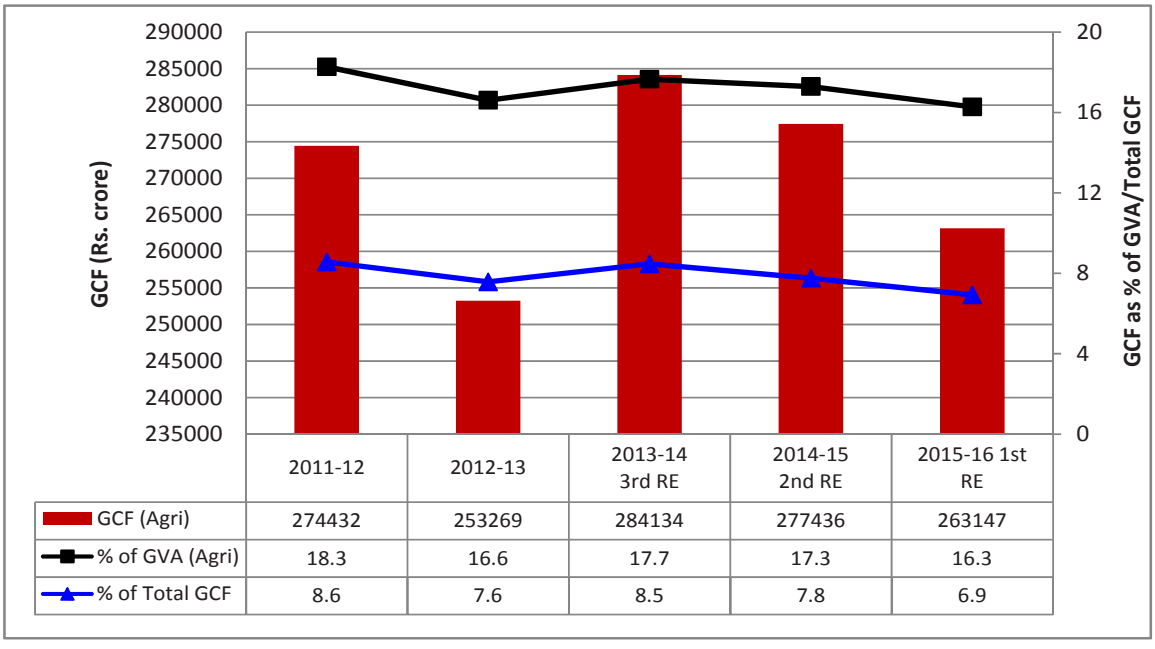
1.16 Kala-cotton, desi cotton grown in parts of Gujarat, requires opening of balls manually. During Commission's interactions with the State government officials, it was observed that farmers incur additional cost for making the kala cotton marketable by getting the balls opened by machines in factories. The State government of Gujarat has requested that arrangements for procurement of such cotton by CCI should be made from factory gate**.** Extra-long staple cotton varieties, which are mainly grown in limited areas of Tamil Nadu and Karnataka, fetch a very high price and used for producing fine and superfine counts of yarn. However, India imports long staple cotton from African countries as domestic production is very low. Production of such varieties needs to be encouraged so as to enhance income of farmers and reduce imports.

Investment in Agricultural Sector

1.17 Capital formation in agriculture is crucial for the development of agriculture and rural infrastructure like irrigation, electricity, farm mechanization, agriculture research, roads, markets and communications. However, Gross Capital Formation (GCF) in agriculture, total as well as a proportion to total GCF declined from 8.6 percent

in 2011-12 to 6.9 percent in 2015-16 (at 2011–12 prices) (Chart 1.6). The GCF in agriculture and allied sector as percentage of GVA from agriculture has also declined from 18.3 per cent in 2011–12 to 16.3 per cent in 2015-16. Share of public GCF to total GCF in agriculture also showed a declining trend, and fell from about 25 percent in 2001-02 to about 12.1 percent in 2013-14. Private investment in agriculture is driven by the public spending in agriculture as there is a strong complementarity between public and private investment in agriculture. During last three years between 2012-13 and 2014-15, total GCF in agriculture showed a negative growth rate of 1.9 percent per annum, while household investment declined by 2.1 percent. The declining trend in investment in agriculture in general and public investment in particular is a matter of great concern and needs to be reversed urgently, especially keeping in view the target of doubling farmers' income by 2022.

Chart 1.6: GCF in Agriculture- Aggregate and Percent of GVA in Agriculture



	2011-12	2012-13	2013-14 3rd RE	2014-15 2nd RE	2015-16 1st RE
GCF (Agri)	274432	253269	284134	277436	263147
% of GVA (Agri)	18.3	16.6	17.7	17.3	16.3
% of Total GCF	8.6	7.6	8.5	7.8	6.9

Source: CSO (2016)

Institutional Agricultural Credit

1.18 There has been an impressive growth in flow of agricultural credit from 4.68 lakh crores to 8.77 lakh crores during last ten year period from 2006-07 to 2015-16. The target for 2017-18 has been fixed at a record level of ₹10 lakh crores (Chart 1.7). However, there are some concerns about distributional aspects.

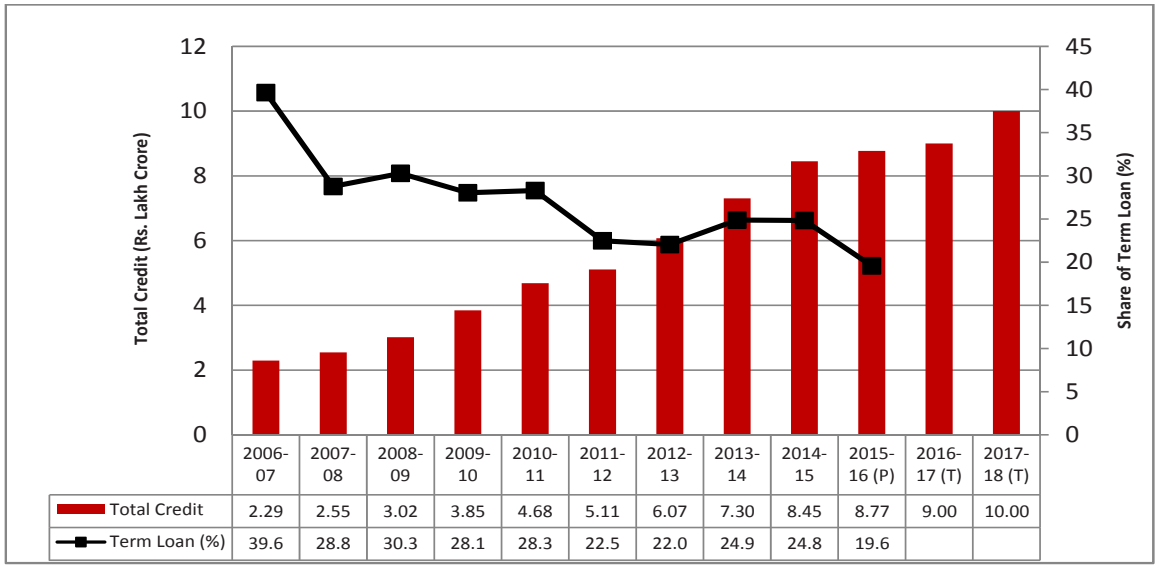
i. The share of term loan in the total agricultural credit has declined sharply from about 39.6 percent in 2006-07 to 19.6 percent in 2015-16, resulting in low capital formation in agriculture.

ii. The share of cooperatives, which have strong presence in rural areas, has declined from about 40 percent in 2000-01 to 17 percent in 2015-16.

iii. Share of small and marginal farmers as well as eastern and north-eastern regions in total credit disbursement is also low. For example, the share of eastern region in total refinance was 10.6 percent, central region 9.3 percent and north-eastern region one percent during TE2015-16. Therefore, special efforts are needed to extend institutional credit facilities to small and marginal farmers and central, eastern and north-eastern regions.

1.19 Interest subvention on crop loans has played a critical role in significant growth of short term loan but led to neglect of investment credit. In order to sustain and improve growth in agricultural sector through investment in land development, irrigation infrastructure, farm mechanization, etc. policy intervention is required to make the term loans attractive to farmers. The Commission recommends that scheme of interest subvention should be extended to investment credit to improve capital formation in agriculture.

Chart 1.7: Trends in Institutional Credit to Agricultural Sector and Share of Term Loans in Total Agricultural Credit



	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16 (P)	2016-17 (T)	2017-18 (T)
Total Credit	2.29	2.55	3.02	3.85	4.68	5.11	6.07	7.30	8.45	8.77	9.00	10.00
Term Loan (%)	39.6	28.8	30.3	28.1	28.3	22.5	22.0	24.9	24.8	19.6		

Note: P-Provisional, T-Target

Source: Annual Reports of NABARD (2014-15 and 2015-16)

1.20 Cooperative institutions particularly Primary Agricultural Credit Societies (PACS) are important source of short-term and medium-term agricultural credit particularly to small and marginal farmers. Since the share of cooperatives in total agricultural credit disbursed has declined sharply, there is a need to strengthen these institutions. Government in recent Budget has made the announcement to support NABARD for computerization and integration of all 63000 functional PACS with core banking system of District Central Cooperative Banks (DCCBs). This initiative is expected to help in smooth flow of credit to marginal and small farmers in rural areas and also enable direct transfer of incentives/subsidy/other payments to farmers and implementation of DBT schemes.

1.21 Some state governments have designed innovative products in financing agriculture. For example, Government of Andhra Pradesh and Telangana have formulated a scheme called Rythu Bandhu Padhakam for providing short term credit to farmers. Under this scheme, interest free credit is made available to the farmers against pledge of stocks stored in designated warehouses to safeguard them against distress sale particularly during peak harvesting season. Many other State governments and financial institutions are also promoting warehouse receipt financing in agriculture. However, such efforts need to be stepped up and made more user-friendly and attractive to farmers.

Irrigation Development

1.22 Development and management of irrigation systems has received special attention of the Government in the recent years. The Hon'ble Union Finance Minister, in his Budget Speech 2017-18, announced institution of a dedicated Long Term Irrigation Fund (LTIF) in NABARD with an initial corpus of ₹ 40000 crores for fast tracking of implementation of incomplete major and medium irrigation projects and dedicated micro-irrigation fund with an initial corpus of ₹ 5000 crores to achieve 'per drop more crop'. This will go a long way in building/rejuvenating dilapidated irrigation infrastructure at local level. Mission Kakatiya of Government of Telangana is also a unique initiative which aims at development of minor irrigation infrastructure, strengthening community based irrigation management and adopting a comprehensive programme for restoration of tanks.

Soil Health Management

1.23 In order to guide the farmers on judicious and economic use of fertilizer nutrients, Government has implemented Soil Health Card (SHC) Scheme from February 2015. At all-India level, 69.8 lakh soil samples have been tested and 183.54 lakh

SHCs have been distributed as on 17.02.2017. There is need to speed up efforts in collection of samples and testing of soil so as to ensure that each farmer gets a SHC.

1.24 There are 1414 Soil Testing Labs (STLs) with an analyzing annual capacity of 195.27 lakh samples in the country (Annex Table 1.6). During interactions with states, farmers reported cases where soil samples were collected but soil health cards were not provided to them. There are also some concerns about authenticity of SHCs distributed to farmers. Therefore, it may be necessary to cross check some samples for validation purpose. Also, in many states it is reported that adequate laboratories for soil testing are not available. Government has taken a very positive step in this direction by recommending to establish mini soil testing labs in all the 648 Krishi Vigyan Kendras (KVKs) and 1000 labs through local entrepreneurs. It may be pertinent to add that the objective of SHC Scheme is not only soil testing and distribution of cards, but improvement in soil quality by suitably advising the farmers for better soil health management.

1.25 Further for proper soil management, efforts are required to prepare a taluk or block level soil health map of India by involving ICAR, which will give information on the type of soil in each village with recommendations for proper type and dose of nutrients. This will reduce imbalance in usage of fertilizers and hence fertilizer subsidy. At the same time, it will help in maintaining the soil health for sustainable production.

Farm Mechanisation

1.26 Agriculture workforce constitutes 49 percent of the total work force while agriculture contributes about 14 percent to the national income (GDP). This is a reflection of large gap in labour productivity in agriculture as compared to that of non-agriculture sector. However, non-availability of labour during peak agricultural operations and high labour costs, especially during harvesting period, make agriculture operations difficult and expensive. Therefore, there is a need to promote farm mechanization. According to Agriculture Census 2010-11, about two-third of operational households are marginal with an average farm size of less than one acre (0.39 hectare). For these farmers, investment in large machinery in not a viable option. Hence, there is a need to promote farm mechanization through Custom Hiring Centres (CHCs) established through Public-Private-Partnership (PPP), private entrepreneurs, co-operative basis, farmer's organizations and charitable trusts. The Commission had recommended in its earlier reports that farm mechanization needs to be promoted among small and marginal farmers through Custom Hiring Centres (CHC). Some State governments like

Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Punjab, etc. have promoted farm mechanization through CHCs and such efforts need to be stepped up.

Fertilizers Sector Initiatives

1.27 As per the Budget Estimates 2017-18, total fertilizer subsidy is ₹70000 crores which is same as in 2016-17 but lower than in 2015-16 (₹72415 crore). Fertiliser consumption, which witnessed a negative growth continuously for three years after implementation of Nutrient Based Subsidy (NBS) scheme in 2010, increased by 4.5 percent in 2014-15 and 4.6 percent in 2015-16. However, price distortions resulting from the partial decontrol of fertiliser sector have resulted in serious imbalance in the use of major plant nutrients, which will have a detrimental effect on soil health and crop productivity. There is a need to promote balanced use of fertilizer nutrients. Therefore urea prices, which have not been revised for a long time, should be increased and subsidy saved through increase in urea prices could be used for higher subsidy on P and K fertilizers, thereby promoting balanced use of fertiliser nutrients without putting any additional burden on farmers as well as on subsidy.

1.28 Government has taken several initiatives in fertilizer sector including neem-coating of urea, revival of closed plants, direct benefit transfer, etc. Neem-coated urea would lead to enhanced N-use efficiency and check illegal diversion for industrial use. The Direct Benefit Transfer (DBT) of fertilizer subsidy being implemented on pilot basis in 16 districts is different from the DBT in other schemes as the subsidy is released to the fertilizer companies instead of the farmers, after fertiliser is sold by the retailers to the beneficiaries. The Commission recommends that a quick assessment of this pilot project should be undertaken to understand problems faced by farmers and other stakeholders. The DBT of fertilizer subsidy to farmers can be effectively implemented only after complete computerization of land records and addressing the issue of informal/oral tenancy prevalent in many states. In this context, Model Agricultural Land Leasing Act, 2016 suggested by NITI Aayog could be emulated. Under this, one of the provisions is to maintain a record of cultivators, even if he/she has no ownership right on the land. This initiative would help in generating important information on farm size, cropping pattern and other parameters from farmers and better targeting and rationalization of fertilizer subsidy.

Risk Management

1.29 Farmers face multiple sources of risk - weather, market prices, disease, etc. The Pradhan Mantri Fasal Bima Yojana (PMFBY) is a major step towards providing insurance to the farmers in the event of crop failure due to natural calamities. The

government has given special emphasis on this Scheme and its coverage will be increased from 30 percent of cropped area in 2016-17 to 40 percent in 2017-18 and 50 percent in 2018-19 with budget provision of ₹9000 crores in 2017-18. There appears to be higher acceptance of this scheme by farmers as number of non-loanee farmers has increased.

1.30 During the Commission's visit to Uttar Pradesh, Haryana, Uttarakhand, Gujarat and Rajasthan, menace of blue bulls and other wild animals was reported as a major problem in crop production. In order to prevent crops from attack of wild animals, barbed fencing is the only way out. According to estimates provided by the Department of Agriculture, Government of Uttarakhand, cost of barbed wire fencing is around ₹ 85000 per hectare. The Commission recommends that central/state governments should work out a plan and provide some subsidy so as to enable the farmers/ groups of farmers to fence their fields to protect them from attack of wild animals. Government of Gujarat has recently announced 50 percent subsidy on fencing of fields

National Agricultural Market (e-NAM)

1.31 The present agri-marketing system in the country is plagued with severe institutional and infrastructural constraints. In order to overcome these constraints and create a unified national market for agricultural commodities, e-NAM, the e-trading platform for the National Agriculture Market was launched by the Government in April 2016. The e-NAM would provide a platform to have a transparent and stable price discovery at national level, transforming the market into a competitive one and ultimately benefiting the farmers. The coverage of National Agricultural Market (e-NAM) will be expanded from the current 250 to 585 APMCs by 2017-18. This will facilitate direct interface between farmers and buyers by reducing number of intermediaries. However, inter-state variations in the rates of taxes/levies and commissions add to the price differentials across states even for the same grade/quality. Unless uniform taxes/levies are fixed at all-India level with free inter-state movement of commodities and harmonization of quality standards, physical integration of all markets of the country would be difficult to realize. In Budget 2017-18 a proposal of ₹75 lakh has been made for every e-NAM for infrastructure development.

Contract Farming

1.32 As Indian agriculture is undergoing rapid transformation, contract farming can play an important role in this transformation. Contract farming not only provides assured markets and remunerative prices but makes small producers competitive by

improving their access to technology, credit, extension and market information and lowering transaction costs. For agri-processing firms, it ensures consistent supply of quality agricultural produce at right time and lesser cost. However, contract farming arrangements have also been criticized for being biased in favour of corporate or large farmers, while exploiting the poor bargaining power of small farmers. The Commission is of the view that there is a need to promote contract farming and develop a model law on contract farming in consultation with state governments and other stakeholders.

Structure of the Report

1.33 The report is organized as follows. Chapter 2 presents the demand-supply scenario and procurement operations of the Government. Chapter 3 discusses trends in crop productivity and related aspects. Chapter 4 presents trends in international trade and domestic prices in relation to international prices, as well as brief review of trade policies with a view to use international trade as an expanding opportunity for domestic producers. Chapter 5 presents the cost of production and returns of different kharif crops. Finally, a summary of the discussion along with non-price policy and MSP recommendations is presented in Chapter 6.

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Chapter 2

Demand-Supply Scenario and Procurement Operations

2.1 As per FAO estimates, world rice production in 2016-17 is anticipated to reach 496.7 million tonnes, up 5.4 million tonnes from 2015-16, largely due to higher acreage and normal weather conditions. As per USDA projections of January 2017, global production of coarse grains, oilseeds and cotton are around, 1328 million tonnes, 555 million tonnes and 105 million tonnes, respectively. These estimates show increase in production over 2015-16. World productions of cotton is estimated to increase to 105.3 million tonnes in 2016-17 against 96.5 million tonnes in 2015-16, mainly due to 32 percent increase in cotton production in USA in 2016-17.

Stock to Use Ratio

2.2 The Stock-to-Use (STU) Ratios for rice and pulses have been taken from NCAERs Rabi Outlook Report, 2017 and that of cotton from Office of the Textile Commissioner, Ministry of Textiles (Table 2.1). It is observed that the STU for rice has increased since 2014-15 consistently, thus showing a comfortable position of stocks of rice. However the STU of pulses has fallen to 6.01 in 2016-17 from 7.60 in 2015-16 inspite of a bumper production of pulses in 2016-17. Consumption of pulses in 2016-17 has been taken as 27.8 million tonnes against 22.32 million tonnes in 2015-16 a growth of 24.6 percent which is unlikely as the growth in consumption in 2015-16 over 2014-15 has been shown as 2.9 percent.

Table 2.1: Stock-to-Use Ratios (Percent) of Kharif Crops (2014-15 to 2016-17)

Commodity	2014-15	2015-16	2016-17
Rice	12.92	15.50	17.16
Pulses	7.80	7.60	6.01
Cotton	18.04	11.35	13.29

Source: Rice and Pulses, NCAER
Cotton, Office of the Textile Commissioner, Ministry of Textiles.

Wholesale Prices and MSP

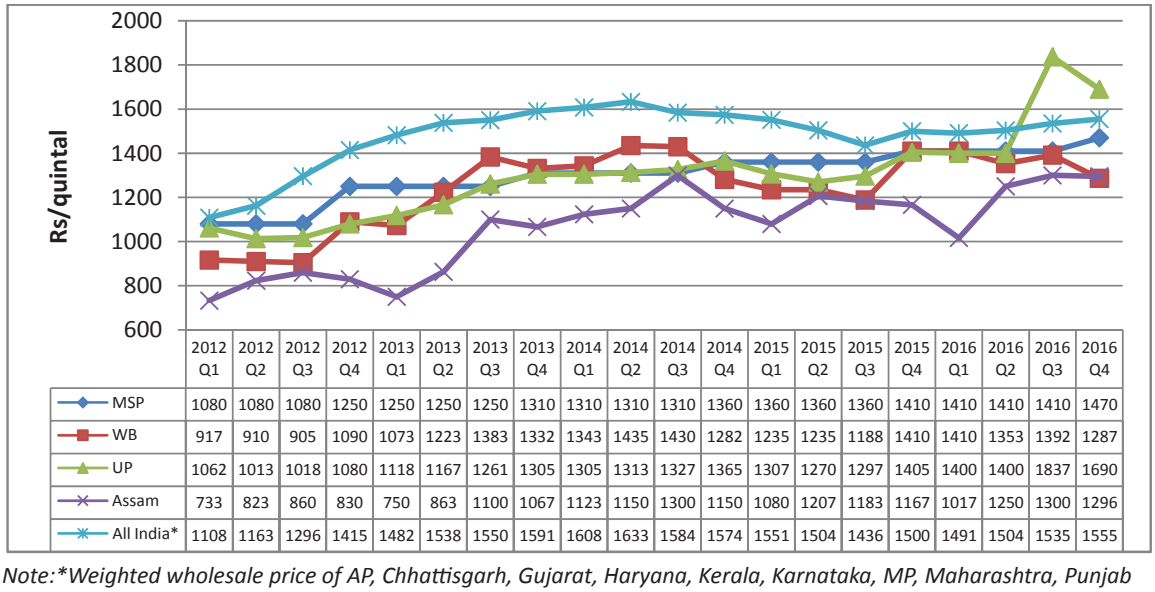
2.3 Weighted average wholesale price is a better indicator to reflect the demand-supply dynamics of agricultural commodities. Stability in the market can be achieved through appropriate price policy measures and other market instruments. There is

an increasing integration of domestic prices with global commodity prices, implying that domestic agricultural prices will to some extent be driven by what happens in global markets. Hence analysis of trends in wholesale prices and world prices plays crucial role in deciding the MSP of crops. In this chapter, we analyze trends in wholesale prices and MSPs of kharif crops during 2012 to 2016. Charts 2.1 to 2.6 present the movement of wholesale prices vis-à-vis MSPs of paddy, maize, arhar, moong, urad, groundnut, soybean and cotton.

Paddy

2.4 Chart 2.1 depicts weighted average wholesale prices of paddy in India from 2012 to 2016. Market price of paddy was ruling above MSP continuously from 2013 to 2015(Q_2). Subsequently, in the next quarters prices were around MSP, but again started rising and were much above MSP in 2016(Q_3). There was a significant decline in market prices during 2016(Q_4) and prices were below MSP. This was mainly due to favorable south west monsoon, which led to increased production. However wholesale prices have been much lower than MSP in Assam during whole period from 2012(Q_1) to 2016 (Q_4). In case of eastern UP, 14 out of 20 quarters recorded market prices below MSP and in West Bengal, market prices were lower than MSP in 13 out of 20 quarters. To arrest falling prices, procurement system needs to be strengthened in paddy growing states, particularly in states like Assam, West Bengal, Bihar and Eastern UP.

Chart 2.1: Wholesale Prices vis-à-vis MSP of Paddy, 2012 to 2016



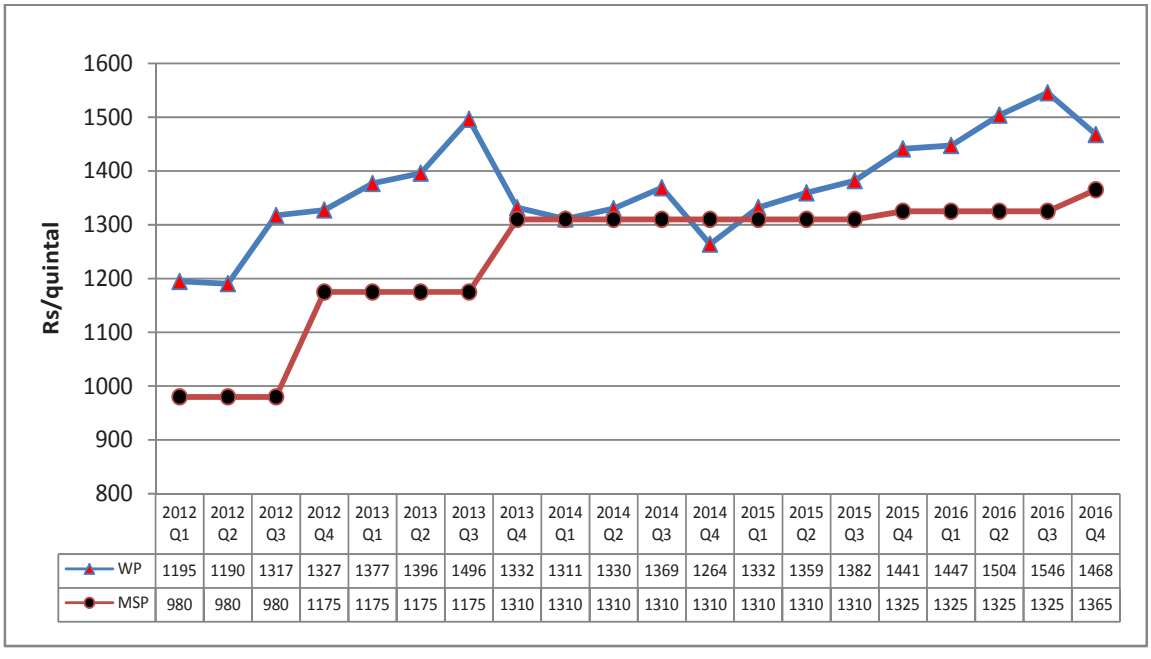
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	1080	1080	1080	1250	1250	1250	1250	1310	1310	1310	1310	1360	1360	1360	1360	1410	1410	1410	1410	1470
WB	917	910	905	1090	1073	1223	1383	1332	1343	1435	1430	1282	1235	1235	1188	1410	1410	1353	1392	1287
UP	1062	1013	1018	1080	1118	1167	1261	1305	1305	1313	1327	1365	1307	1270	1297	1405	1400	1400	1837	1690
Assam	733	823	860	830	750	863	1100	1067	1123	1150	1300	1150	1080	1207	1183	1167	1017	1250	1300	1296
All India*	1108	1163	1296	1415	1482	1538	1550	1591	1608	1633	1584	1574	1551	1504	1436	1500	1491	1504	1535	1555

*Note:*Weighted wholesale price of AP, Chhattisgarh, Gujarat, Haryana, Kerala, Karnataka, MP, Maharashtra, Punjab and TN; UP indicates eastern UP, MSPs are inclusive of bonus*
Source: DES, Ministry of Agriculture & Farmers Welfare

Maize

2.5 Wholesale price of maize increased continuously from 2015 to 2016 (Q_3) with peak price of ₹1546 per quintal in 2016 (Q_3). However, price declined to ₹1468 per quintal in 2016 (Q_4) due to increased kharif production (20 percent) in 2016-17 mainly attributed to higher area (12 percent) under cultivation (Chart 2.2).

Chart 2.2: Wholesale Prices vis-à-vis MSP of Maize, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	1195	1190	1317	1327	1377	1396	1496	1332	1311	1330	1369	1264	1332	1359	1382	1441	1447	1504	1546	1468
MSP	980	980	980	1175	1175	1175	1175	1310	1310	1310	1310	1310	1310	1310	1310	1325	1325	1325	1325	1365

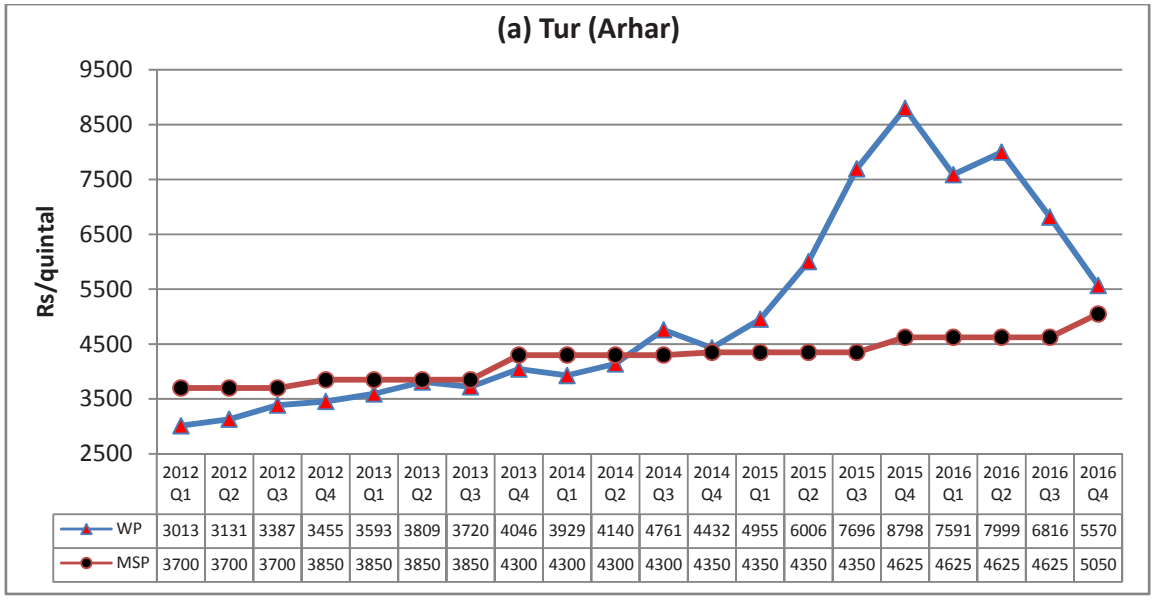
Note: Weighted wholesale price of AP, Bihar, Gujarat, Karnataka, MP, Maharashtra, Punjab, Rajasthan, TN and UP, which cover 78 percent of production in 2016-17
Source: DES, Ministry of Agriculture & Farmers Welfare

Pulses

2.6 Demand for pulses in India has always been higher than the domestic production but this demand-supply gap widened during last two years due to drastic fall in production. This shortage in availability of pulses led to very steep increase in wholesale market prices during 2015. As a result of this, prices of tur, moong and urad were ruling much above MSP in 2015 and 2016 with exception of moong in 2016(Q_4). Tur prices were ₹ 8798 per quintal during the last quarter of 2015, which were more than twice the MSP. Almost a similar trend was witnessed in case of moong and urad. However, due to various government initiatives and incentives, area under kharif pulses increased significantly in 2016 by 29.5 percent, 23.3 percent and

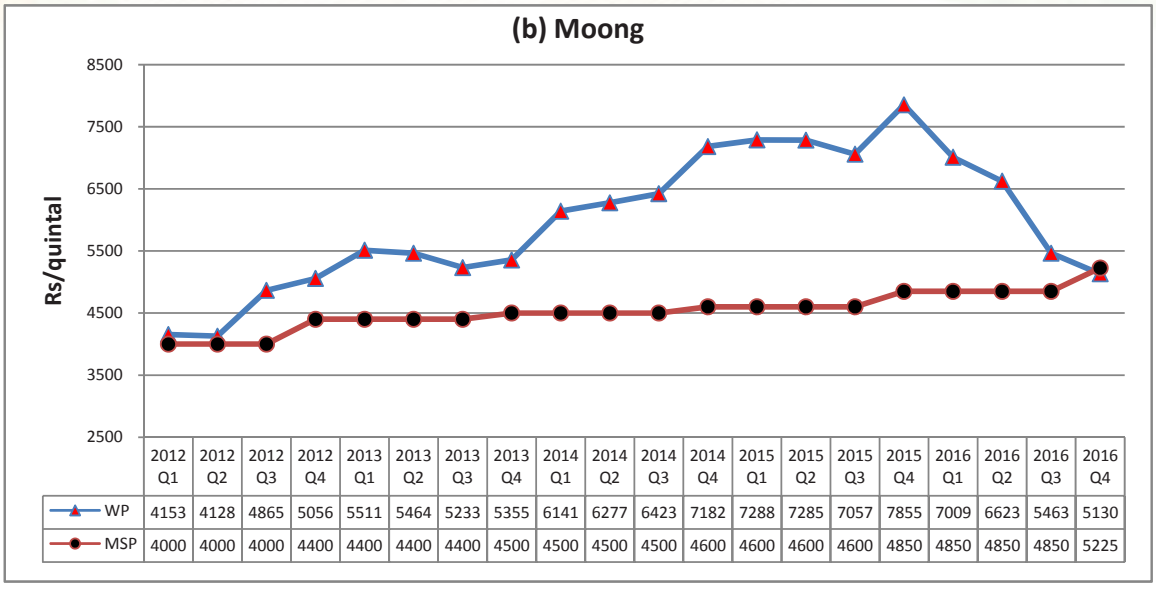
19.4 percent under tur, urad and moong, respectively and increase in productions 65.3 percent, 51.2 percent and 69.2 percent respectively for these pulses. In 2016-17, in the states of Telangana and Andhra Pradesh due to concerted efforts of the state government, area and production of pulses, redgram and moong increased significantly while area under cotton and paddy declined. In Uttar Pradesh, area and production of redgram and urad has increased substantially. As a result of these initiatives, increase in market arrivals of pulses led to very steep fall in market prices converging towards MSP and even below MSP in some markets (Chart 2.4 a to c). Despite special efforts in procurement of pulses, arhar and moong prices (modal price) in major APMC mandis in Karnataka, Maharashtra and Telangana, were ruling below MSP during harvest period. This calls for timely and large scale intervention of NAFED, FCI and SFAC along with proper warehouse storage facilities to stabilize the market prices and proper monitoring of pulses markets. State governments need to be roped in for effective procurement of pulses. Otherwise farmers will again shift from pulses to other crops. Details of important markets, where market prices were below MSP are given in Annex Table 2.4.

Chart 2.3: Wholesale Prices vis-à-vis MSP of Pulses, 2012 to 2016



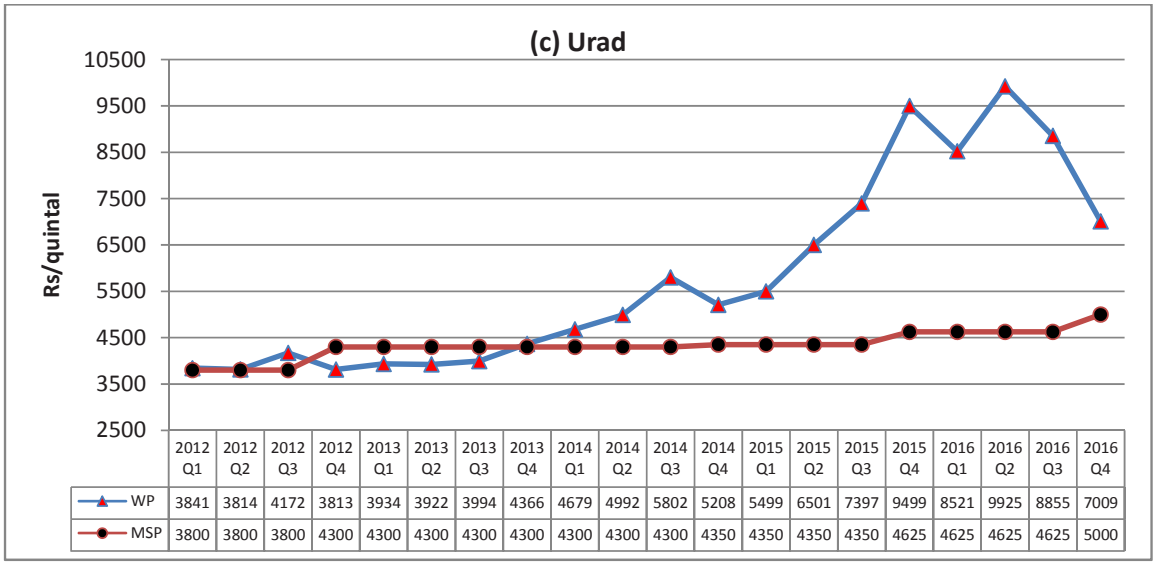
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	3013	3131	3387	3455	3593	3809	3720	4046	3929	4140	4761	4432	4955	6006	7696	8798	7591	7999	6816	5570
MSP	3700	3700	3700	3850	3850	3850	3850	4300	4300	4300	4300	4350	4350	4350	4350	4625	4625	4625	4625	5050

Note: Weighted wholesale price of AP, Bihar, Karnataka, MP, Maharashtra, TN, UP and WB, which cover 72 percent of production in 2016-17, MSPs are inclusive of Bonus
Source: DES, Ministry of Agriculture & Farmers Welfare



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	4153	4128	4865	5056	5511	5464	5233	5355	6141	6277	6423	7182	7288	7285	7057	7855	7009	6623	5463	5130
MSP	4000	4000	4000	4400	4400	4400	4400	4500	4500	4500	4500	4600	4600	4600	4600	4850	4850	4850	4850	5225

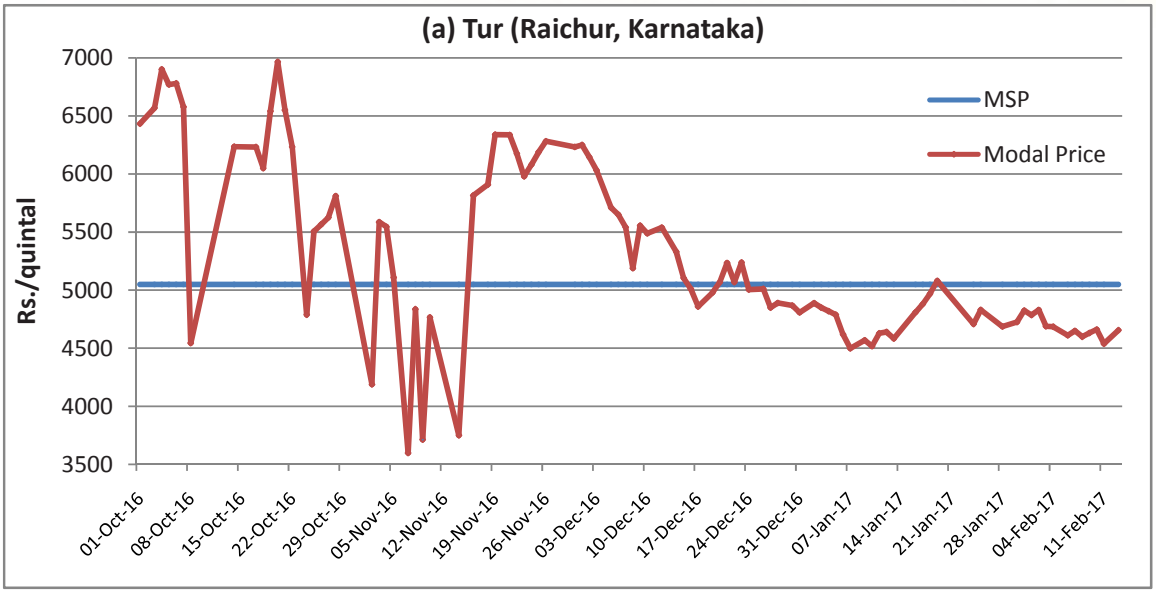
Note: Weighted wholesale price of AP, Bihar, Gujarat, Karnataka, MP, Maharashtra, Rajasthan, Punjab, TN and UP, which cover 86 percent of production in 2016-17, MSPs are inclusive of Bonus
Source: DES, Ministry of Agriculture & Farmers Welfare



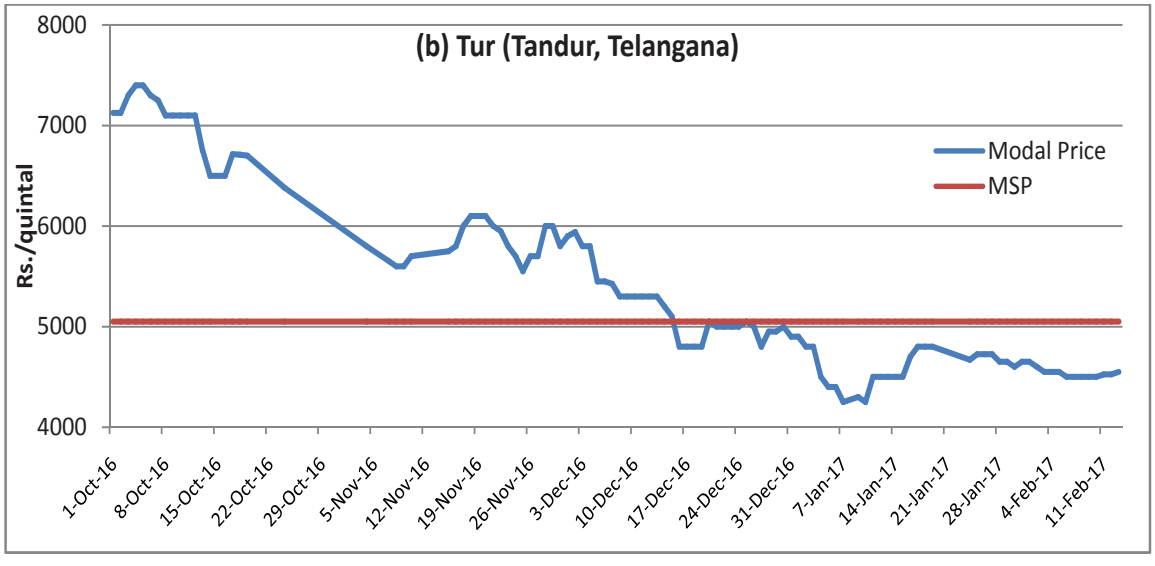
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	3841	3814	4172	3813	3934	3922	3994	4366	4679	4992	5802	5208	5499	6501	7397	9499	8521	9925	8855	7009
MSP	3800	3800	3800	4300	4300	4300	4300	4300	4300	4300	4300	4350	4350	4350	4350	4625	4625	4625	4625	5000

Note: Weighted wholesale price of AP, Bihar, Gujarat, MP, Maharashtra, TN, UP and WB, which cover 82 percent of production in 2016-17, MSPs are inclusive of Bonus
Source: DES, Ministry of Agriculture & Farmers Welfare

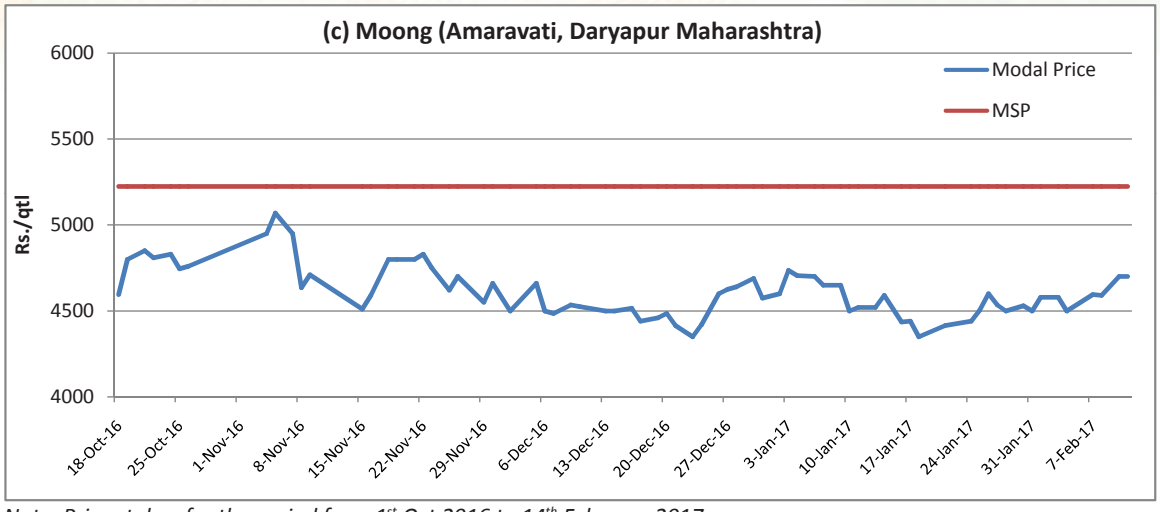
Chart 2.4: Comparison of Market Prices and MSP of Kharif Pulses during KMS 2016-17



Note: Prices taken for the period from 1st Oct 2016 to 14th February 2017 for "777 New Vasad Imp" variety
Source: AGMARKNET



Note: Prices taken for the period from 1st Oct 2016 to 14th February 2017
Source: AGMARKNET

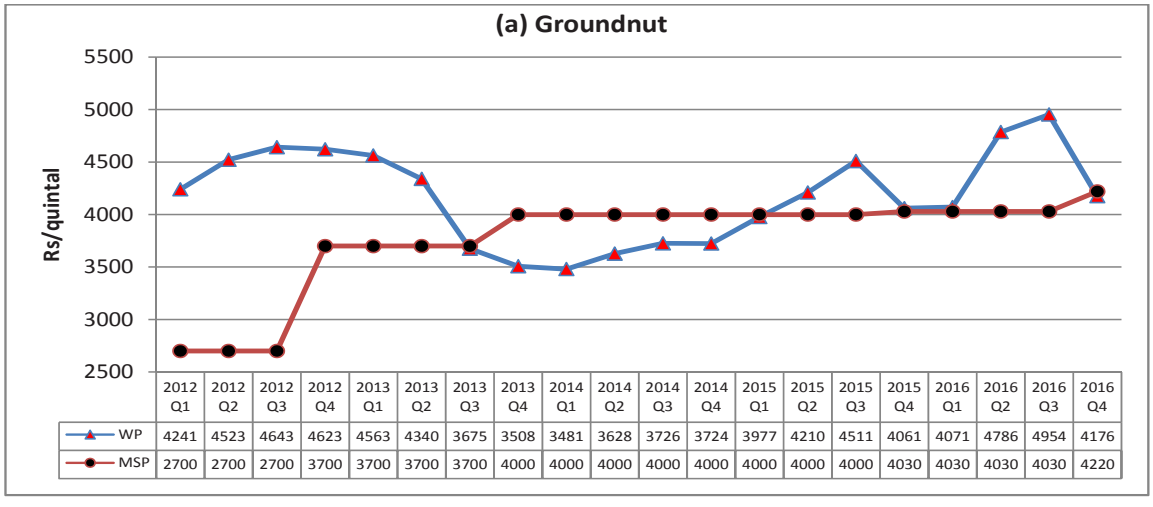


Note: Prices taken for the period from 1st Oct 2016 to 14th February 2017
Source: AGMARKNET

Oilseeds

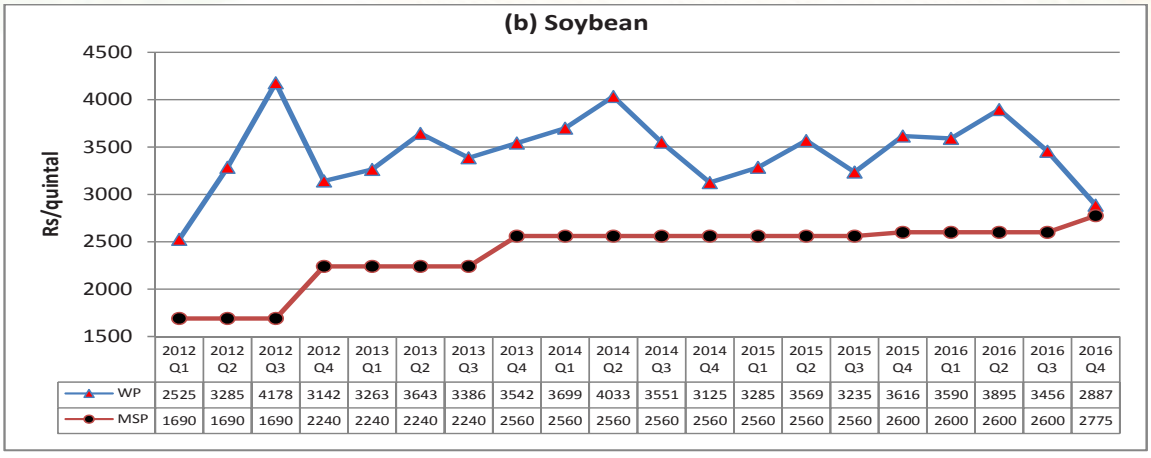
2.7 The prices of groundnut were ruling above MSP from 2015(Q_2) with fluctuating trend. In last quarter of 2016 price fell below MSP, which necessitated procurement of groundnut by the public agencies. Similar price trend over the years was observed in case of soybean. In 2016-17, due to bumper harvest of soybean (65 percent increase in production), soybean prices recorded a steep decline during last two quarters and prices reached a level of ₹2887 per quintal in 2016(Q_4), marginally higher than MSP.

Chart 2.5: Wholesale Prices vis-à-vis MSP of Oilseeds, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	4241	4523	4643	4623	4563	4340	3675	3508	3481	3628	3726	3724	3977	4210	4511	4061	4071	4786	4954	4176
MSP	2700	2700	2700	3700	3700	3700	3700	4000	4000	4000	4000	4000	4000	4000	4000	4030	4030	4030	4030	4220

Note: Weighted wholesale price of AP, Gujarat, Karnataka, Rajasthan and TN, which cover 89 percent of production in 2016-17, MSPs are inclusive of bonus
Source: DES, Ministry of Agriculture & Farmers Welfare



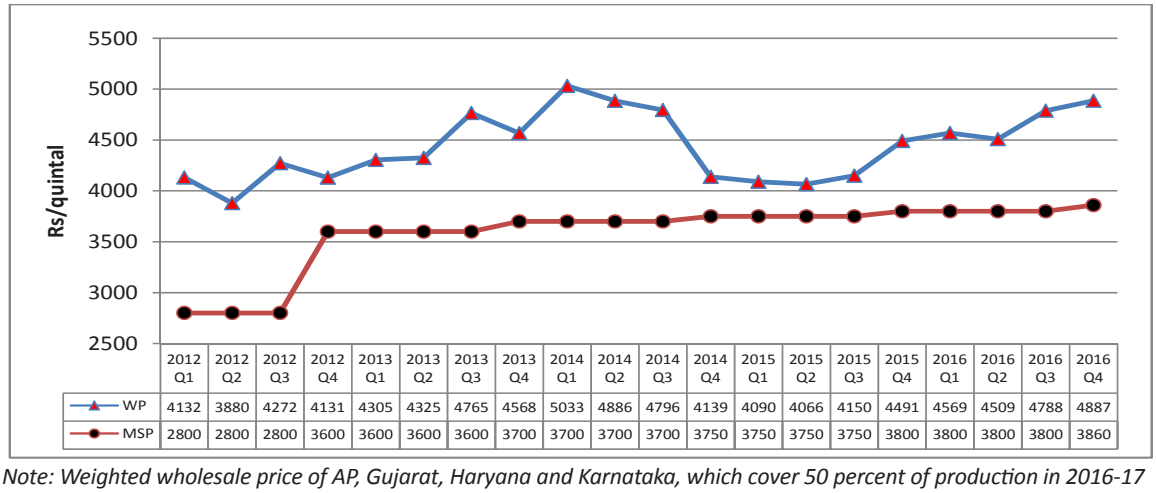
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	2525	3285	4178	3142	3263	3643	3386	3542	3699	4033	3551	3125	3285	3569	3235	3616	3590	3895	3456	2887
MSP	1690	1690	1690	2240	2240	2240	2240	2560	2560	2560	2560	2560	2560	2560	2560	2600	2600	2600	2600	2775

Note: Weighted wholesale price of MP, Maharashtra and Rajasthan, which cover 93 percent of production in 2016-17, MSPs are inclusive of Bonus
Source: DES, Ministry of Agriculture & Farmers Welfare

Cotton

2.8 In contrast to other crops, there is an increasing trend in wholesale prices of cotton. Area under cotton cultivation declined by 12 percent in 2016-17 but due to improvement in productivity, cotton production increased by 7 percent. As per USDA report, China's cotton area has been declining since 2012-13 due to its policy of using domestic stocks. Also removal of cotton subsidies has resulted in lower profits and a subsequent reduction in planted area. According to CCI, import of cotton by China is expected to increase marginally by about 3 percent during 2016-17 and imports by other countries like Bangladesh, Indonesia, Pakistan, Thailand, Turkey, Vietnam etc. are expected to grow due to increase in their consumption. This may result in upward movement of cotton prices in future.

Chart 2.6: Wholesale Prices vis-à-vis MSP of Cotton, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
WP	4132	3880	4272	4131	4305	4325	4765	4568	5033	4886	4796	4139	4090	4066	4150	4491	4569	4509	4788	4887
MSP	2800	2800	2800	3600	3600	3600	3600	3700	3700	3700	3700	3750	3750	3750	3750	3800	3800	3800	3800	3860

Note: Weighted wholesale price of AP, Gujarat, Haryana and Karnataka, which cover 50 percent of production in 2016-17
Source: DES, Ministry of Agriculture & Farmers Welfare

2.9 The Government of Gujarat during interaction with the Commission raised an issue regarding 15 classes of cotton based on fibre quality parameters for which MSP is fixed. CACP recommends MSP of two basic varieties of cotton viz., medium staple (staple length 24.5 to 25.5 mm and micronaire value 4.3-5.1) and long staple (staple length 29.5 to 30.5 mm and micronaire value 3.5-4.3) length cotton. Based on this, support prices for 15 classes of kapas of FAQ are fixed by Office of the Textile Commissioner, Ministry of Textiles. However precise measurement of staple length and micronaire value for different classes is difficult and is subjective due to non-availability of fibre testing instruments in markets. The Commission recommends that there is a need to review the number of classes of cotton for fixation of MSP by the Ministry of Textiles. Also instruments for measuring the length of fibre should be provided in sufficient numbers in APMCs and Cotton Corporation of India (CCI) procurement centres to ensure objective measurement of staple length of cotton for benefit of farmers.

Market Outlook Forecasting

2.10 A forecast regarding the future trends in prices of a particular commodity based on the past price trends, production pattern, consumer demand and other economic factors will help in smooth functioning of market. Governments of Gujarat and Rajasthan have initiated system of preparing Market Outlook reports for major crops, which help in temporal and spatial integration of markets and prices thus strengthening the market intelligence network and reducing the volatility in market price. CACP feels that this is a good initiative and recommends that such exercise should be undertaken by other states for forecasting market and price outlook of major crops.

Procurement Policy and Operations

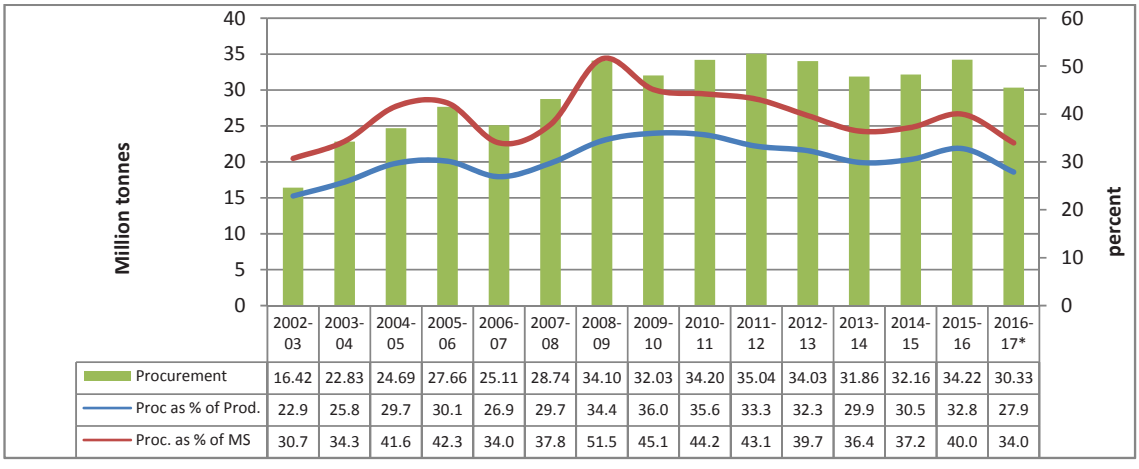
2.11 Among kharif crops, procurement operations are largely limited to rice. However, due to special focus of the Government on pulses production and procurement, FCI was also designated as central nodal agency for procurement of pulses during KMS 2016-17. National Cooperative Consumers Federation of India Ltd. (NCCF), National Agricultural Cooperative Marketing Federation of India (NAFED), Small Farmers Agribusiness Consortium (SFAC) and Central Warehousing Corporation (CWC) are other central nodal agencies for undertaking procurement of pulses and oilseeds under PSS, when market prices fall below MSP.

Rice

2.12 Procurement of rice has increased from 32.16 million tonnes in 2014-15 to 34.22 million tonnes in 2015-16. Similarly procurement as percentage of production and

marketed surplus has increased to 32.8 percent and 40 percent, respectively in 2015-16. This year procurement of rice as on 28.02.2017, has touched about 30.33 million tonnes, which is about 8.27 percent higher than last year (28.02 million tonnes) as on date. The overall position regarding rice procurement over the years in the country as percentage of the production and marketed surplus is presented in Chart 2.7.

Chart 2.7: Rice Procurement as Percent of Production and Marketed Surplus, 2002-03 to 2016-17

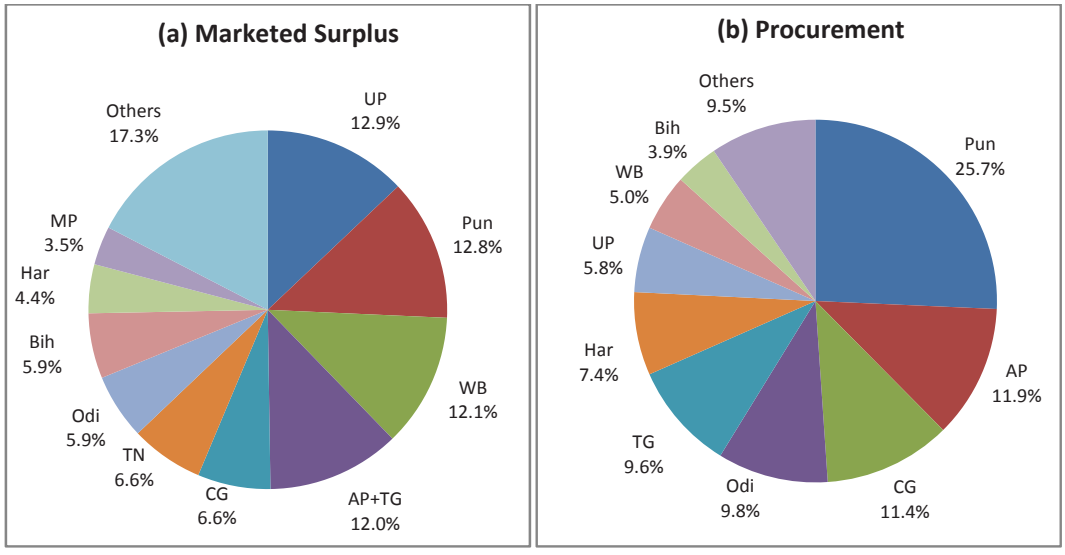


	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
Procurement	16.42	22.83	24.69	27.66	25.11	28.74	34.10	32.03	34.20	35.04	34.03	31.86	32.16	34.22	30.33
Proc as % of Prod.	22.9	25.8	29.7	30.1	26.9	29.7	34.4	36.0	35.6	33.3	32.3	29.9	30.5	32.8	27.9
Proc. as % of MS	30.7	34.3	41.6	42.3	34.0	37.8	51.5	45.1	44.2	43.1	39.7	36.4	37.2	40.0	34.0

Note: MSR is available upto 2013-14 only hence repeated in 2014-15, 2015-16 & 2016-17
**Procurement for 2016-17 as on 28.02.2017*
Source: DES, DFPD, Agricultural Statistics at a Glance, 2015

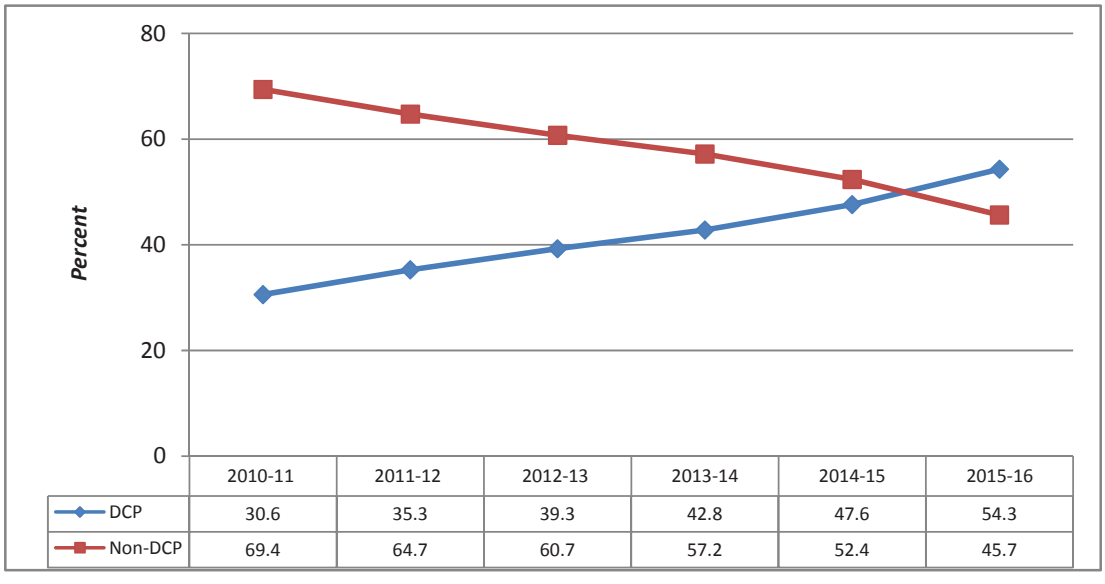
2.13 Punjab still continues to be the largest contributor to the central pool of rice procurement with an estimated share of about 25.7 percent of procurement (Chart 2.8) followed by Andhra Pardesh (11.9 percent), Chhattisgarh (11.4 percent) and Odisha (9.8 percent). It is interesting to note that rice procurement has become more diversified and share of DCP states has increased from about 30.6 percent in KMS 2010-11 to 54.3 percent in KMS 2015-16 (Chart 2.9). However, there are still some major rice producing states, where procurement operations are either absent or very limited. For example, there was almost negligible procurement of rice in Assam during TE2015-16, even though rice is a major crop in the state and has 3 percent share in marketed surplus. As regards West Bengal, the procurement share is only 5 percent though marketed surplus share is 14 percent. The share of other states like Bihar, Tamil Nadu and Karnataka in procurement is also very low. As discussed earlier, market prices were below MSP in states like Assam, West Bengal and Eastern UP. Therefore to make the price support more effective in eastern and southern region, there is a need to strengthen rice procurement operations in these states.

Chart 2.8: Shares of Major States in Marketed Surplus and Procurement of Rice, TE2015-16



Sources: DES, Agricultural Statistics at a Glance, 2015 and FCI

Chart 2.9: Procurement of Rice in DCP & Non-DCP States



	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
DCP	30.6	35.3	39.3	42.8	47.6	54.3
Non-DCP	69.4	64.7	60.7	57.2	52.4	45.7

Note: Procurement as on 06.02.2017
Source: FCI

Pulses

2.14 The country has achieved a record production of pulses during 2016-17, which has led to fall in market prices. Participation of FCI in addition to NAFED and SFAC in procurement of pulses has yielded limited results as market prices were below MSP in many markets. Procurement of pulses is about 11 lakh tonnes as on 21.03.2017, much higher than earlier years but market prices are still ruling below MSP in some states. Therefore, there is a need for effective involvement of states in procurement of pulses. However, infrastructure of NAFED and SFAC needs to be strengthened with administrative and financial support to take up procurement of pulses on a substantial scale throughout the country. It is reported that in the absence of assurance of reimbursement of losses, state government agencies do not come forward for procurement of pulses. Some states like Gujarat and Madhya Pradesh have expressed the need to extend procurement of kharif pulses upto April as harvesting season extends till then. Since pulses have relatively short shelf life, there is also a need to evolve a suitable mechanism for disposal of these stocks.

Table 2.2: Procurement of Pulses by Different Agencies in 2016-17

(qty in MT)

Pulses	FCI	NAFED	SFAC	Total
Moong	64614	128953	26225	219792
Urad	18234	59394	11043	88670
Tur	146912	590664	65701	803277
Total	229760	779011	102969	1111740

Note: procurement as on 21.03.2017

Source: FCI

Oilseeds

2.15 In 2016-17, total kharif oilseeds production is expected to be 23.9 million tonnes (7.23 million tonnes more than 2015-16), which will increase domestic availability of oils. However, there is low level of procurement of kharif oilseeds by NAFED and market prices were below MSP in some states. In order to sustain increased production, incentive in the form of reasonably strong market intervention operations to arrest the falling market prices is necessary. Crop diversification from water-intensive crops to pulses and oilseeds is need of the hour. In order to give a greater push for crop diversification, robust procurement of pulses and oilseeds deserve priority.

Table 2.3: Procurement of Kharif Oilseeds by NAFED (2012-13 to 2016-17)

(qty in MT)

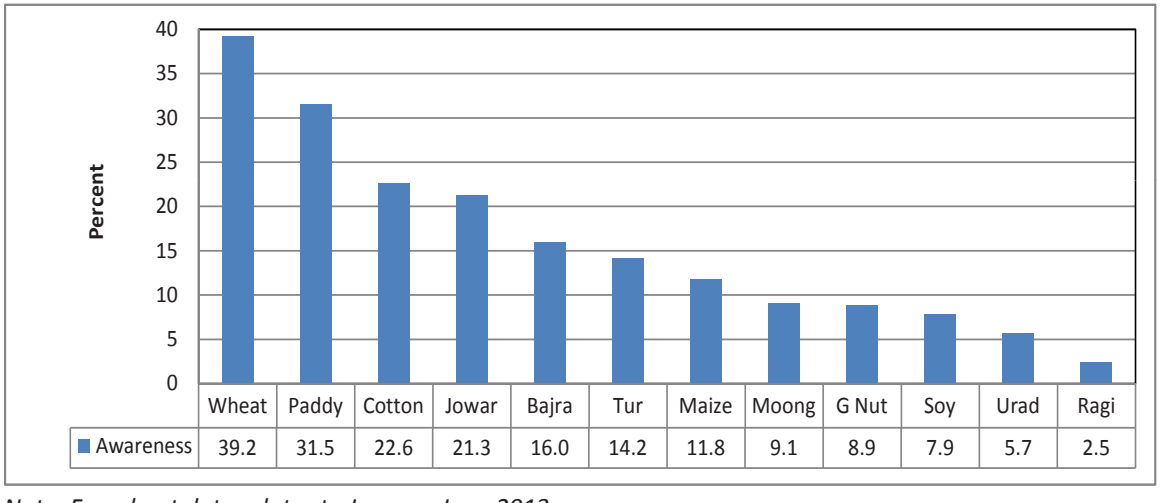
Oilseeds	2012-13	2013-14	2014-15	2015-16	2016-17
Groundnut	Nil	341156	6230	-	188621
Sunflower	1499	4383	4153	4242	4249
Soybean (Yellow)	-	-	-	-	164

Source: NAFED

Awareness Creation about MSP and FAQ

2.16 In order to strengthen MSP operations, awareness about MSP and FAQ norms need to be created as many times farmer's produce is rejected on the basis of quality norms. Strong procurement operations need to be expanded to neglected regions, particularly eastern and north eastern regions. As per NSSO data for 2012-13, all farmers, who reported sale of paddy during July-December 2012, only 13.5 percent households sold it to procurement agencies and in case of wheat (January-June, 2013), 16.2 percent households sold to procurement agencies. Together they account for only 14.9 percent of total households in the country. Chart 2.10 shows that most farmers are not even aware of the existence of MSPs.

Chart 2.10: Farmer Awareness about MSP of major crops: July-December 2012

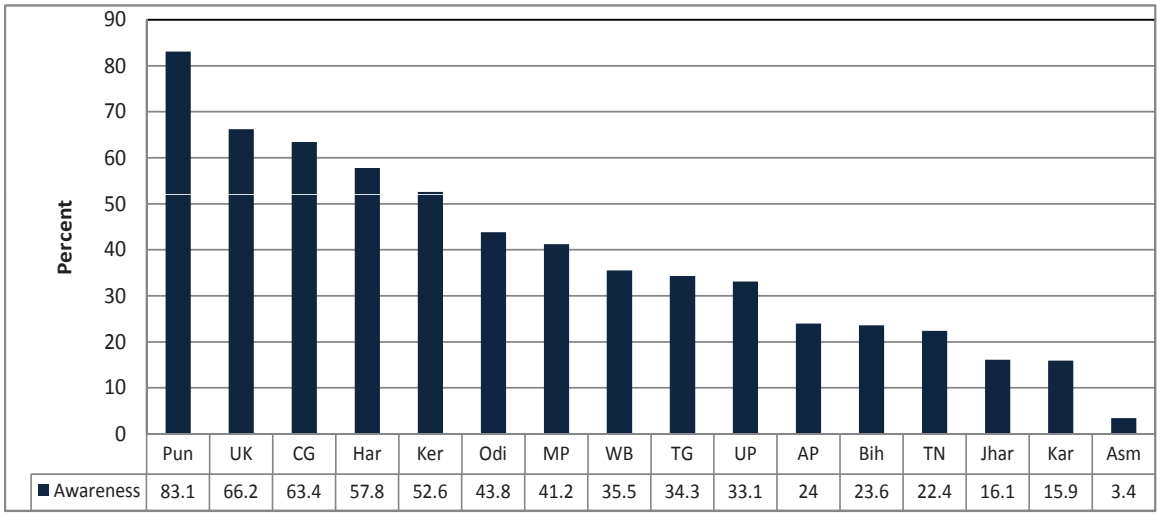


Note: For wheat data relates to January-June 2013
Source: Some Aspects of Farming in India; NSS 70th Round (January– December 2013)

2.17 Though more than one-third of rice and wheat farmers are aware of the MSP, very few are aware about it in other crops like pulses, oilseeds and coarse cereals. Similarly awareness of MSP of paddy also varies across states, and is particularly low in most

of eastern and southern states (Chart 2.11). It is not surprising to observe that states where awareness of MSP is high are also the states where there is more procurement of wheat and paddy. This calls for giving wide publicity about MSP and procurement agencies by the State Governments in regional/vernacular electronic and print media and also through pamphlets, announcements in the villages regarding MSPs and FAQ parameters of important commodities at least 15 days before the procurement starts so as to reach out to farmers in far off areas. Also Govt. of India should give wide publicity about MSP through newspapers and electronic media when MSPs are announced. In addition, farmers need to be trained on FAQ norms and post-harvest handling of commodities so as to minimize post-harvest losses and better prices to farmers. Furthermore to instill confidence among farmers for procurement of their produce, a legislation conferring on farmers 'The Right to Sell at MSP' may be brought out.

Chart 2.11: Farmer Awareness about MSP of Paddy (July-December 2012)



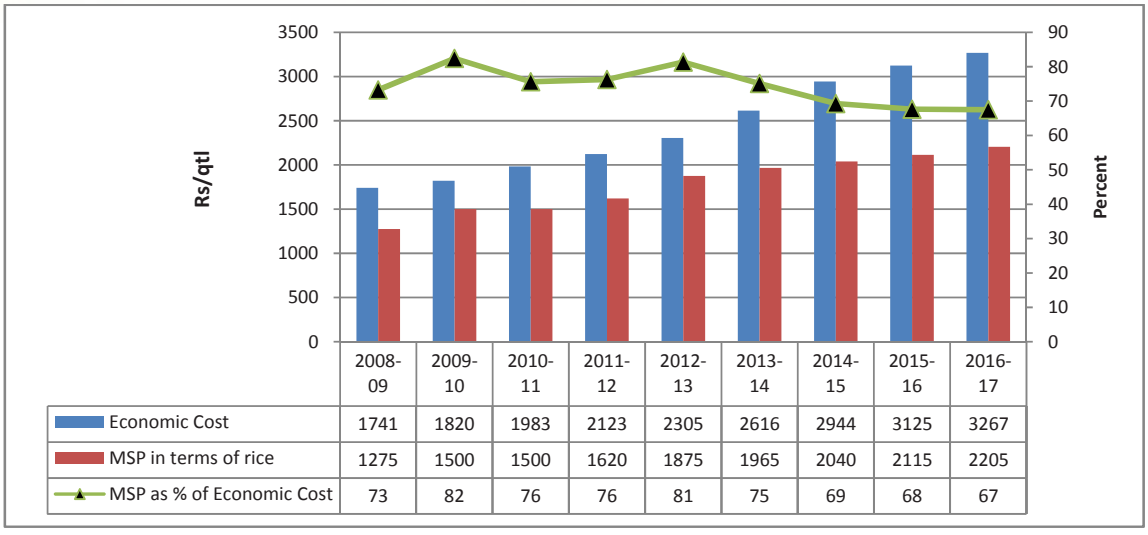
	Pun	UK	CG	Har	Ker	Odi	MP	WB	TG	UP	AP	Bih	TN	Jhar	Kar	Asm
Awareness	83.1	66.2	63.4	57.8	52.6	43.8	41.2	35.5	34.3	33.1	24	23.6	22.4	16.1	15.9	3.4

Source: Some Aspects of Farming in India; NSS 70th Round (January– December 2013)

Economic Cost of Rice and Delinking of Statutory Levies/Taxes from MSP

2.18 Economic cost of rice has increased significantly over the years (Chart 2.12). The rising trends of procurement incidentals and distribution costs have contributed more to the increase in economic cost. For example, during TE2010-11 share of MSP in total economic cost was 77 percent, which declined to 68.2 percent in TE2016-17. One of the main factors for rising economic cost is continuously increasing statutory taxes and other incidentals levied by the state governments. These statutory levies, mandi tax, VAT etc. are major source of market distortion.

Chart 2.12: Economic Cost of Rice, 2008-09 to 2016-17



	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Economic Cost	1741	1820	1983	2123	2305	2616	2944	3125	3267
MSP in terms of rice	1275	1500	1500	1620	1875	1965	2040	2115	2205
MSP as % of Economic Cost	73	82	76	76	81	75	69	68	67

Source: FCI

2.19 It may be noted that the statutory levies imposed by the states are ad-valorem and linked to the MSP, which is hardly justifiable. Andhra Pradesh, Telangana, Chhattisgarh, Punjab, Haryana and Odisha, which together accounted for 76 percent of the total procurement in 2015-16, have realized ₹44478 crores from levies and taxes on procurement of paddy during 2005-06 to 2016-17. Out of this, ₹22151 crores (50 percent) has been realized on account of rise in MSP alone (Annex Table 2.2).

Table 2.4: Statutory Levies Imposed on Rice by Major States, 2014-15 to 2016-17

State/Year	Taxes/Levies (as % of MSP)			Price After Tax (₹/qtl)		
	2014-15	2015-16	2016-17	2014-15	2015-16	2016-17
MSP	-	-	-	1360	1410	1470
AP	11.00	13.22	13.13	1510	1596	1663
Bihar	4.73	6.22	6.22	1424	1498	1561
Chhattisgarh	7.20	9.59	9.59	1458	1545	1611
Haryana	11.50	11.50	11.50	1516	1572	1639
Kerala	7.00	7.00	7.00	1455	1509	1573
MP	9.70	9.70	9.70	1492	1547	1613
Odisha	11.89	9.22	9.13	1522	1540	1604
Punjab	14.50	14.50	14.50	1557	1614	1683
UP	6.50	8.72	8.63	1448	1533	1597
WB	2.80	2.22	8.13	1398	1441	1589

Source: FCI

2.20 The amount collected by way of levies/taxes is supported to be used to develop and modernize mandi infrastructure by states. However during Commission's visits to the mandis, it is observed that there is no significant improvement in these facilities. The Commission in its earlier reports has recommended bringing down the rates of state taxes and levies but these are still at the same level. Such levies increase the economic cost whereas the Central Issue Price (CIP) has remained unchanged over last many years, leading to substantial increase in food subsidy bill. In view of this, the Commission is of the considered opinion that there is no justification for linking taxes with increase in MSP and must be frozen at certain level. The Commission, therefore, strongly recommends that statutory levies should be delinked from MSP and states should levy the taxes at the level of MSP fixed for KMS 2016-17(for the purpose of taxation only) and should not increase with the increase in MSP for next five years.

Bonus on MSP

2.21 Certain state governments were providing bonus over and above MSP during past few years, which were distorting market and also affecting inter-crop price parity. It is encouraging to note that many states have stopped giving bonus. During 2016-17 only three states Kerala, Tamil Nadu and Jharkhand declared bonus ranging from ₹ 50 per quintal in case of Tamil Nadu to ₹ 780 per quintal in Kerala. Such bonuses do not help farmers to diversify to other crops in the surplus states which leads to overproduction and increase in food subsidy bill. The Commission recommends that such bonuses/incentives should be discouraged, particularly in surplus states.

Stock Limits and Licensing Requirements for Pulses

2.22 Restrictions regarding stock limits/licensing requirements of pulses were first imposed in August 2006 and extended from time to time. Currently restrictions are valid upto 30.09.2017. Keeping in view a record production and comfortable availability of pulses as well as depressed market prices, the Commission recommends removal of stock limits/licensing requirements of pulses. This will allow traders and other market participants to freely buy, stock and sell pulses, and also help in improving market prices.

Towards Achieving Self-Sufficiency in Pulses

2.23 In order to achieve self-sufficiency in pulses, phenomenal shift in R&D and its dissemination, and other policy instruments is required. Productivity of pulses is very low as these are generally grown on marginal lands with low inputs. However, there are large yield gaps in pulses and production of kharif pulses can increase by

about 1.6 to 3.5 million tonnes with the existing technologies by bridging yield gap. There is a need to ensure timely availability of quality seeds and other inputs along with training of farmers to follow best practices. The newly developed extra early-maturing variety of tur (PUSA Arhar-16) would certainly help in increasing pulses production. Pulses should also be promoted as inter-crops along with cereals, oilseeds and sugarcane.

Utilization of Rainfed Rice Fallow Lands

2.24 It is a common practice for farmers in eastern region to leave the area fallow in the rabi season after harvest of kharif rice. According to baseline survey conducted by ICRISAT, approximately 12 million hectare, out of 40 million hectare rice area during the kharif season, remains uncultivated in the rabi. Of the total rice fallow area, about 73 percent (8.6 million hectare) lies in the states of Chhattisgarh, Bihar, West Bengal and Madhya Pradesh. Hence, there is tremendous opportunity for cultivation of a second crop on available soil moisture after harvest of rice. The residual moisture left in the soil at the time of rice harvest is often sufficient to raise short-duration pulses and oilseed crops and rice fallows can be converted into productive lands. Introduction of pulses such as lentil, moong, urad and oilseeds like mustard, groundnut, linseed, nigerseed, safflower and sesamum in rice fallows can augment domestic availability of pulses and oilseeds, which are in short supply and will also help in restoring soil health. The states of Odisha and Chhattisgarh have targeted rice fallows for growing moong, urad and arhar.

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Chapter 3
Crop Productivity

3.1 Productivity of Indian agriculture has increased over the years but it still falls short of the world average in many crops. It is, therefore, imperative that rising demand for food be met with increasing productivity and making Indian agriculture competitive and remunerative. Judicious use of inputs, better management practices, remunerative prices and optimum use of natural resources will improve productivity and ensure better income to the farmers. In this chapter we analyze productivity trends and major growth drivers of productivity.

Decadal Productivity Growth Trends

3.2 The Compound Annual Growth Rates (CAGR) in the area, production and productivity of major kharif crops during the decades of 1990s (1991-92 to 2000-2001), 2000s (2001-02 to 2010-11) and 2010s (2011-11 to 2016-17) are analyzed and given in Table 3.1.

3.3 **Cereals:** CAGR of total cereals production, which accelerated during the 2000s, turned negative during 2010s mainly due to decline in area. In kharif cereals, growth rate in area, production and productivity declined during 2010s compared with last two decades. The growth in area, production and yield of paddy also witnessed a declining trend during last two and a half decades and growth rate in area was negative during 2010s. Maize production, which recorded 6 percent growth rate during the last decade, registered a negative growth in both yield and production during 2010s. Jowar production had a negative growth rate during all three sub-periods. Bajra production, which witnessed positive growth rate during 1990s and 2000s, declined during 2010s mainly due to decline in growth in area under the crop. Ragi production also fell marginally during the 2010s. Performance of cereals has not been very encouraging during the period 2011-12 to 2016-17, primarily due to two consecutive droughts during 2014-15 and 2015-16. Therefore, efforts are needed to develop drought-resistance varieties in case of coarse cereals.

3.4 **Pulses:** The growth rate of area under total as well as kharif pulses showed an increasing trend during 2000s and 2010s. Growth rate increased from (-)1.05

percent in 1990s to 0.52 percent in 2000s and reached 4.19 percent in 2010s. The kharif pulses production registered a significant increase during 2010s and growth rate reached 4.60 percent from a negative growth (-0.81 percent) during 1990s and 1.90 percent in 2000s. Area expansion has contributed more to pulses production than yield improvement. Almost a similar trend was observed in tur, moong and urad. The production growth rate of tur exhibits an increasing trend over last 26 years and reached a level of 5 percent in 2010s, the main driver behind this increase has been the rate of growth in area which increased from (-)0.22 percent in 1990s to 1.61 percent in 2000s and 3.71 percent in 2010s. Production of moong also registered an impressive growth (6.29 percent) during 2010s mainly driven by increase in area under moong cultivation. Urad production has also been mainly driven by area expansion as area under urad recorded a growth rate of 5.91 percent during 2010s. Total foodgrains production in the country increased marginally (0.35 percent) during 2010s while productivity remained stagnant.

3.5 **Oilseeds**: In case of groundnut, productivity has played an important role in increasing production over the two and a half decades despite negative growth rate in area due to shift in area to cotton in Andhra Pradesh and Gujarat. In case of soybean, growth rate in production became negative (-2.87 percent) during 2010s after an impressive growth rate of 9.85 percent and 9.39 percent in 1990s and 2000s, respectively. Soybean yield registered negative growth rate (-4.82 percent) during 2010s, which needs to be addressed. The two other oilseeds, sunflower and nigerseed registered a significant decline in area as well as production during the period 1991-92 to 2016-17 and problem has become more serious in the recent period. In the case of sesamum, though the area in 2010s as compared to 2000s has drastically declined, production has increased mainly due to substantial increase in productivity.

3.6 **Cotton:** During 2000s, the growth rate of cotton production was 14.2 percent, and production grew from 8.6 million bales in 2002-03 to 33 million bales in 2010-11. However, growth rate became negative (-2.32 percent) during 2010s with production falling to 30 million bales in 2015-16, which is anticipated to improve (32.5 million bales) in 2016-17. Both area (-1.28 percent) and yield (-1.06 percent) registered negative growth rates during 2010s. In addition to drought conditions, incidence of pests, mainly whitefly and pink bollworm, has led to fall in cotton production in the country. Therefore, issue of pest resistance to existing varieties/hybrids is a matter of great concern and needs to be addressed on priority.

Table 3.1: Trends in Compound Annual Growth Rates (Percent) of Major Kharif Crops (1991-92 to 2016-17)

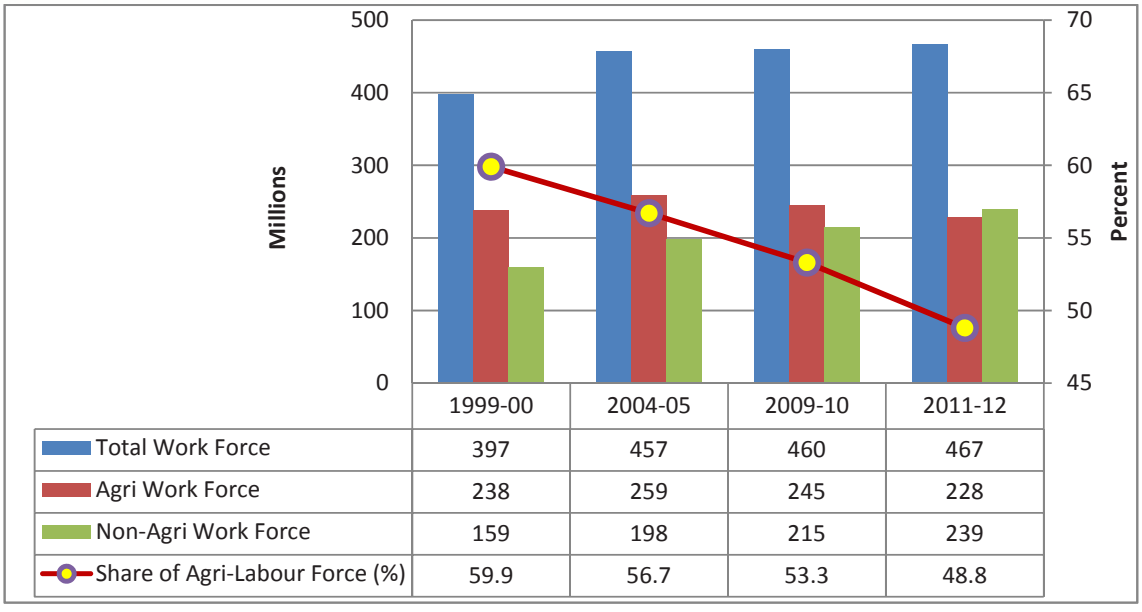
Crop	Area			Production			Productivity		
	1990s	2000s	2010s	1990s	2000s	2010s	1990s	2000s	2010s
A- Cereals	0.18	0.27	-0.59	2.03	2.25	-0.01	1.85	1.96	0.58
Kharif Cereals	-0.46	-0.35	-0.65	0.99	1.46	0.21	1.46	1.81	0.87
Paddy	0.78	0.11	-0.27	1.87	1.71	0.38	1.08	1.60	0.65
Bajra	-0.99	0.12	-2.62	1.58	2.14	-1.94	2.60	2.02	0.70
Maize	1.17	2.91	1.57	3.74	6.00	-4.62	2.54	3.01	-6.09
Jowar	-3.11	-3.19	-2.89	-3.14	-0.24	-5.09	-0.03	3.05	-2.26
Ragi	-1.99	-2.71	-1.01	-0.35	0.70	-0.02	1.67	3.50	1.01
B- Pulses	-0.64	1.45	2.86	0.15	3.09	2.48	0.68	1.62	-0.38
Kharif Pulses	-1.05	0.52	4.19	-0.81	1.90	4.60	0.25	1.37	0.40
Tur	-0.22	1.61	3.71	0.73	2.09	5.00	0.95	0.47	1.24
Moong	-0.66	0.32	6.21	-2.56	0.94	6.29	-1.92	0.61	0.07
Urad	-0.74	-1.55	5.91	-1.21	-0.24	7.73	-0.48	1.33	1.72
Foodgrains	0.03	0.50	0.35	1.90	2.31	0.35	1.87	1.78	0.00
C- Oilseeds	-0.87	2.21	-0.25	0.56	5.37	-0.53	1.45	3.09	-0.39
Kharif Oilseeds	-	2.71	0.44	-	6.10	-0.27	-	3.30	-0.71
Groundnut	-2.75	-0.80	-0.48	-2.27	1.94	5.25	0.50	2.77	5.76
Soybean	8.08	5.87	2.05	9.85	9.39	-2.87	1.64	3.32	-4.82
Sesamum	-	2.63	-0.52	-	2.17	2.50	-	-0.45	3.04
Sunflower	-6.94	-2.29	-13.63	-7.00	-0.41	-15.22	-0.06	1.92	-1.85
Nigerseed	-3.25	-2.08	-7.60	-4.47	-0.15	-5.40	-1.26	1.97	2.38
D-Cotton	2.18	3.17	-1.28	0.24	14.2	-2.32	-1.90	10.70	-1.06

Source: CACP using DES data.

Labour Productivity

3.7 The share of agricultural work force in total workforce is continuously declining since 1999-2000. It was about 60 percent during 1999-2000 and declined to 48.8 percent during 2011-12. The NSSO data indicate higher productivity in secondary and tertiary sectors in comparison of agricultural sector. The growth potential of agriculture is much lower compared to industry or service sector, and it results in increasing disparity between agricultural and non-agricultural sector. Therefore, enhancing crop productivity is a key to reducing agricultural and non-agricultural income disparity.

Chart 3.1: Declining Workforce in Agriculture (1999-2000 to 2011-12)



	1999-00	2004-05	2009-10	2011-12
Total Work Force	397	457	460	467
Agri Work Force	238	259	245	228
Non-Agri Work Force	159	198	215	239
Share of Agri-Labour Force (%)	59.9	56.7	53.3	48.8

Source: Various Reports of NSSO

3.8 Agriculture is a labour-intensive sector and human wages constitute 30 to 60 percent of total cost of cultivation depending upon crop. Thus, shortage of labour can become an insurmountable problem in near future due to migration of labour from farm to non-farm sector. The lesser supply of labour also creates a pressure on rural wages, which further increases cost of cultivation. To address this problem, customized farm mechanization is necessary. Innovations in farm mechanization and judicious use of time, labour and resources will lead to an increased productivity through multi-cropping and timely planting of crops. The Commission, in its earlier reports has recommended promoting group based 'Custom Hiring Models'. States like Gujarat, Karnataka etc. have made concerted efforts towards promotion of farm mechanization and it is already high in the green revolution states like Haryana and Punjab. Therefore, other states should follow the suit as per their needs.

Crop Productivity in the Major Producing States

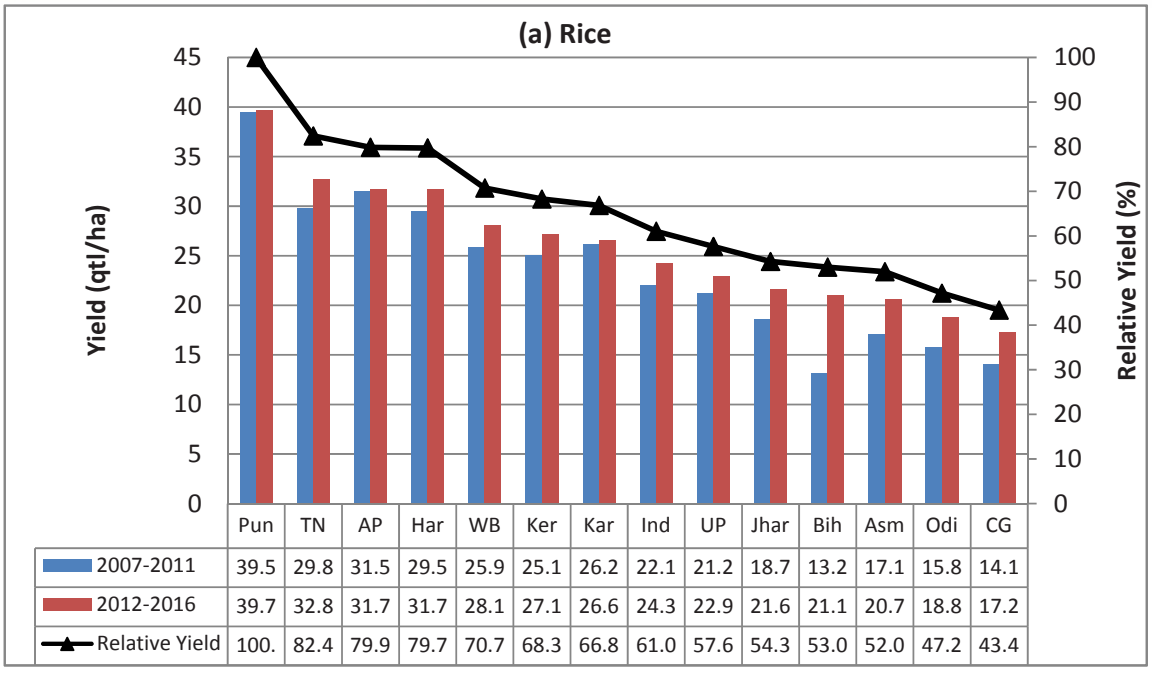
3.9 In order to study productivity trends at state level, 5-year olympic average (The Olympic average is calculated by dropping the highest and lowest yield from the most-recent 5-year and calculating the average based on remaining 3 yields) yield per hectare in major producing states has been compared during 2007-2011 and 2012-2016 and results are presented in Charts 3.1 (a) to (e).

3.10 **Cereals:** The average productivity of kharif cereals has increased from 18.6 quintal per hectare to 21 quintal per hectare during last 10 years. In case of paddy, national productivity has increased by nearly 10 percent, from 22.1 quintal per hectare in 2007-11 to 24.3 quintal per hectare during 2012-16 [Chart 3.2 (a)]. Punjab has the highest yield but yield levels have remained almost stagnant. Bihar has recorded the highest increase (59.7 percent) in yield, followed by Chhattisgarh (22.6 percent) and Assam (20.8 percent) during this period but yield level is still less than half of Punjab. Although yield levels in eastern and north-eastern states have improved during last 10 years but efforts are needed to improve it further as present level of productivity is much lower than potential yield and productivity achieved in other states.

3.11 Tamil Nadu has the highest productivity (56.5 quintal per hectare) in maize and is more than double the all-India average. Andhra Pradesh (including Telangana), Bihar and Karnataka have maize yield higher than national average but states like Maharashtra, Madhya Pradesh, Himachal Pradesh, Uttar Pradesh, Rajasthan and Gujarat have productivity lower than national average. Andhra Pradesh (including Telangana) has witnessed highest increase (56.8 percent) in maize yield, followed by Madhya Pradesh (53.8 percent) and Bihar (48.1 percent) during 2007-2011 to 2012-2016. Some states like Karnataka, Maharashtra, Himachal Pradesh and Rajasthan registered a decline in yield levels. Maize yield in Uttar Pradesh, Rajasthan and Gujarat is less than one-third of Tamil Nadu and much lower than national average.

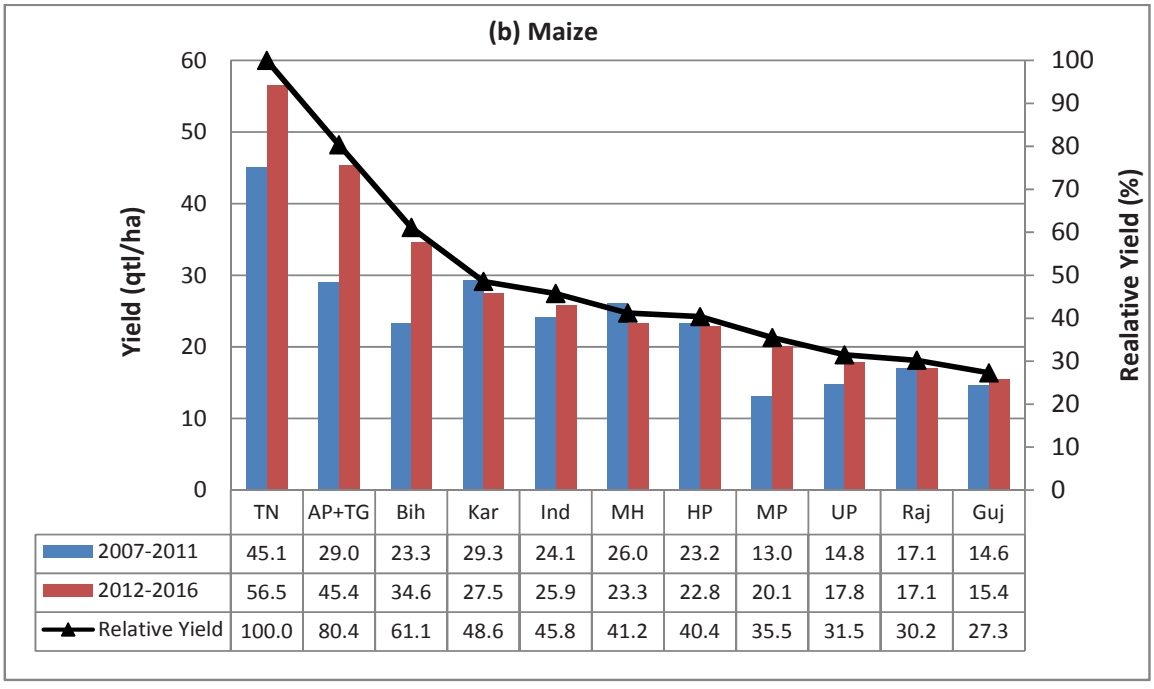
3.12 **Pulses:** Madhya Pradesh, Maharashtra, Rajasthan, Karnataka, Uttar Pradesh, Gujarat, Jharkhand, Telangana and Andhra Pradesh are major kharif pulses producing states and account for more than 90 percent of total production. Though average productivity of kharif pulses is low but has increased by 23.1 percent between 2007-11 and 2012-16. All states, except Maharashtra, have experienced significant increase in yield levels. Rajasthan recorded the highest increase (from 3.8 quintal per hectare in 2007-11 to 6.3 quintal per hectare in 2012-16), followed by Tamil Nadu and Jharkhand. Despite increase in yield levels, productivity in states like Madhya Pradesh, Rajasthan, Maharashtra, Karnataka and Odisha is much lower than all-India average and less than two-third of the highest yield in Jharkhand. There are large yield gaps in pulses and actual farm yields are much lower than the potential yield in most crops.

Chart 3.2: Crop Productivity of Kharif Crops in the Major Producing States



	Pun	TN	AP	Har	WB	Ker	Kar	Ind	UP	Jhar	Bih	Asm	Odi	CG
2007-2011	39.5	29.8	31.5	29.5	25.9	25.1	26.2	22.1	21.2	18.7	13.2	17.1	15.8	14.1
2012-2016	39.7	32.8	31.7	31.7	28.1	27.1	26.6	24.3	22.9	21.6	21.1	20.7	18.8	17.2
Relative Yield	100.	82.4	79.9	79.7	70.7	68.3	66.8	61.0	57.6	54.3	53.0	52.0	47.2	43.4

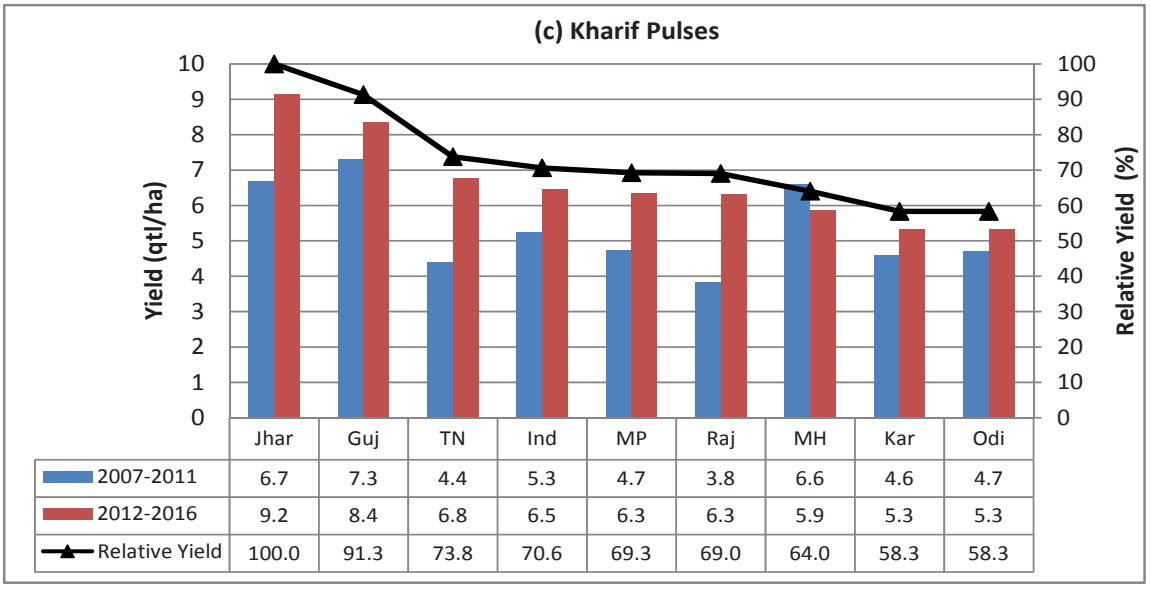
Source: DES



	TN	AP+TG	Bih	Kar	Ind	MH	HP	MP	UP	Raj	Guj
2007-2011	45.1	29.0	23.3	29.3	24.1	26.0	23.2	13.0	14.8	17.1	14.6
2012-2016	56.5	45.4	34.6	27.5	25.9	23.3	22.8	20.1	17.8	17.1	15.4
Relative Yield	100.0	80.4	61.1	48.6	45.8	41.2	40.4	35.5	31.5	30.2	27.3

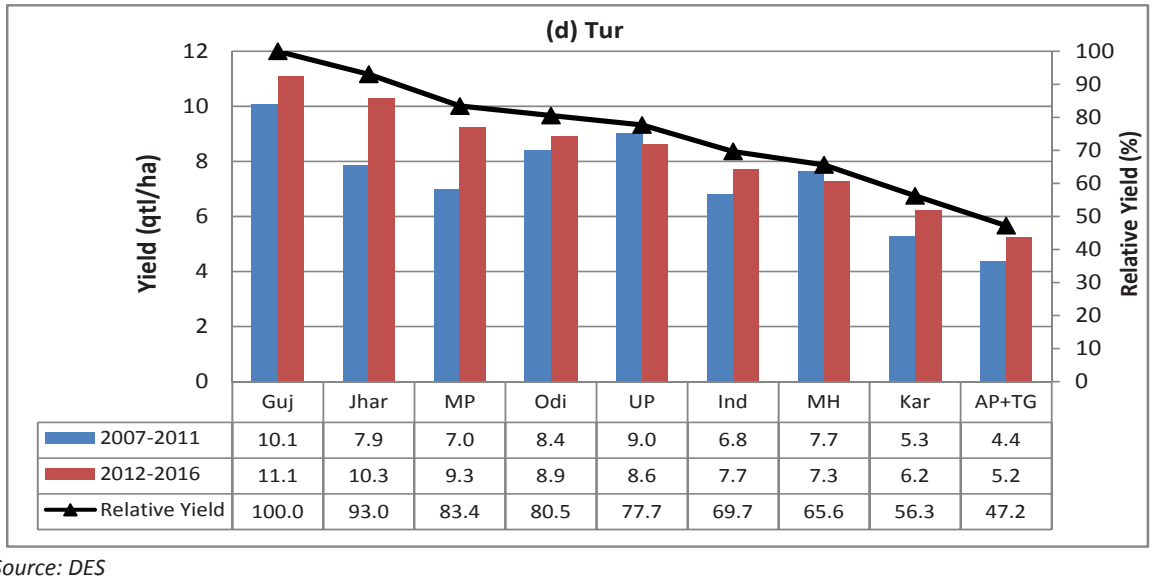
Source: DES

3.13 The major tur producing states are Maharashtra, Madhya Pradesh, Karnataka, Gujarat, Uttar Pradesh, Andhra Pradesh and Jharkhand. Madhya Pradesh and Jharkhand have shown an impressive increase in the yield over the years, while Uttar Pradesh and Maharashtra, the largest producer of tur, showed a decline in productivity during last 10 years. The average yield has increased from 6.8 quintal per hectare in 2007-11 to 7.7 quintal per hectare in 2012-16. Tur yields in Maharashtra, Karnataka and Andhra Pradesh are lower than national average and much lower than those compared with Gujarat and Jharkhand.



	Jhar	Guj	TN	Ind	MP	Raj	MH	Kar	Odi
2007-2011	6.7	7.3	4.4	5.3	4.7	3.8	6.6	4.6	4.7
2012-2016	9.2	8.4	6.8	6.5	6.3	6.3	5.9	5.3	5.3
Relative Yield	100.0	91.3	73.8	70.6	69.3	69.0	64.0	58.3	58.3

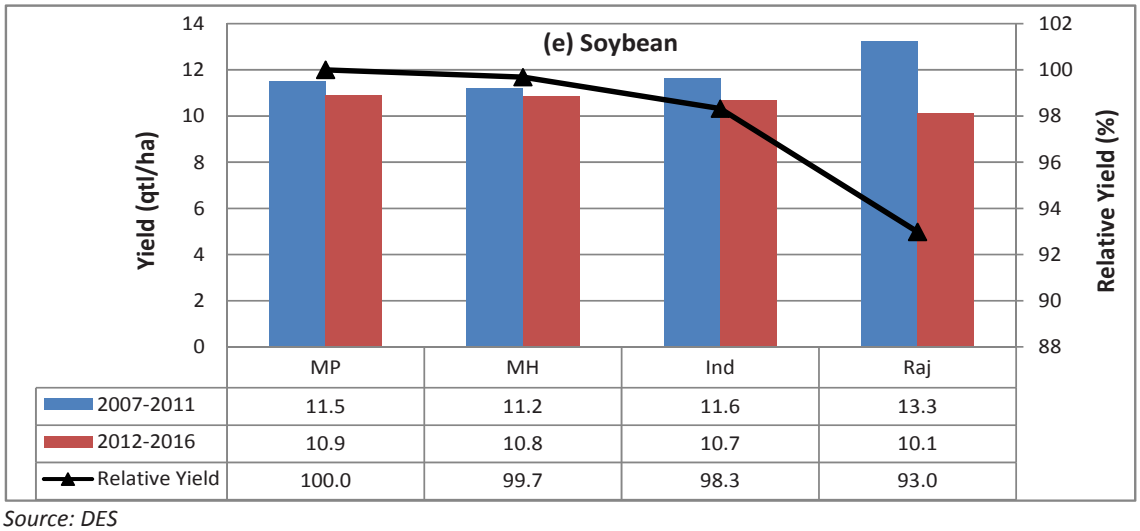
Source: DES



	Guj	Jhar	MP	Odi	UP	Ind	MH	Kar	AP+TG
2007-2011	10.1	7.9	7.0	8.4	9.0	6.8	7.7	5.3	4.4
2012-2016	11.1	10.3	9.3	8.9	8.6	7.7	7.3	6.2	5.2
Relative Yield	100.0	93.0	83.4	80.5	77.7	69.7	65.6	56.3	47.2

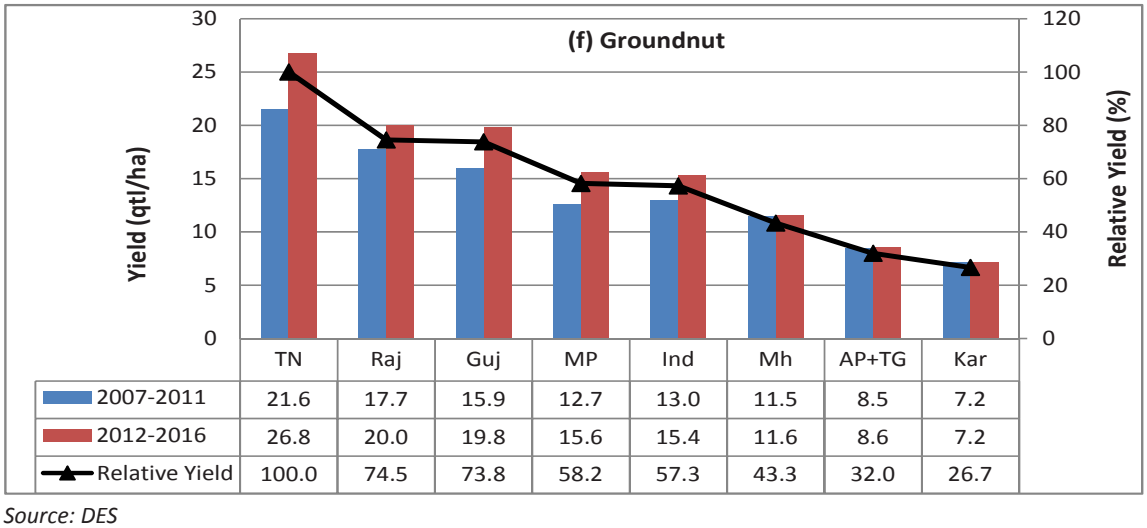
Source: DES

3.14 **Oilseeds:** Madhya Pradesh, Maharashtra, Gujarat, Rajasthan, Andhra Pradesh, Karnataka, Tamil Nadu and Telangana account for almost 95 percent of total kharif oilseeds production in the country. Among major kharif oilseeds, soybean (59.1 percent) and groundnut (29.5 percent) account for almost 90 percent of total production. It is evident from Chart 3.2(e) that soybean yield at all-India level as well as all major producing states declined during 2012-16 compared with 2007-11 period. Groundnut yield improved during last decade and increased from 13 quintal per hectare during 2007-11 to 15.4 quintal per hectare in 2012-16, an increase of 18.3 percent. Tamil Nadu has the highest yield, followed by Rajasthan and Gujarat, while Karnataka has the lowest yield. There are large inter-state differences in groundnut yields, e.g., yield in Karnataka is about one-fourth of Tamil Nadu and in Andhra Pradesh it is less than one-third of the highest yield achieved in Tamil Nadu.



	MP	MH	Ind	Raj
2007-2011	11.5	11.2	11.6	13.3
2012-2016	10.9	10.8	10.7	10.1
Relative Yield	100.0	99.7	98.3	93.0

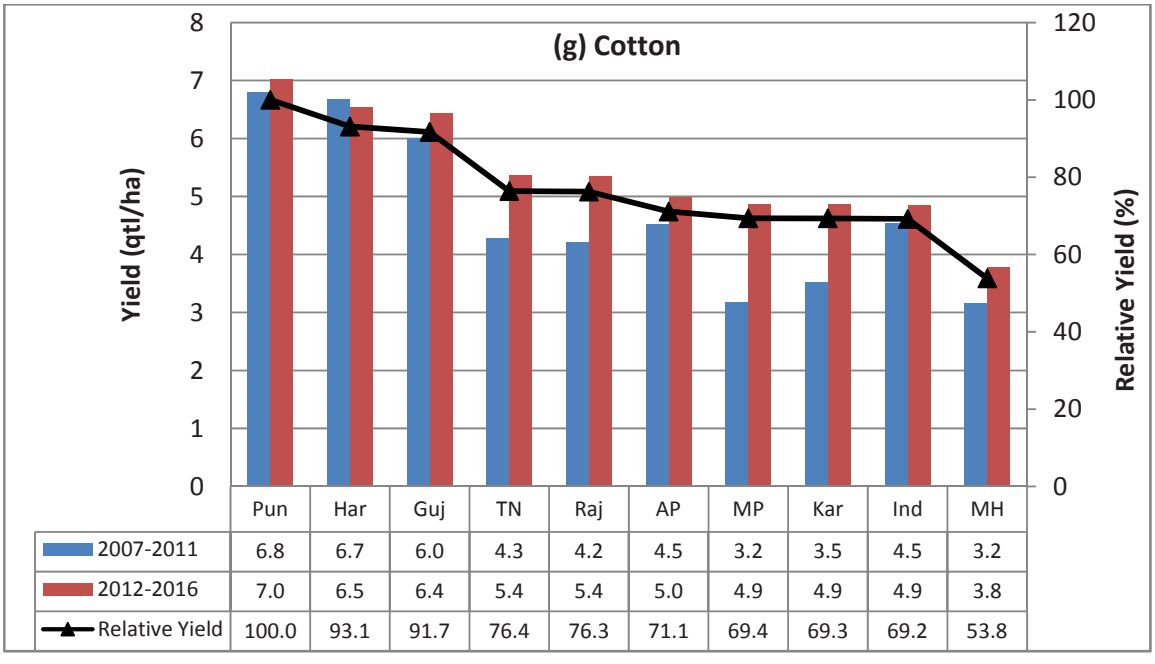
Source: DES



	TN	Raj	Guj	MP	Ind	Mh	AP+TG	Kar
2007-2011	21.6	17.7	15.9	12.7	13.0	11.5	8.5	7.2
2012-2016	26.8	20.0	19.8	15.6	15.4	11.6	8.6	7.2
Relative Yield	100.0	74.5	73.8	58.2	57.3	43.3	32.0	26.7

Source: DES

3.15 **Cotton:** Productivity of cotton was 4.5 quintal per hectare during 2007-11, which increased to 4.9 quintal per hectare during 2012-16, about 7 percent increase. All states except Haryana recorded an increase in cotton productivity during last ten years, ranging from about 3.3 percent in Punjab to 53.3 percent in Madhya Pradesh. Punjab has the highest productivity (7 quintal per hectare), followed by Haryana and Gujarat. However, productivity levels in states like Madhya Pradesh, Karnataka and Maharashtra are significantly lower than Punjab. Therefore, cotton productivity needs to be improved to make Indian cotton sector competitive in the world markets.



	Pun	Har	Guj	TN	Raj	AP	MP	Kar	Ind	MH
2007-2011	6.8	6.7	6.0	4.3	4.2	4.5	3.2	3.5	4.5	3.2
2012-2016	7.0	6.5	6.4	5.4	5.4	5.0	4.9	4.9	4.9	3.8
Relative Yield	100.0	93.1	91.7	76.4	76.3	71.1	69.4	69.3	69.2	53.8

Source: DES

State Level Productivity Growth Rates

3.16 The analysis of the growth performance of productivity of kharif crops at the state level during 2000s and 2010s is presented in Table 3.2. As discussed in the earlier section, at all-India level, the growth rate of yield decelerated in most crops (except tur, urad, groundnut and sesamum) during 2010s compared with 2000s. In case of paddy, 8 out of 13 major paddy growing states recorded deceleration in their yield growth rates during 2010s compared with 2000s. Almost a similar trend was observed in case of other cereal crops. The number of states with negative growth rate in paddy increased from one in 2000s to four in 2010s. Most of the states recorded a deceleration in yield growth rates in all oilseed crops during last one and a half decade. All major soybean producing states registered negative growth rate in crop yields during 2010s. In case of cotton, all states witnessed deceleration in yield

growth rates. Since the yield growth has to be a predominant source of growth of agricultural output, a steep deceleration in the growth rates of yields in most crops and most of the states in the recent years should be a matter of great concern for the researchers and policymakers.

Table 3.2: State-wise Productivity Growth of Major Kharif Crops (2001-02 to 2016-17)

Crop	2001-02 to 2010-11		2011-12 to 2016-17	
	>National Average	<National Average	>National Average	<National Average
Paddy (1.8%)[1]	Jhar (5.0), Odi (3.6) CG (3.0), Ker (2.0), Asm (1.8)	Kar (1.6), TN (1.6), Pun (1.3), AP (1.2), Har (1.0), UP (0.7), WB (0.5), Bih (-1.4)	Odi (4.8), Asm (2.3)	WB (1.5), AP (1.5), TN (1.4), Ker (1.2), CG (1.1), Pun (0.8), Bih (0.3), Har (-0.3), Kar (-0.8), UP (-2.1), Jhar (-2.7)
Bajra (7.1%)	Raj (45.3), Kar (15.4), AP (8.3), MP (8.1)	Guj (7.8), MH (7.3), TN (3.1), UP (2.0)	MH (15.34), TN (15.12), Guj (14.38)	MP (4.40), Raj (3.17), UP (2.52), A.P. (0.71), Kar (-3.20)
Maize (1.7%)	TN (16.8), WB (7.2), AP+TG (4.7), MH(4.5), Kar (3.6), Raj (2.4)	UP (0.6), Bih (0.0) Har (-1.0), Guj (-3.0), MP (-5.3)	MP (10.2), Bih (5.9), TN (5.0), WB (4.9), UP (2.9), Har (1.8)	Raj (-0.8), Guj (-1.3), AP+TG (-1.5), Kar (-2.9), MH (-3.1)
Jowar (0.9%)	Kar (7.88), MP (4.13), TN (3.97), Raj (3.76), AP (3.13), MH (2.21), Bih (1.81)	UP (-0.13)	AP (7.27), TN (7.23), MP (3.91)	Bih (-0.05), MH (-3.94), Raj (-3.99) Kar (-4.54), UP (-7.26)
Tur (0.7%)	Guj (5.21), Kar (5.09), Bih (1.61), AP (1.24), CG (1.12), MH (1.01)	Jhar (-3.04), UP (-3.77), MP (-3.79)	MP (14.56), AP (12.57), CG (3.54), Kar (1.46)	Jhar (0.81), Guj (0.52), Bih (-2.53), MH (-5.05), UP (-5.24)
Moong (2.7%)	UP (4.07), Raj (2.89), Guj (2.82)	Kar (2.59), Odi (2.29), MP (1.16), AP (0.85), Bih (0.73), MH(-0.49), CG (-0.65), TN (-3.72)	CG (9.11), MP (8.36), TN (7.21) Guj (3.47), AP (3.31)	Raj (2.59), Odi (1.12), Bih (-1.05), UP (-4.91), Kar (-7.54), MH (-9.84)
Groundnut (3.3%)	Raj (4.9), AP (4.1), TN (4.1), MP (3.7), Guj (3.3)	CG (2.2), Kar (1.5), MH (0.7)	Guj (13.0), TN (11.9), Raj (3.9)	AP (3.2), MH (1.5), MP (0.1), Kar (-0.7), CG(-0.9)
Soybean (0.7%)	MP (5.3), Chatt (5.0), Raj (4.1)	Guj (-0.3), MH (-1.9)		MP (-0.5), Guj (-4.5), CG(-7.6), Raj (-7.6), MH (-10.5)
Sesamum (1.5%)	MP (5.7), Raj (5.1), Kar (3.4)	TN (0.9), WB (-0.1), Guj (-2.9), UP (-4.8)	UP (7.4), Raj (3.4) Guj (3.2), TN (2.1)	MP(1.2), WB (0.4), Kar (-0.8)
Sunflower (1.4%)	MH (3.5), Kar (2.8)	AP (1.2)	AP (2.8)	Kar (-4.3), MH (-12.8)
Cotton (2.1%)	Har(12.3), Kar (9.1), MH (9.0), Pun(8.6), Guj (8.3), Raj (7.0), AP (3.9), TN (3.4)		Kar (6.7), Raj (2.1)	MH (1.8), AP (-0.9), Guj (-1.5), TN (-2.9), Pun (-4.7), Har (-10.6)

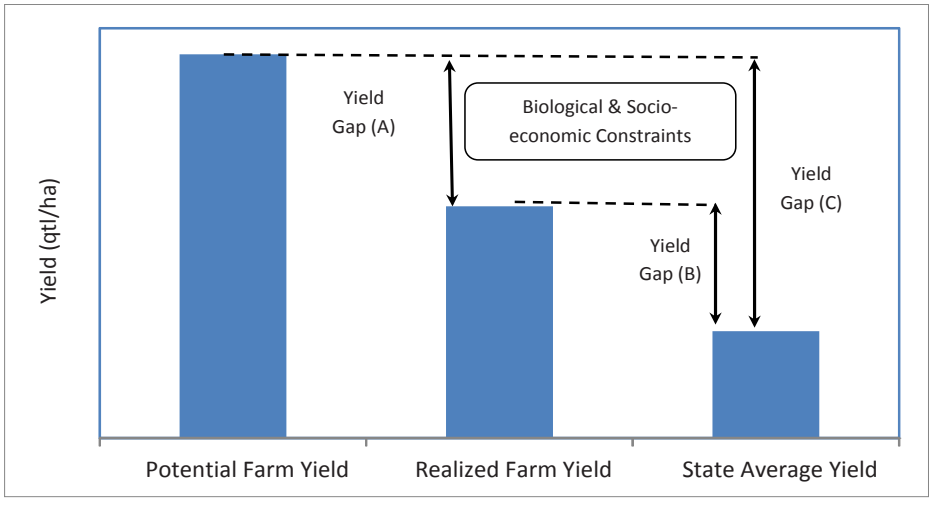
[1]*Shows all-India productivity CAGR during the period from 2001-02 to 2016-17*

Source: CACP using DES Data

Yield Gap Analysis

3.17 Analysis of yield gaps helps in identification of constraints as well as developing management options to reduce the gaps where feasible and implementing policies that encourage adoption of gap-closing technologies and practices. We grouped yield-gaps in three broad categories. Yield Gap (A) is difference between potential farm yields achieved under Front Line Demonstration (FLD), where best scientific and management practices are followed and realized farm yield of improved technology under farmer's practices. Yield Gap (B) compares state average yield with realized farm yield of improved technology under farmer's practices. Yield Gap (C) compares state average yield with potential yields achieved under FLD. Yield Gap (A) is due to various socio-economic constraints like input availability, credit, knowledge and institutions while Yield Gap (B) is due to non-availability of technology. Yield Gap (C) is due to combination of both biological and socio-economic constraints.

Chart 3.3: Constraints of Yield Gaps



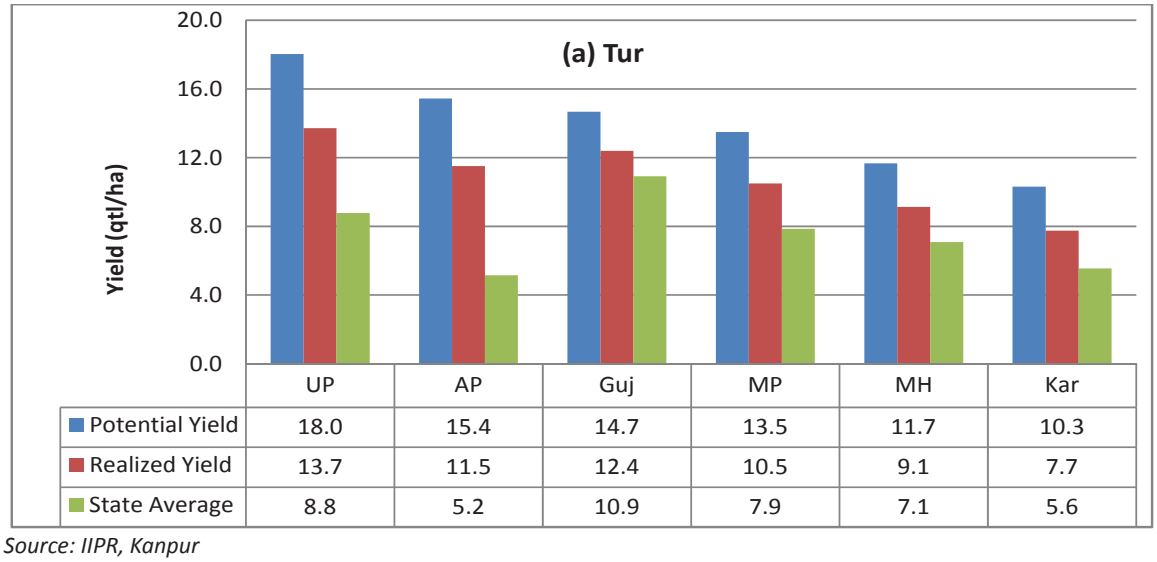
3.18 We have used data on potential and realized farm yields from Front-Line Demonstrations conducted by All-India Coordinated Research Projects on different pulses and oilseeds provided by Indian Institute of Pulses Research, Kanpur and Indian Institute of Oilseeds Research, Hyderabad.

Pulses

3.19 In all kharif pulses, there is a huge gap between the potential yield and the realized yield (Chart 3.4). It is also evident that the state average yields are significantly lower as compared to their potential yield under FLD as well as those realized on farmer's field. The realized yield is 15-40 percent less than the potential yield while state average yields are much lower than realized and potential farm yields in majority of the states.

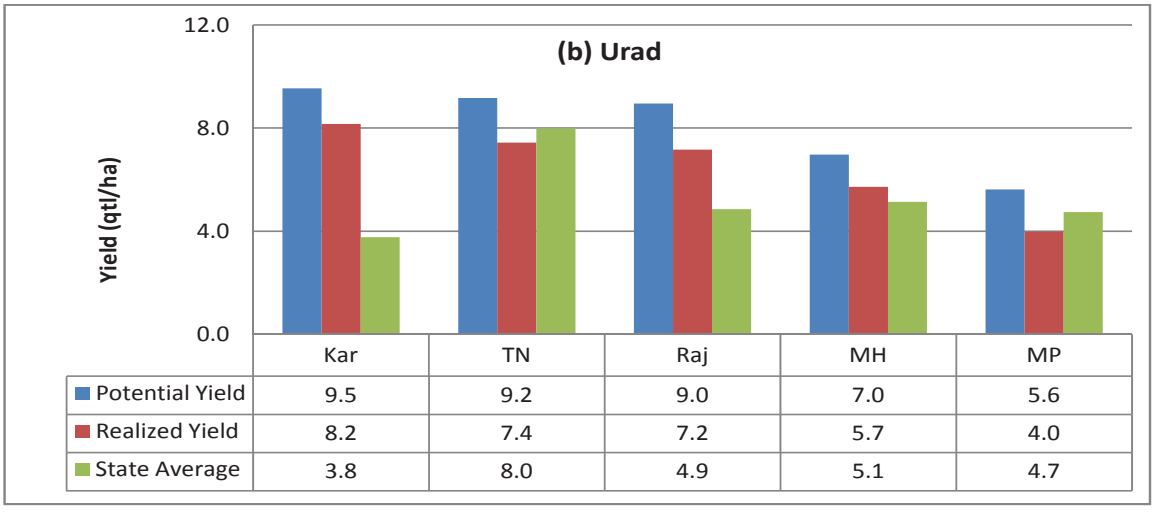
3.20 For tur, the difference between state average yield and potential yield is highest in Andhra Pradesh and lowest in case of Gujarat. In case of urad, state average yield is 73.2 percent lower than potential yield in Karnataka and about 13 percent in Tamil Nadu. In case of moong, the gap between state average and potential farm yield is the highest in Karnataka, followed by Odisha, Rajasthan and Tamil Nadu. Production of kharif pulses can therefore increase by about 1.6 to 3.5 million tonnes even with the existing technologies if biological and socio-economic constraints are addressed and farmers follow the best practices (Table 3.3).

Chart 3.4: Yield Gap Analysis of Pulses in Major Producing states



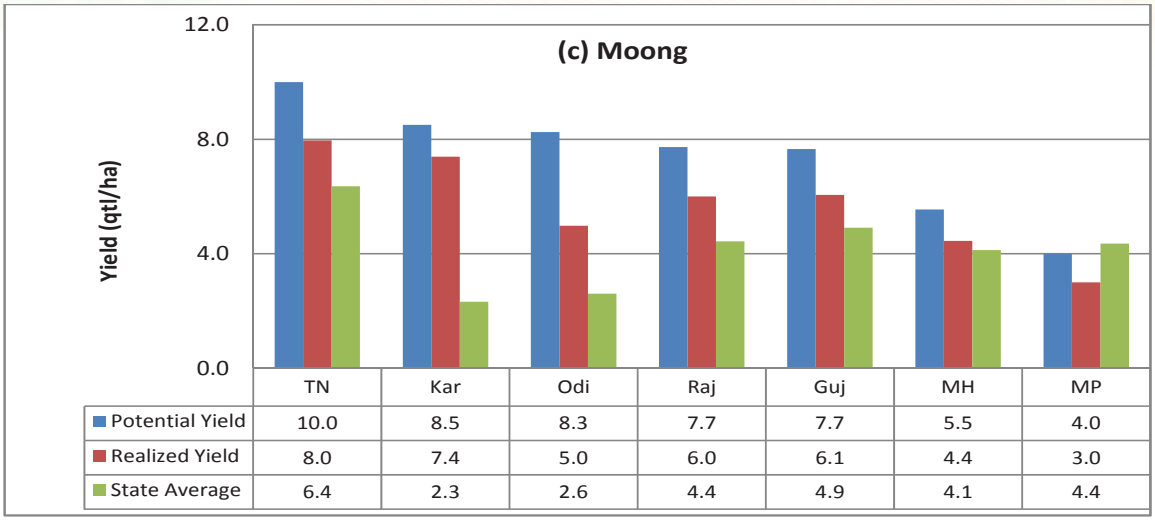
	UP	AP	Guj	MP	MH	Kar
Potential Yield	18.0	15.4	14.7	13.5	11.7	10.3
Realized Yield	13.7	11.5	12.4	10.5	9.1	7.7
State Average	8.8	5.2	10.9	7.9	7.1	5.6

Source: IIPR, Kanpur



	Kar	TN	Raj	MH	MP
Potential Yield	9.5	9.2	9.0	7.0	5.6
Realized Yield	8.2	7.4	7.2	5.7	4.0
State Average	3.8	8.0	4.9	5.1	4.7

Source: IIPR, Kanpur



Source: IIPR, Kanpur

Table 3.3: Estimated Additional Production of Kharif Pulses by Bridging Yield Gap

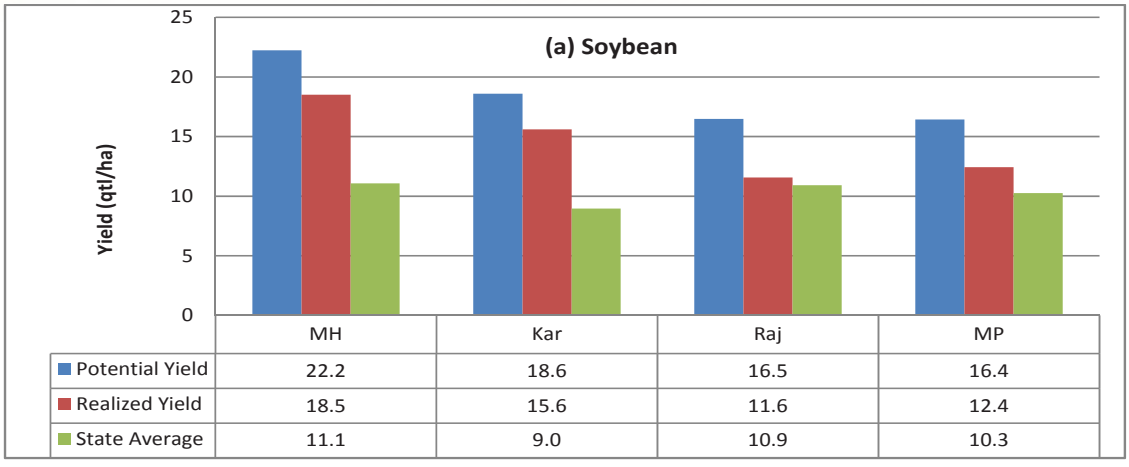
Crop	Likely impact of reduction in crop yield gaps on Total Production ('000 tonnes)							
	Yield Gap B				Yield Gap C			
	25%	50%	75%	100%	25%	50%	75%	100%
Tur	268	536	803	1071	548	1095	1643	2190
Urad	54	108	162	216	149	299	448	598
Moong	84	169	253	338	178	357	535	713
Total	406	813	1218	1625	875	1751	2626	3501

Source: Computed by CACP

Oilseeds

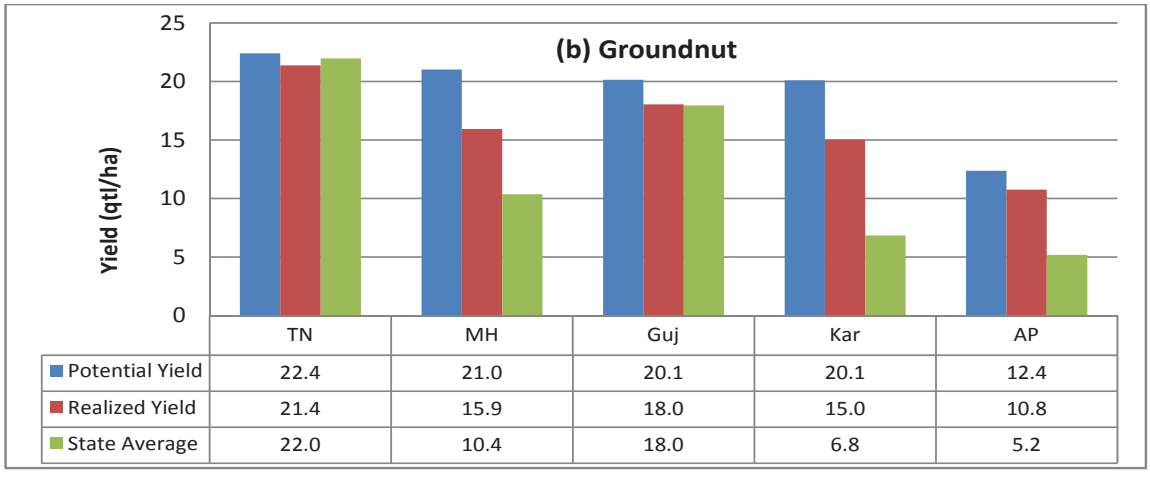
3.21 Yield gap in oilseeds is also large and ranges from about 5 percent to over 200 percent. In case of groundnut, yield gaps are wide in Andhra Pradesh, Karnataka and Maharashtra, while in case of soybean and sunflower yield gaps are high for almost all major producing states. Therefore, production of kharif oilseeds can be increased by about 4 million tonnes even with the existing technologies if gap between state average and realized farm yields can be bridged (Table 3.4). If state average yields can be further improved and reach a level of potential yield, about 8 million tonnes of additional oilseeds, particularly soybean can be produced. Therefore, efforts are needed to improve availability of quality seeds along with other inputs and services like extension and credit. Low seed replacement rates and lack of even protective irrigation in pulses and oilseeds are other reasons for low productivity. We need to improve seed replacement rate and promote protective irrigation particularly in pulses.

Chart 3.5: Yield Gap Analysis of Oilseeds in Major Producing States



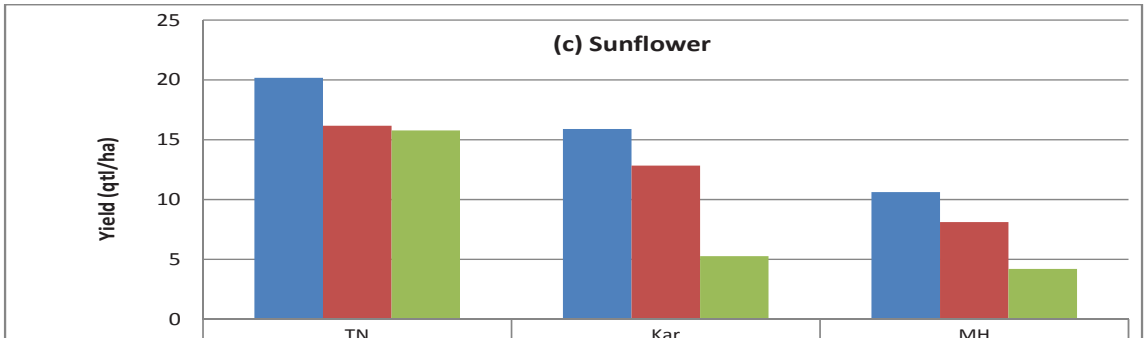
	MH	Kar	Raj	MP
Potential Yield	22.2	18.6	16.5	16.4
Realized Yield	18.5	15.6	11.6	12.4
State Average	11.1	9.0	10.9	10.3

Source: IIOR, Hyderabad



	TN	MH	Guj	Kar	AP
Potential Yield	22.4	21.0	20.1	20.1	12.4
Realized Yield	21.4	15.9	18.0	15.0	10.8
State Average	22.0	10.4	18.0	6.8	5.2

Source: IIOR, Hyderabad



	TN	Kar	MH
Potential Yield	20.2	15.9	10.6
Realized Yield	16.2	12.8	8.1
State Average	15.8	5.3	4.2

Source: IIOR, Hyderabad

Table 3.4: Estimated Additional Production of Kharif Oilseeds by Bridging Yield Gaps

Crop	Likely Impact of Reduction in Yield Gaps on Total Production ('000 tonnes)							
	Yield Gap B				Yield Gap C			
	25%	50%	75%	100%	25%	50%	75%	100%
Soybean	983	1966	2949	3932	1982	3965	5947	7930
Groundnut	-	-	-	-	8	17	25	34
Sunflower	3	7	10	14	20	40	59	79

Source: Computed by CACP

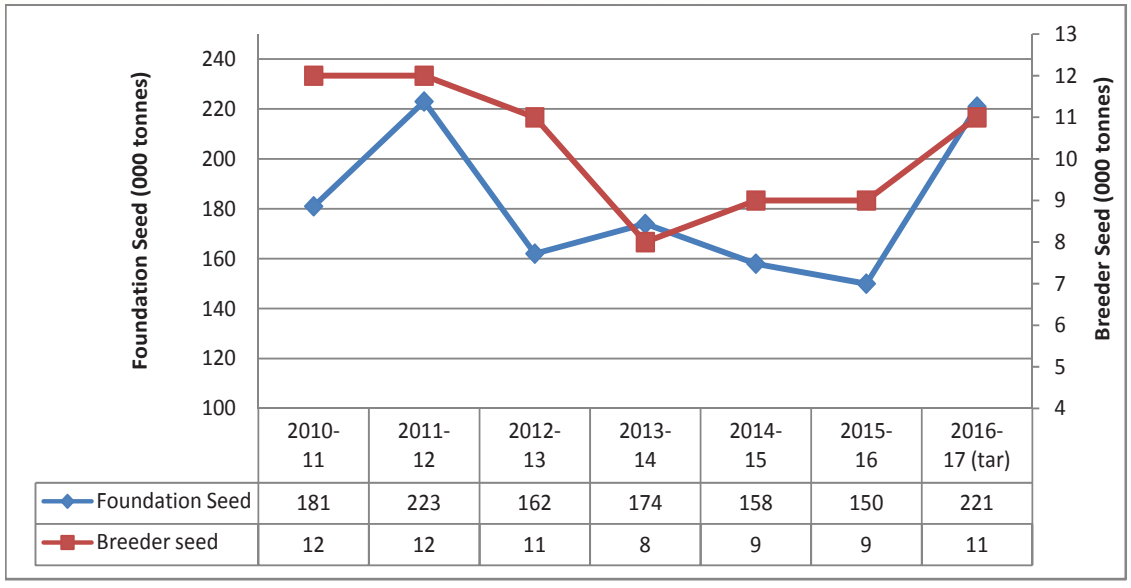
Drivers of Yield Growth

3.22 The important drivers for increasing crop productivity are fertilizers, irrigation, seeds, technology and better management practices. By assuring timely availability of first four drivers, crop productivity can be enhanced significantly.

Quality Seed Production and Distribution

3.23 Seed quality plays an important role in enhancing crop productivity and overall production. However, during stakeholders consultations timely availability of quality seeds was reported as one of the major constraints contributing to low yields in many crops. The trends in production of foundation and breeder seeds as well as distribution of certified/quality seeds of major kharif crops are given in Chart 3.6 and 3.7. It is observed that production of breeder and foundation seeds showed a declining trend but is targeted to increase during 2016-17. Distribution of certified/quality seeds in case of paddy, groundnut and soybean also declined. In case of cereals, except maize, almost a similar trend was observed. In case of cotton and tur, there has been a steady decline in distribution of certified/quality seeds during last four years. Seed replacement rate is very low in most of pulses and oilseeds crops. Government has taken new initiatives in pulses like distribution of seed minikits, subsidy on production of quality seed, creation of seed hubs, strengthening breeder seed production programmes, which would help in improving crop productivity. There is a need to regulate quality of seed to ensure availability of quality seed to farmers at reasonable prices, control sale of spurious and poor quality seed and create healthy competition in production and distribution of seed. Therefore, the Seeds Bill should be passed at the earliest to enable availability of quality seed to farmers and realizing the yield potential of improved agricultural technologies.

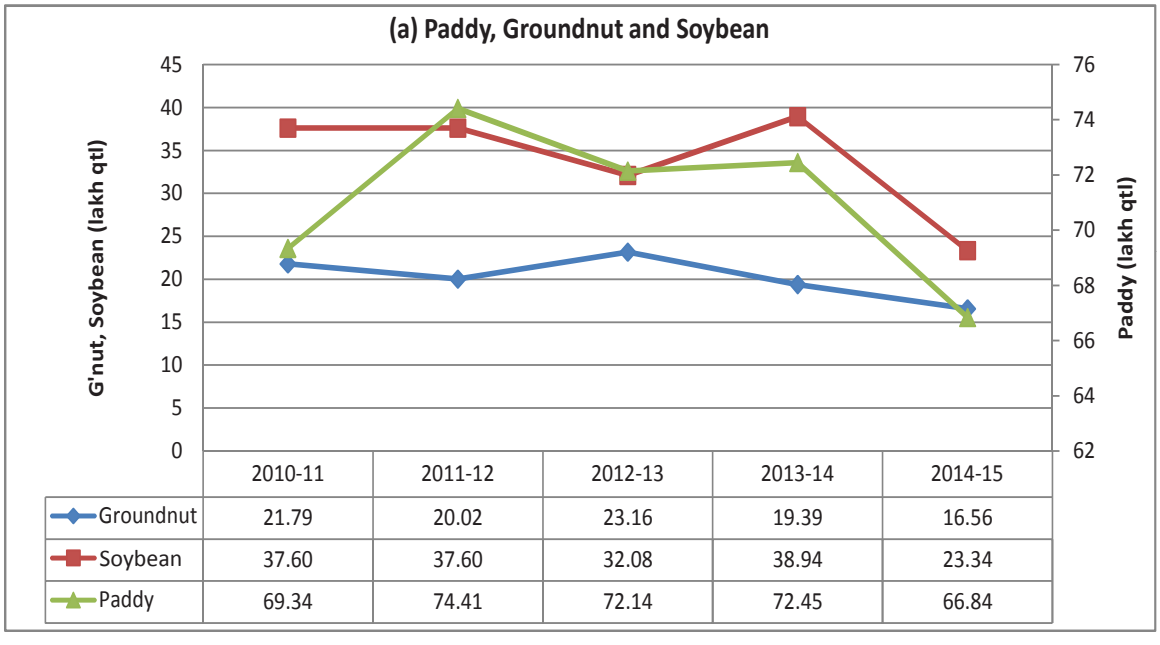
Chart 3.6: Production of Breeder and Foundation Seeds (2010-11 to 2016-17)



	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17 (tar)
Foundation Seed	181	223	162	174	158	150	221
Breeder seed	12	12	11	8	9	9	11

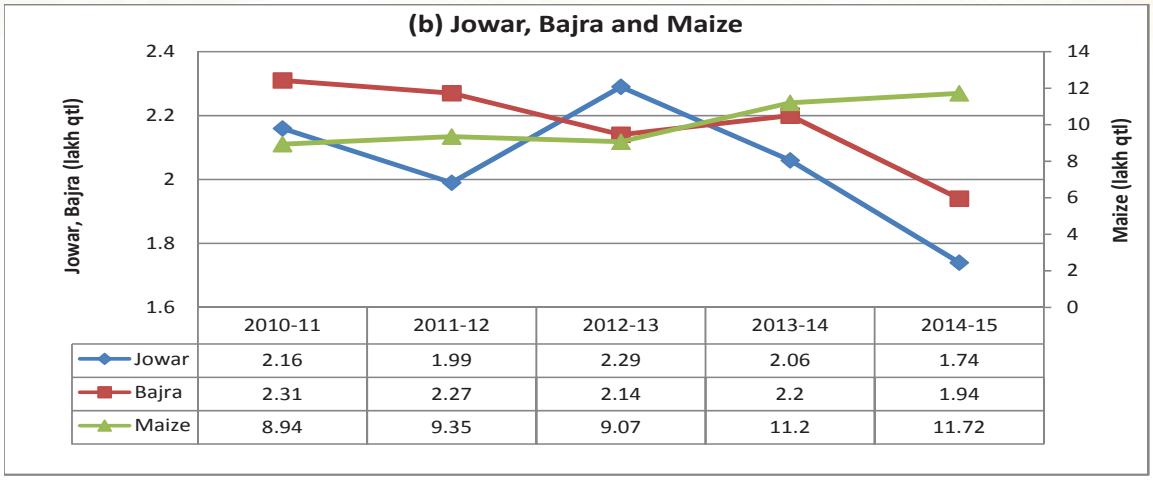
Source: DAC & FW

Chart 3.7: Distribution of Certified/Quality Seeds of Major Kharif crops (2010-11 to 2014-15)



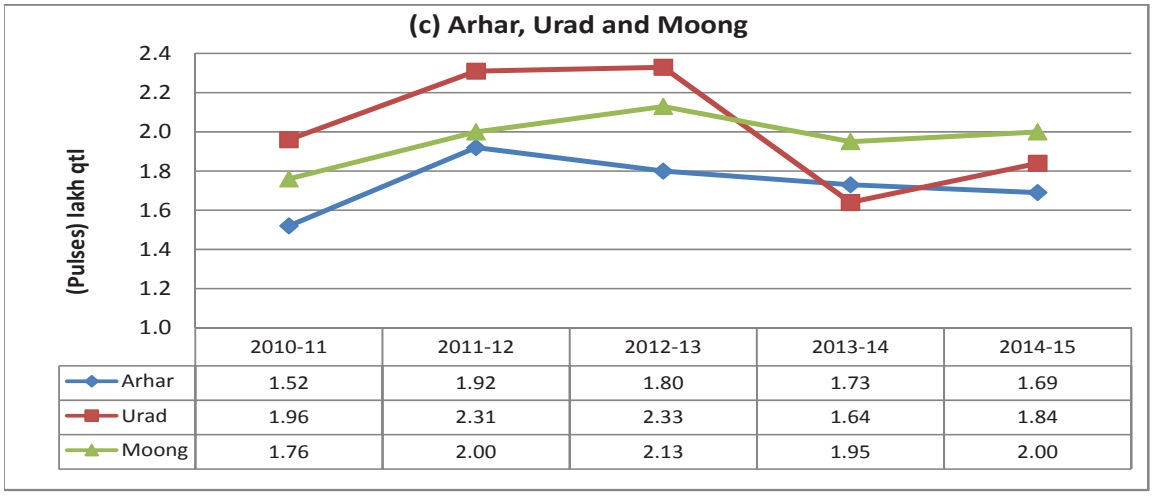
	2010-11	2011-12	2012-13	2013-14	2014-15
Groundnut	21.79	20.02	23.16	19.39	16.56
Soybean	37.60	37.60	32.08	38.94	23.34
Paddy	69.34	74.41	72.14	72.45	66.84

Source: DAC & FW



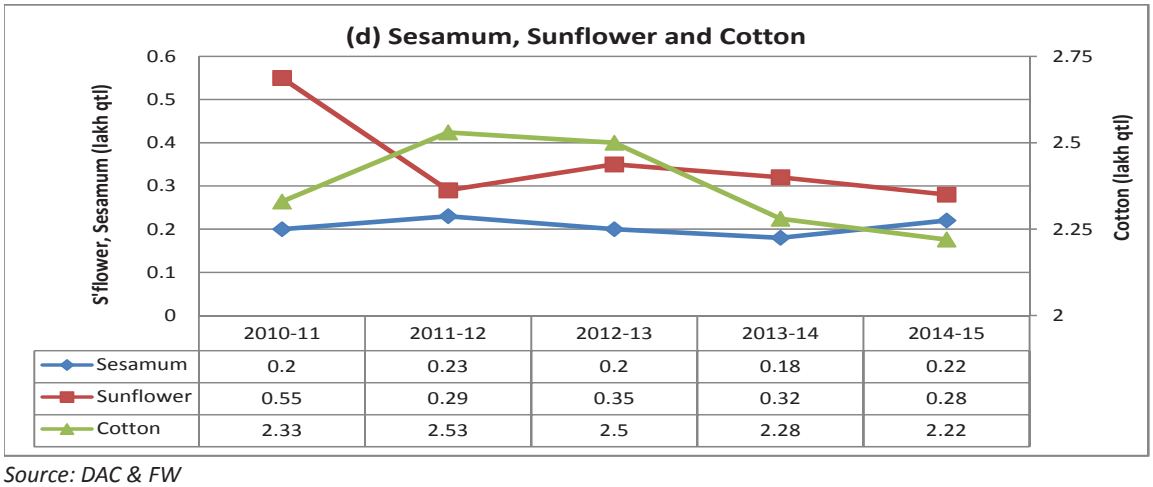
	2010-11	2011-12	2012-13	2013-14	2014-15
Jowar	2.16	1.99	2.29	2.06	1.74
Bajra	2.31	2.27	2.14	2.2	1.94
Maize	8.94	9.35	9.07	11.2	11.72

Source: DAC & FW



	2010-11	2011-12	2012-13	2013-14	2014-15
Arhar	1.52	1.92	1.80	1.73	1.69
Urad	1.96	2.31	2.33	1.64	1.84
Moong	1.76	2.00	2.13	1.95	2.00

Source: DAC & FW



	2010-11	2011-12	2012-13	2013-14	2014-15
Sesamum	0.2	0.23	0.2	0.18	0.22
Sunflower	0.55	0.29	0.35	0.32	0.28
Cotton	2.33	2.53	2.5	2.28	2.22

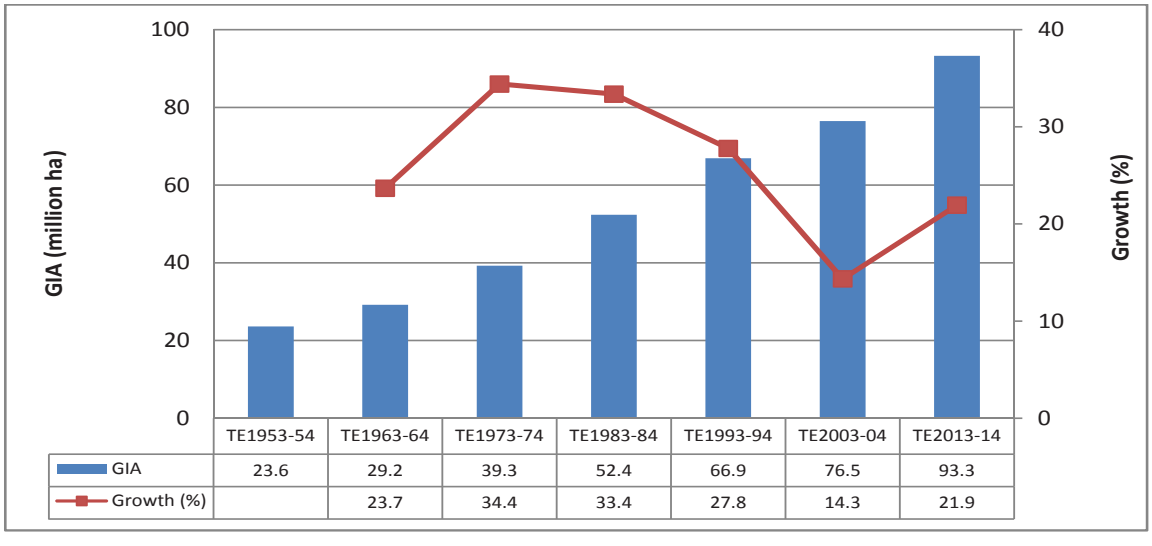
Source: DAC & FW

Irrigation

3.24 Irrigation is an important factor in agricultural production and in recognition of this the government has made massive investments in irrigation development. As shown in Chart 3.8, there has been a significant increase in gross irrigated area in the country but growth rate has decelerated during the 1980s and 1990s, which improved marginally during the last decade. Besides declining public investment in major and medium irrigation projects, poor management of water resources has also become a major constraint in irrigation development. For example, Irrigation Potential Created (IPC) is not utilised fully and the gap between IPC and Irrigation Potential Utilised (IPU) has increased over the years (Chart 3.9). The gap has increased from about 10 percent during Sixth Five Year Plan to about 23 percent during Eleventh Plan. Therefore, efforts are needed to bridge this gap as water is the most critical and scarce resource in Indian agriculture and it would help in increasing irrigation and cropping intensity and also diversification of agriculture.

3.25 The country's farm sector alone accounts for 83 percent of total water use. It is therefore imperative to enhance water productivity along with land productivity. Subsidizing electricity for agriculture in most of the states leads to over-exploitation of ground water. The Commission in its previous reports has recommended metering electricity/water for efficient use and reward farmers through cash incentive equivalent to unused units of water/power at the rates of their domestic resource cost. The Commission reiterates direct interventions in order to encourage farmers to adopt water efficient methods like drip and sprinkler irrigation and involvement of users in managing water resources.

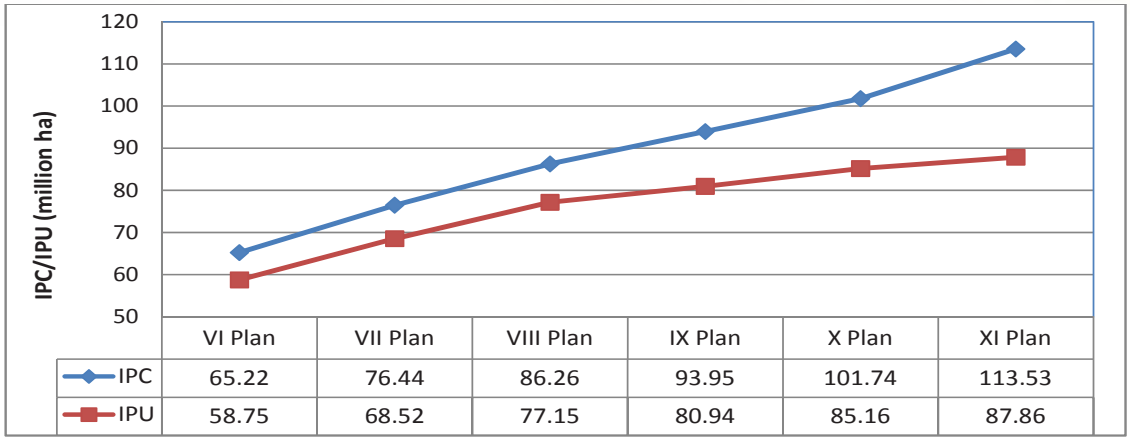
Chart 3.8: Trends and Growth in Gross Irrigated Area (GIA) in India



	TE1953-54	TE1963-64	TE1973-74	TE1983-84	TE1993-94	TE2003-04	TE2013-14
GIA	23.6	29.2	39.3	52.4	66.9	76.5	93.3
Growth (%)		23.7	34.4	33.4	27.8	14.3	21.9

Source: CWC

Chart 3.9: Trends in Irrigation Potential Created and Utilized (Cumulative) (1980-2012)

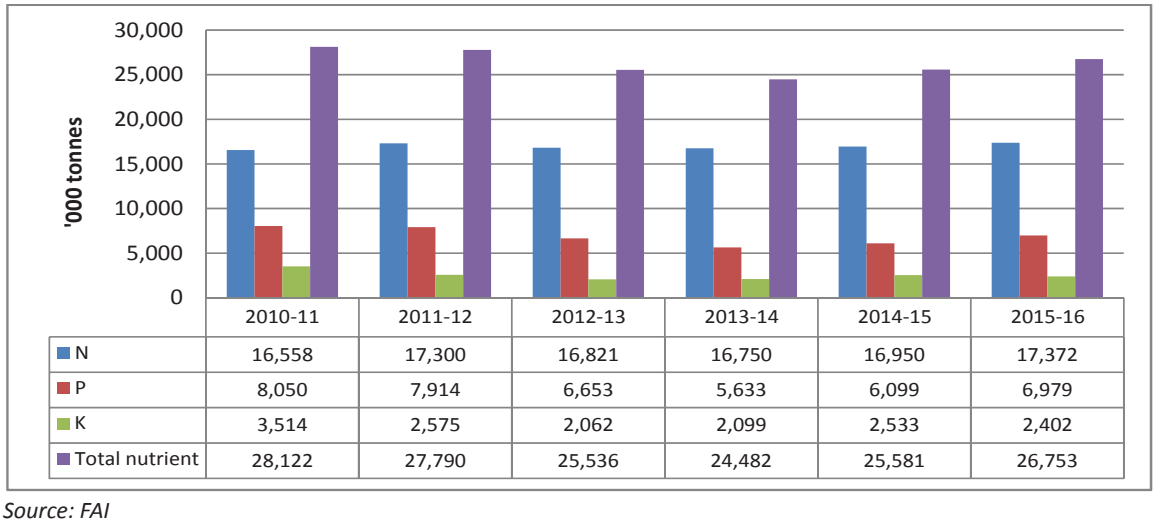


	VI Plan	VII Plan	VIII Plan	IX Plan	X Plan	XI Plan
IPC	65.22	76.44	86.26	93.95	101.74	113.53
IPU	58.75	68.52	77.15	80.94	85.16	87.86

Source: CWC

3.26 **Fertilizers:** The trends in fertilizer use are given in Chart 3.10. It can be observed from the chart that consumption of fertilizers, which declined continuously for three years from 2011-12 to 2013-14, recorded a positive growth during 2014-15 and 2015-16. The consumption of both N and P nutrients picked up significantly but K consumption declined marginally during 2015-16. The nutrient use became highly imbalanced after introduction of NBS in April 2010 (from 4.7:2.3:1 in 2010-11 to 8.0:2.7:1 in 2013-14), which marginally improved (6.7:2.4:1) during 2014-15 but again deteriorated (7.2:2.9:1) in 2015-16. However, N:P:K ratio is expected to improve during 2016-17. A long term strategy to rejuvenate soil health through balanced use of primary nutrients along with micro and secondary nutrients and soil organic carbon would help in improving crop yields.

Chart 3.10: Consumption of Fertilizers ('000 tonnes)



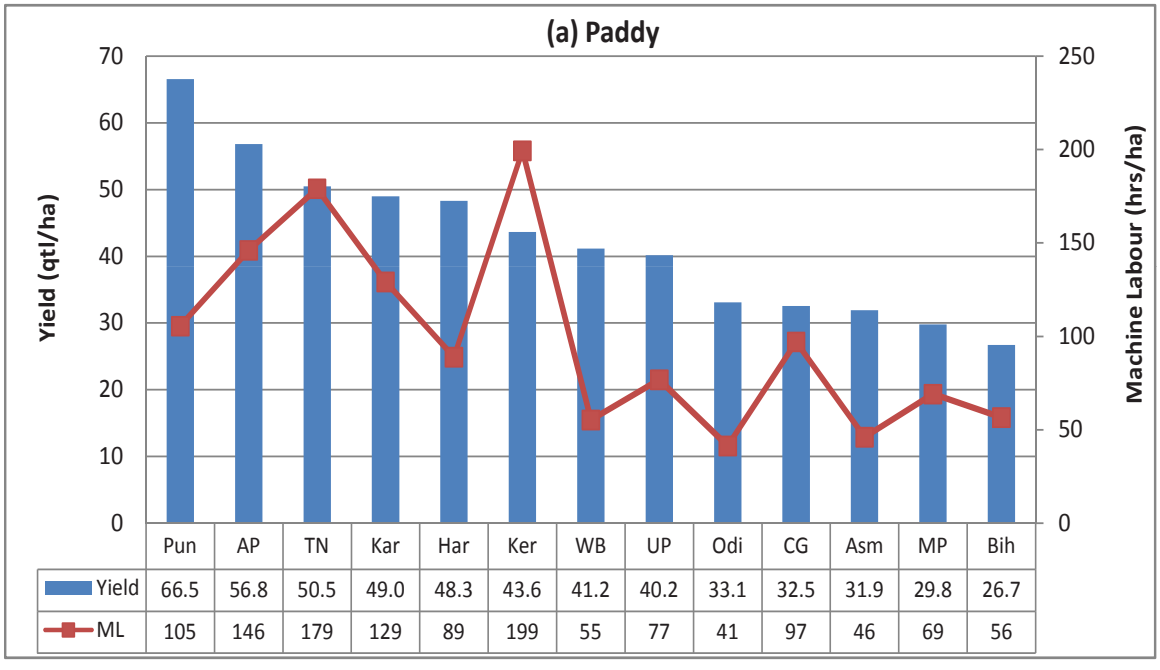
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
N	16,558	17,300	16,821	16,750	16,950	17,372
P	8,050	7,914	6,653	5,633	6,099	6,979
K	3,514	2,575	2,062	2,099	2,533	2,402
Total nutrient	28,122	27,790	25,536	24,482	25,581	26,753

Source: FAI

Farm Mechanization

3.27 The extent of farm mechanization and its impact on productivity of main kharif crops has been examined using CS data. It may be observed from Chart 3.11 (a) that in case of paddy, states with lower productivity like Odisha, Chhattisgarh, Assam and Bihar have lower farm mechanization while higher productivity states like Punjab, Andhra Pradesh and Tamil Nadu etc. have higher level of farm mechanization. The use of machine labour in paddy cultivation is highest in Kerala and Tamil Nadu because of high agricultural wages. Almost a similar trend was observed in maize and cotton [Chart 3.11 (b) and (c)].

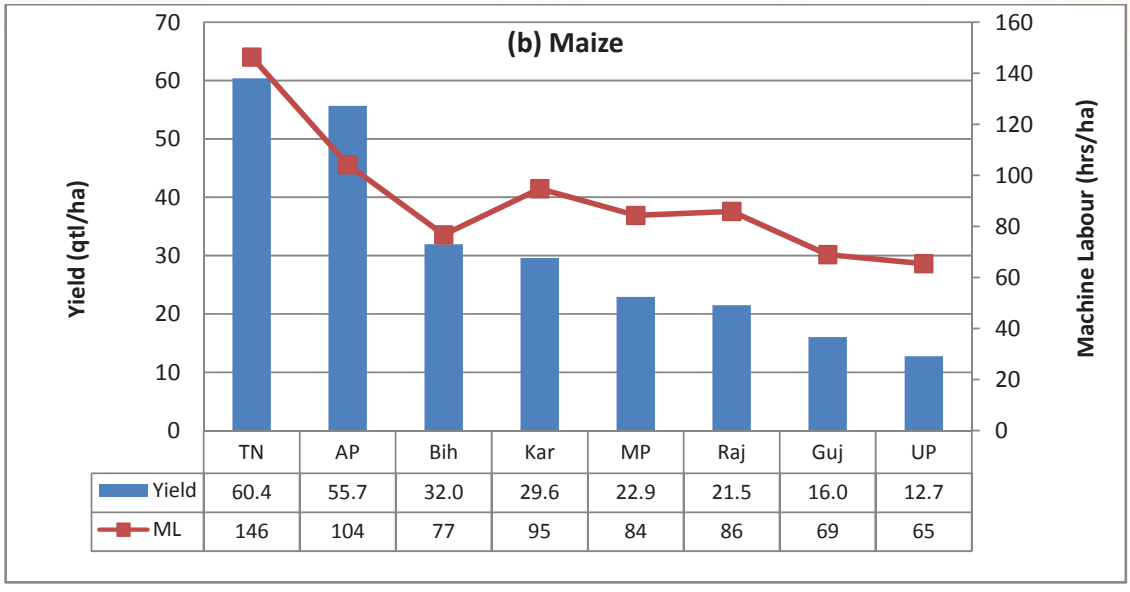
Chart 3.11: Trends in Farm Mechanization in Paddy, Maize and Cotton in Major States: TE2014-15[1]



	Pun	AP	TN	Kar	Har	Ker	WB	UP	Odi	CG	Asm	MP	Bih
Yield	66.5	56.8	50.5	49.0	48.3	43.6	41.2	40.2	33.1	32.5	31.9	29.8	26.7
ML	105	146	179	129	89	199	55	77	41	97	46	69	56

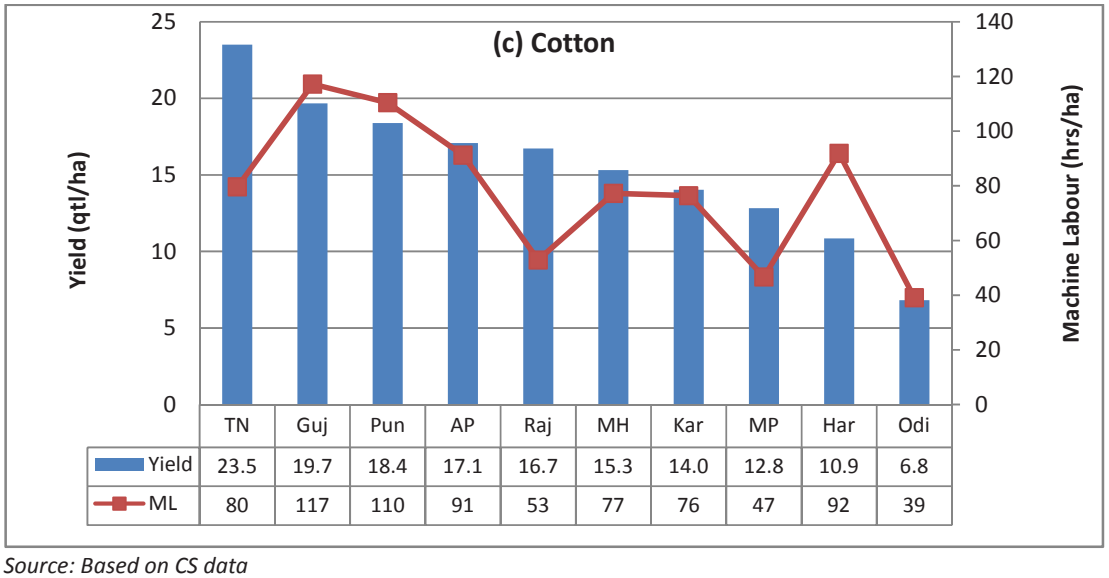
Source: Based on CS data

[1] *In case of paddy, for Kerala the data is for 2014-15 and in maize the data is for 2014-15*



	TN	AP	Bih	Kar	MP	Raj	Guj	UP
Yield	60.4	55.7	32.0	29.6	22.9	21.5	16.0	12.7
ML	146	104	77	95	84	86	69	65

Source: Based on CS data



	TN	Guj	Pun	AP	Raj	MH	Kar	MP	Har	Odi
Yield	23.5	19.7	18.4	17.1	16.7	15.3	14.0	12.8	10.9	6.8
ML	80	117	110	91	53	77	76	47	92	39

Source: Based on CS data

3.28 To examine the impact of mechanization on crop productivity, we estimated the following model using data on yield (tonnes/ha) and farm machinery used (hours/ha) in crop production from the CS Scheme for 2009-10 to 2014-15 across the key producing states of relevant crops:

$$Ln\ (Y_{it}) = \alpha + \beta_i * Ln\ (ML_{it})$$

Where, Y_{it} = Yield of i^{th} crop;

ML_{it} = Machine Labour used in i^{th} crop;

β_i = elasticity of i^{th} crop;

α = Constant; and

Ln denotes logarithmic function

3.29 It can be inferred from Table 3.5 that farm mechanization has significant positive impact on crop yields in both paddy and cotton. The impact on paddy is more pronounced compared with cotton as paddy is more labour-intensive crop. Farm mechanization enhances crop production and productivity due to timeliness of farm operations, better quality of operations and efficiency in application of inputs. In order to understand substitution pattern between machine, human and animal labour, correlation coefficients were worked out for major producing states. The results indicate that machine labour has replaced both human and animal labour in almost all states with varying degree of substitution but replacement rate is much higher for animal labour.

Table 3.5: Impact of Machine Labour on Crop Yields

Crop	Intercept (α)	Coefficient (β)	R^2
Paddy	1.9248*** (0.2049)	0.3985*** (0.0472)	0.51
Cotton	2.1759*** (0.1526)	0.2445*** (0.0601)	0.12

*Source: Figures in parentheses show standard errors of coefficients, *** indicates significant at one percent level of confidence*

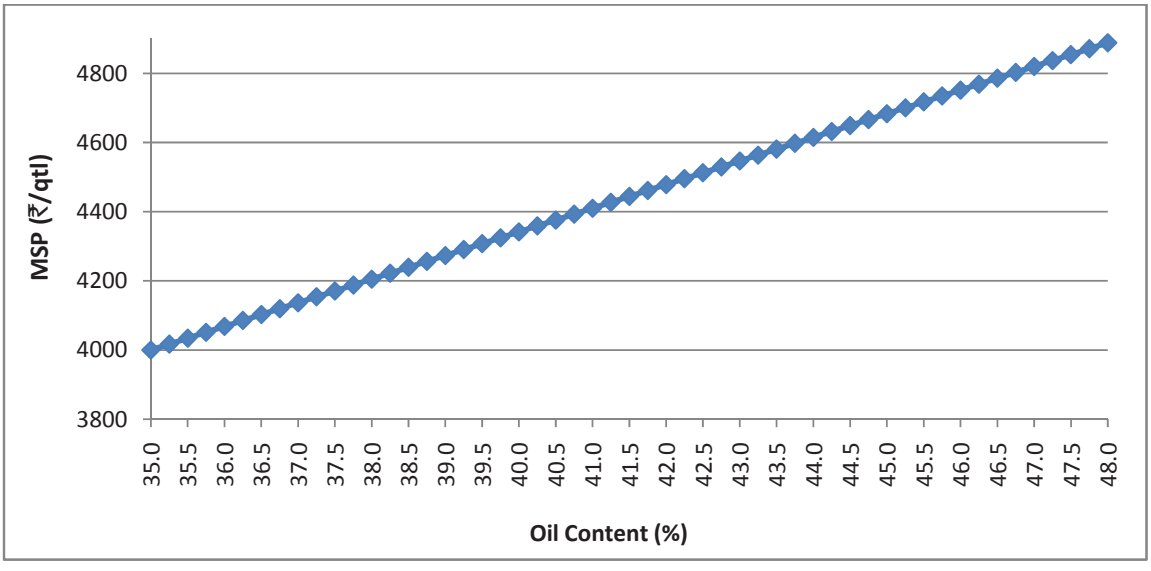
Linking MSP with Oil Content in Sunflower

3.30 Area under sunflower has declined from 4.87 lakh hectare in 2015-16 to 3.71 lakh hectare in 2016-17. This decline has implications for sunflower oil production. In order to increase area under sunflower, farmers should be incentivized through linking MSP of sunflower seed with its oil content. There are variations in oil content of different varieties of sunflower and therefore uniform MSP may not be desirable. The Commission is of the opinion that farmers be incentivized for higher 'oil content'. On the basis of detailed discussions held with various stakeholders such as sunflower cultivators, processors and scientists of ICAR, the Commission recommends that the MSP of sunflower be linked to the basic 'oil content' of 35 percent in sunflower

seeds and farmers be incentivized for every 0.25 percent point increase in its 'oil content' beyond this level.

3.31 To determine the incentive for higher 'oil content', one quintal of sunflower seed will give 35 kg of oil and 65 kg of oil cake. Adjusting the value of cake, the cost of sunflower seed (oil without cake) would be ₹ 2687 (₹ 4000 – ₹ 1313) which will contain 35 kg of oil. Thus, the MSP will increase by ₹ 17.08 for every 0.25 percent point increase in oil content (Chart 3.12). Cost per unit of oil content slowly decreases with increase in 'oil content' (Annex Table 3.1). Taking average oil content between 35 percent and 48 percent, the average cost for every 0.25 percent point works out to ₹ 17.08 per quintal. Hence Commission recommends that MSP of sunflower seeds should be increased by ₹ 17.08 per quintal for every 0.25 percent point increase in 'oil content' over and above the base oil content of 35 percent in sunflower seed.

Chart 3.12: MSP based on Oil Content of Sunflower



Recapitulation

3.32 Compound annual growth rates of productivity, which accelerated for all mandated crops (except sesamum) during the 2000s, turned negative in maize, jowar, soybean, sunflower and cotton in 2010s. Production growth rates decelerated in 2010s for all kharif crops except all pulses, groundnut and sesamum mainly due to declining productivity and area. Since productivity improvement has to be a predominant source of growth of agricultural output as area under cultivation is facing competition from other sectors due to the ever increasing demands, a steep deceleration in the

growth rates of yields in most crops is a matter of great concern for the policymakers. The yield gap analysis reveals that there are wide gaps between potential yield and actual yields in both pulses and oilseeds. Therefore, production can be increased significantly even with the existing technologies if timely availability of seed and other inputs is assured and farmers are trained to follow the best practices.

3.33 Fertilizer consumption has increased during the last two years but distortion in pricing of fertilizer nutrients has led to imbalanced use, which needs to be corrected. There is a wide gap between IPC and IPU, clearly indicating that all the potential which has been created has not been fully utilized. PMKSY launched in 2015 is expected to address some of these problems.

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Chapter 4

Trade Competitiveness of Indian Agriculture

Trade Performance

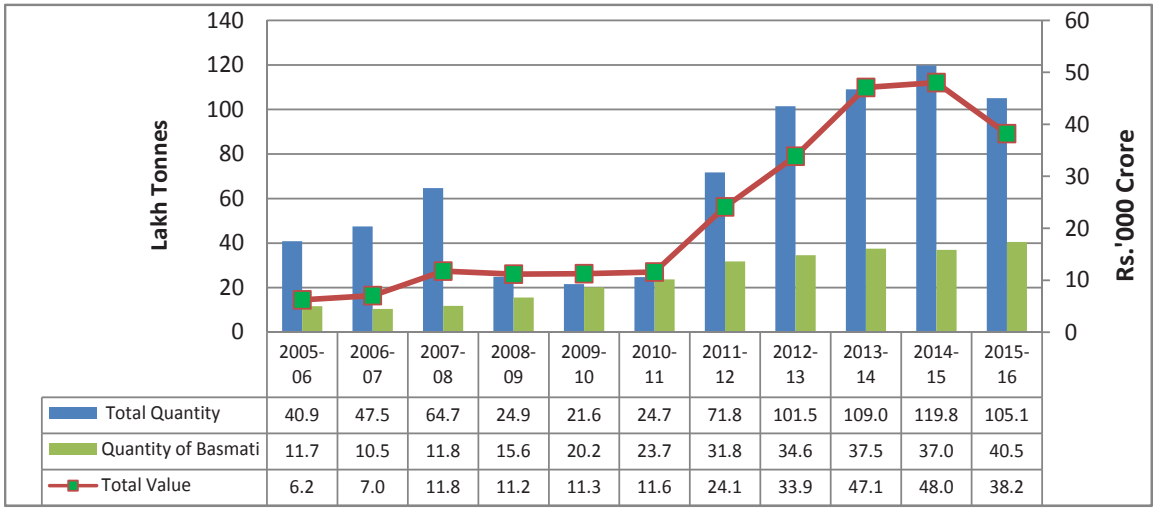
4.1 India has consistently remained a net exporter of agricultural products during the last two and half decades. Agri-exports, which increased by more than five times from ₹ 46.5 thousand crores in 2005-06 to a peak of ₹268.7 thousand crores in 2013-14, witnessed a declining trend during last two years. Agri-imports have increased from ₹ 21.5 thousand crores in 2005-06 to ₹ 163.3 thousand crores in 2015-16. The country's overall exports as well as agri-exports have declined in 2014-15 and 2015-16, mainly due to global slowdown and decline in commodity prices in the international market. Overall exports have declined by (-) 0.5 percent in 2014-15 and (-) 9.5 percent in 2015-16 while agri-exports have declined by (-) 8.7 percent and (-) 9.3 percent, respectively during this period. Exports of guargum meal, oilmeals, wheat, maize, rice and cotton have shown drastic decline during this period. Despite decline in exports of rice in 2015-16, it continues to be a major agri-export commodity and India remains the top exporter of rice in the world since 2012-13. However, agri-imports have shown growth in this period mainly because of increase in imports of edible oils, pulses, fresh fruits, cashew, spices, cotton and raw sugar. Only two items, edible oils and pulses accounted for about 58 percent of total agri-imports in 2015-16. Imports of edible oils and pulses have increased because of decline in production during the last two years but continuous increase in consumption in the country. India's agri-exports declined by 8.7 percent in 2014-15 and further declined by 9.3 percent in 2015-16, whereas, agri-imports have increased from ₹ 123.8 thousand crore in 2013-14 to ₹ 144.8 thousand crore (17 percent) in 2014-15 and ₹ 163.3 thousand crore (12.8 percent) in 2015-16. Despite decline in agri-exports, the country continues to be net exporter in agri-trade. However, trade surplus has declined from a high of ₹ 144.9 thousand crore in 2013-14 to ₹ 100.6 thousand crore in 2014-15, which further declined to ₹ 59.2 thousand crore in 2015-16.

Rice

4.2 The global average production of rice during 2011-2013 was 488.7 million tonnes, out of which only about 9 percent was traded. As per FAO Rice Market Monitor (December 2016), the global production of rice has declined from 494.7 million tonnes in 2014-15 to 491.3 million tonnes in 2015-16 and is anticipated to reach 496.7 million tonnes in 2016-17, which is about 1.1 percent higher than 2015. China is the largest producer with a share of about 28 percent followed by India (21.2 percent). India, Thailand, Vietnam and Pakistan are the major exporters accounting for about three-fourths of the global exports. Despite being largest producer of rice, China is also the largest importer with a share of 11.2 percent. China, Nigeria, EU, Philippines, Saudi Arabia and Iran account for 31.3 percent of global imports. The world rice exports are estimated to be 42 million tonnes in 2016, about 6 percent less than 44.7 million tonnes in 2015. However, rice trade is expected to increase marginally to 42.9 million tonnes in 2017.

4.3 India continues to be the largest exporter of rice in the world, followed by Thailand and Vietnam since 2012-13. However, India's exports of rice, which recorded a consistent increase since 2009-10, have declined from a high of 119.8 lakh tonnes in 2014-15 to 105.1 lakh tonnes in 2015-16, due to fall in non-basmati rice exports. Basmati rice recorded a significant increase in exports during 2015-16, from 37 lakh tonnes in 2014-15 to 40.5 lakh tonnes in 2015-16. The country's exports of rice (Basmati + non-basmati) from 2005-06 to 2015-16 are shown in Chart 4.1.

Chart 4.1: India's Exports of Rice, 2005-06 to 2015-16

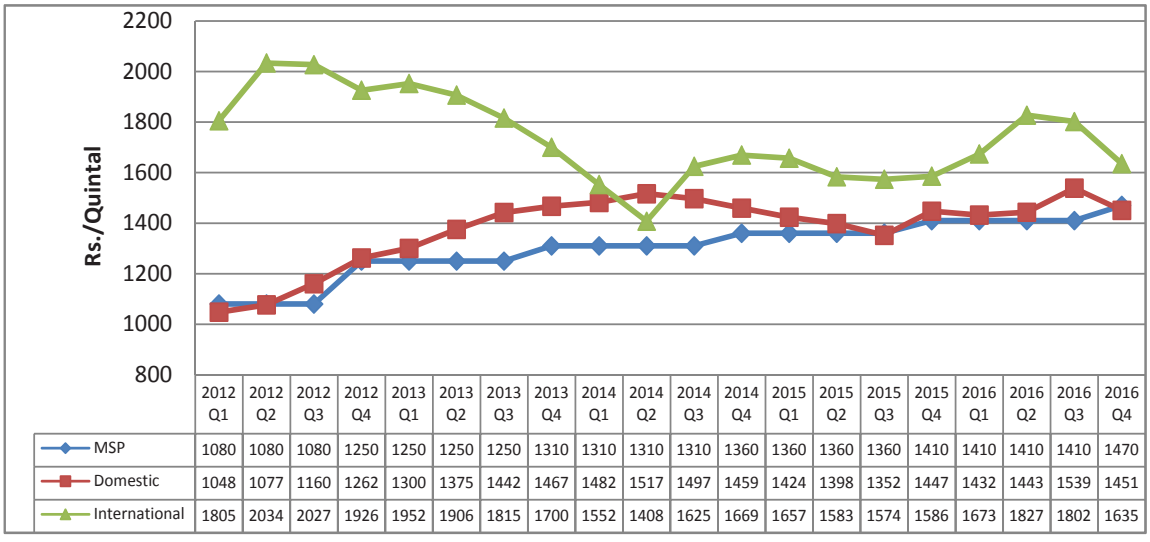


	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Total Quantity	40.9	47.5	64.7	24.9	21.6	24.7	71.8	101.5	109.0	119.8	105.1
Quantity of Basmati	11.7	10.5	11.8	15.6	20.2	23.7	31.8	34.6	37.5	37.0	40.5
Total Value	6.2	7.0	11.8	11.2	11.3	11.6	24.1	33.9	47.1	48.0	38.2

Source: DGCIS

4.4 It may be seen from Chart 4.2 that domestic prices of paddy (prices of rice converted into paddy) were continuously lower than international prices during the period from 2012 to 2016, barring 2014 (Q_2). This indicates that Indian rice is export competitive. The MSP of paddy has been generally lower than domestic wholesale prices [except 2015 (Q_3)] and continuously lower than international prices during this period.

Chart 4.2: MSP, Domestic and International Prices of Paddy, 2012 to 2016.



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	1080	1080	1080	1250	1250	1250	1250	1310	1310	1310	1310	1360	1360	1360	1360	1410	1410	1410	1410	1470
Domestic	1048	1077	1160	1262	1300	1375	1442	1467	1482	1517	1497	1459	1424	1398	1352	1447	1432	1443	1539	1451
International	1805	2034	2027	1926	1952	1906	1815	1700	1552	1408	1625	1669	1657	1583	1574	1586	1673	1827	1802	1635

Note: 1. Rice (Thailand), 25% broken, WR, milled indicative survey price, government standard, f.o.b. Bangkok
2. International Prices of Rice converted into paddy at the ratio of 0.67.
3. Weighted wholesale price of AP, Assam, Chhattisgarh, Gujarat, Haryana, Kerala, Karnataka, MP, Maharashtra, Punjab, TN, UP and WB, which covered 77 percent of production in 2016-17.

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

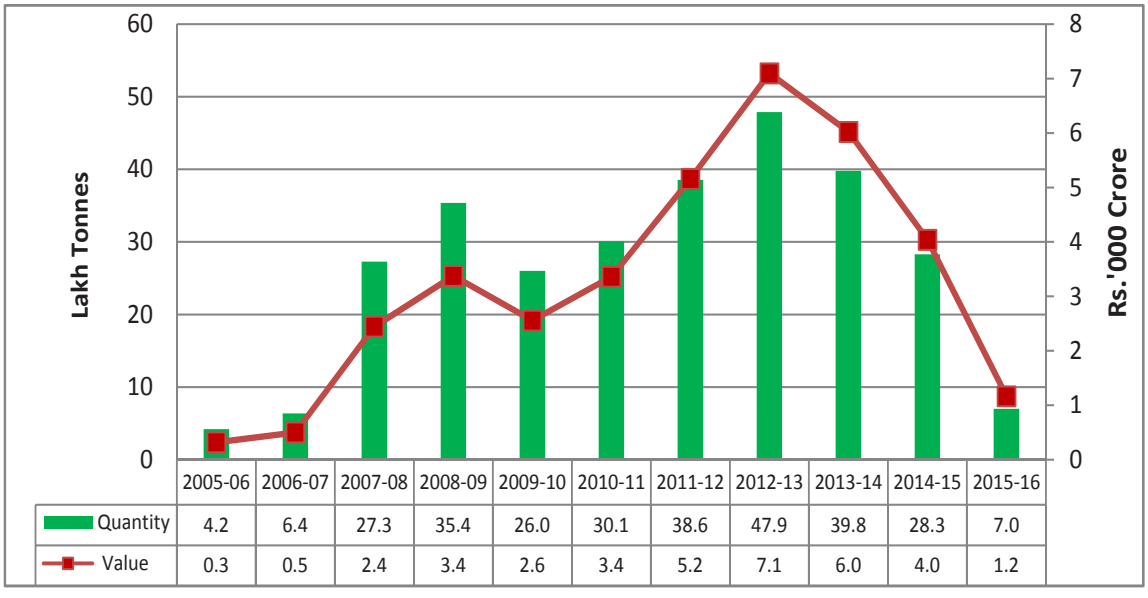
4.5 In view of the tight position of rice in the domestic market, the government prohibited exports of non-basmati rice from the Central Pool in March 2008 and also on private account in April 2008. This ban continued till July 2011 when exports of 10 lakh tonnes of non-basmati rice on private account were allowed with a Minimum Export Price (MEP) of $425 per tonne. In September 2011, export of non-basmati rice was allowed under the Open General License (OGL) by private parties out of privately held stocks and this has continued thereafter. Import duty of 80 percent on husked (brown) rice and broken rice and 70 percent on milled and semi-milled rice was imposed in April 2000. In view of tight position of rice in the domestic market, import duty on milled and semi-milled rice was allowed at zero percent from 01.03.2008 to 01.04.2009. With some intermittent relaxations, import duty on rice remains at 70-80 percent.

Maize

4.6 The world production of maize was 988.8 million tonnes during TE2015-16, out of which 13.6 percent was traded. As per USDA, global production of maize has declined from 1015.1 million tonnes in 2014-15 to 961.1 million tonnes in 2015-16. USA is the largest producer with a share of 35.7 percent, followed by China (22.2 percent). USA, Brazil, Ukraine and Argentina account for more than 80 percent of total world exports of maize. Japan, EU, Mexico, South Korea and Egypt account for 41.5 percent of global imports.

4.7 It may be seen from Chart 4.3 that India's exports of maize increased from 4.2 lakh tonnes in 2005-06 to a high of 47.9 lakh tonnes in 2012-13. However, exports of maize declined to 39.8 lakh tonnes in 2013-14, 28.3 lakh tonnes in 2014-15 and only 7 lakh tonnes in 2015-16 mainly due to low world prices and fall in domestic production. It may be seen from Chart 4.4 that domestic wholesale prices of maize were lower than the international prices from 2012 (Q_1) to 2013 (Q_3) but higher than international prices from 2013 (Q_4) onwards. Currently, Indian maize is not export competitive. MSP of maize is lower than the domestic prices but it is much higher than international prices.

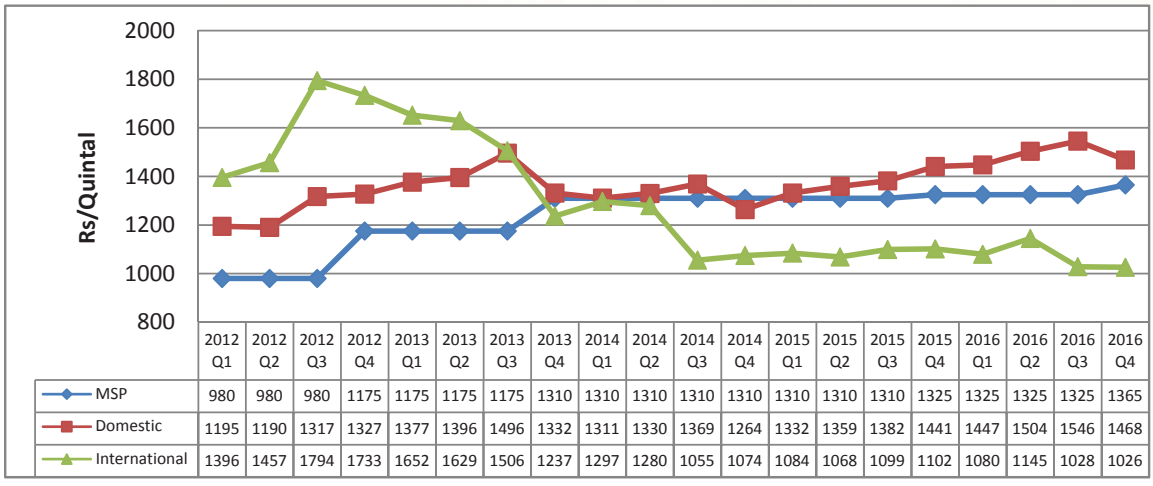
Chart 4.3: India's Exports of Maize, 2005-06 to 2015-16



	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	4.2	6.4	27.3	35.4	26.0	30.1	38.6	47.9	39.8	28.3	7.0
Value	0.3	0.5	2.4	3.4	2.6	3.4	5.2	7.1	6.0	4.0	1.2

Source: DGCIS

Chart 4.4: MSP, Domestic and International Prices of Maize, 2012 to 2016



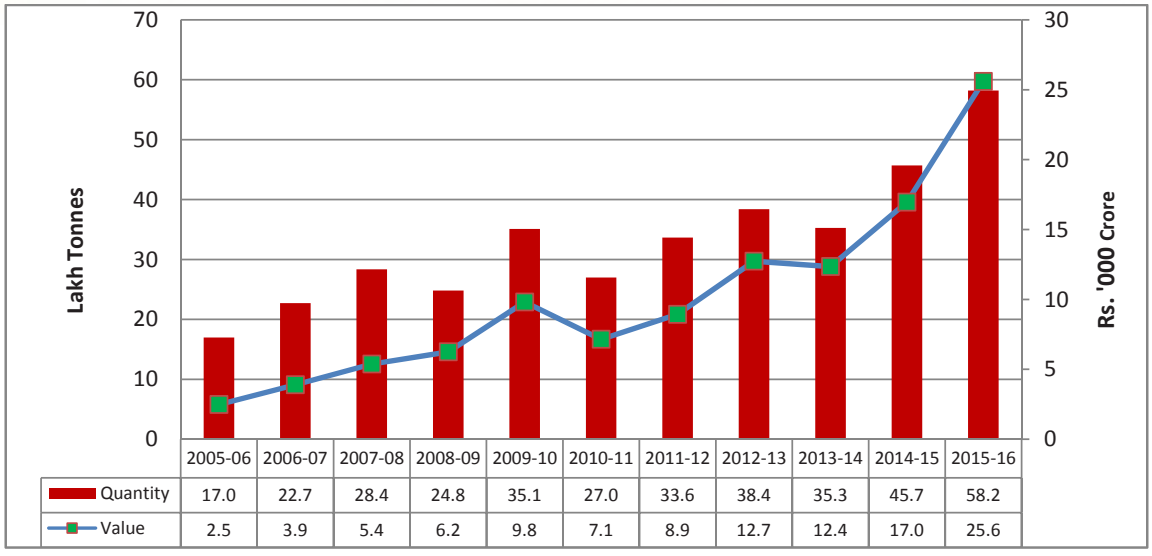
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	980	980	980	1175	1175	1175	1175	1310	1310	1310	1310	1310	1310	1310	1310	1325	1325	1325	1325	1365
Domestic	1195	1190	1317	1327	1377	1396	1496	1332	1311	1330	1369	1264	1332	1359	1382	1441	1447	1504	1546	1468
International	1396	1457	1794	1733	1652	1629	1506	1237	1297	1280	1055	1074	1084	1068	1099	1102	1080	1145	1028	1026

Note: 1.Maize (US), No. 2, yellow, f.o.b. US Gulf ports
2. Weighted wholesale price of AP, Bihar, Gujarat, Karnataka, MP, Maharashtra, Punjab, Rajasthan, TN and UP, which cover 78 percent of production in 2016-17
Source: DES for domestic wholesale prices and World Bank for International prices.

Pulses

4.8 India is the largest producer, consumer and importer of pulses in the world. As per DGCIS, imports of pulses have increased from 17 lakh tonnes valued at ₹ 2.5 thousand crores in 2005-06 to 58.2 lakh tonnes valued at ₹ 25.6 thousand crores in 2015-16 (Chart 4.5). Peas constitute the largest share (39.7 percent) in total imports followed by lentils (20 percent) and chickpea (12.4 percent). India exports small quantities of pulses, especially Kabuli Chana. Exports of pulses declined from a high of 4.5 lakh tonnes in 2005-06 to only 1 lakh tonnes in 2009-10. Exports of pulses were 2.5 lakh tonnes in 2015-16. Canada, Myanmar and Australia are major exporters of pulses to India and account for about three-fourth of total imports in the country. Other important suppliers are Russia, USA and Tanzania. The share of Myanmar in total imports has declined significantly from 25.6 percent in TE2007-08 to 17 percent in TE2015-16. On the other hand, share of Australia and Russia has increased. There has been some diversification of import originations as share of top 5 exporters has declined from about 87 percent to less than 80 percent during the last ten years.

Chart 4.5: India's Imports of Pulses, 2005-06 to 2015-16



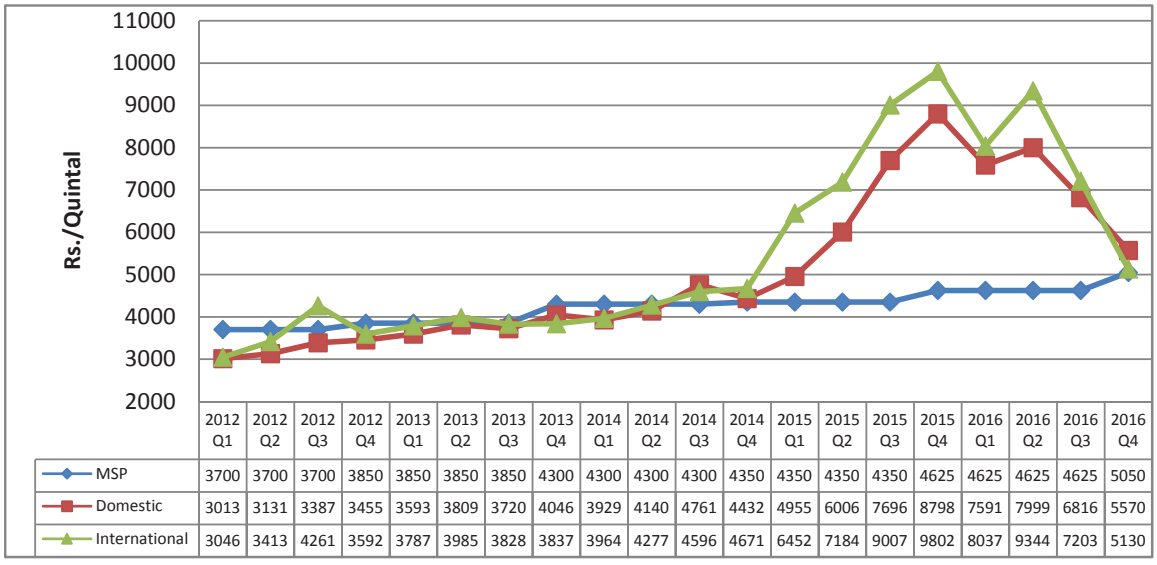
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	17.0	22.7	28.4	24.8	35.1	27.0	33.6	38.4	35.3	45.7	58.2
Value	2.5	3.9	5.4	6.2	9.8	7.1	8.9	12.7	12.4	17.0	25.6

Source: DGCIS

4.9 Import duty on pulses was brought down from 10 percent to zero percent in June 2006 and continues to be zero percent since then. Exports of pulses were banned in June 2006 initially for a period of six months which has been extended from time to time, latest being in March, 2014. However, Kabuli Chana is exempted from export ban. Also, exports of organic pulses and lentils up to 10,000 tonnes per annum have been allowed since March, 2011, subject to certification by Agricultural and Processed Food Products Export Development Authority (APEDA) and such exports are allowed from Customs Electronic Data Interchange (EDI) Ports only.

4.10 The domestic wholesale prices of Kharif pulses have been compared with international prices (C&F) during the period from 2012 to 2016. It may be observed from Charts 4.6 to 4.8 that domestic wholesale prices of Kharif pulses, viz. arhar, urad and moong have generally followed the trend of the international prices during 2012 to 2016. Domestic and international prices of tur and urad recorded a significant increase in 2015, but declined during 2016. These trends clearly show impact of Indian imports on world markets. MSP of arhar and urad are currently lower than domestic wholesale prices but MSP of moong is higher than domestic wholesale prices in 2016 (Q_4). MSP of arhar, urad and moong are currently lower than international prices.

Chart 4.6: MSP, Domestic and International Prices of Arhar, 2012 to 2016

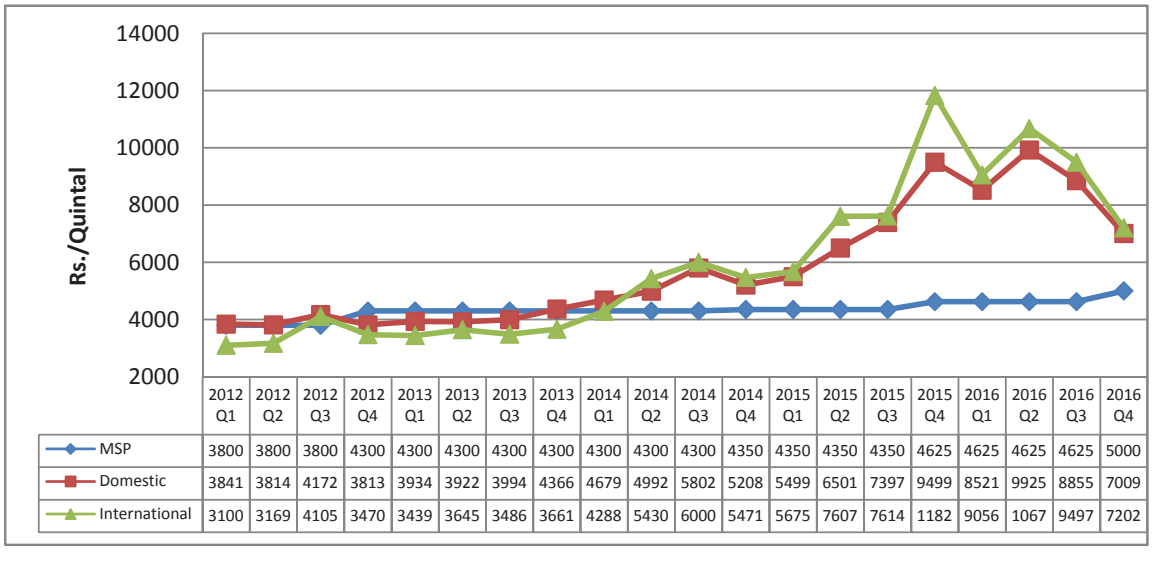


	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	3700	3700	3700	3850	3850	3850	3850	4300	4300	4300	4300	4350	4350	4350	4350	4625	4625	4625	4625	5050
Domestic	3013	3131	3387	3455	3593	3809	3720	4046	3929	4140	4761	4432	4955	6006	7696	8798	7591	7999	6816	5570
International	3046	3413	4261	3592	3787	3985	3828	3837	3964	4277	4596	4671	6452	7184	9007	9802	8037	9344	7203	5130

Note: Weighted wholesale price of AP, Bihar, Karnataka, MP, Maharashtra, TN, UP and WB, which cover 72 percent of production in 2016-17, MSPs are inclusive of Bonus.

Source: DES for domestic wholesale prices & NAFED for International prices, C&F at Mumbai

Chart 4.7: MSP, Domestic and International Prices of Urad, 2012 to 2016

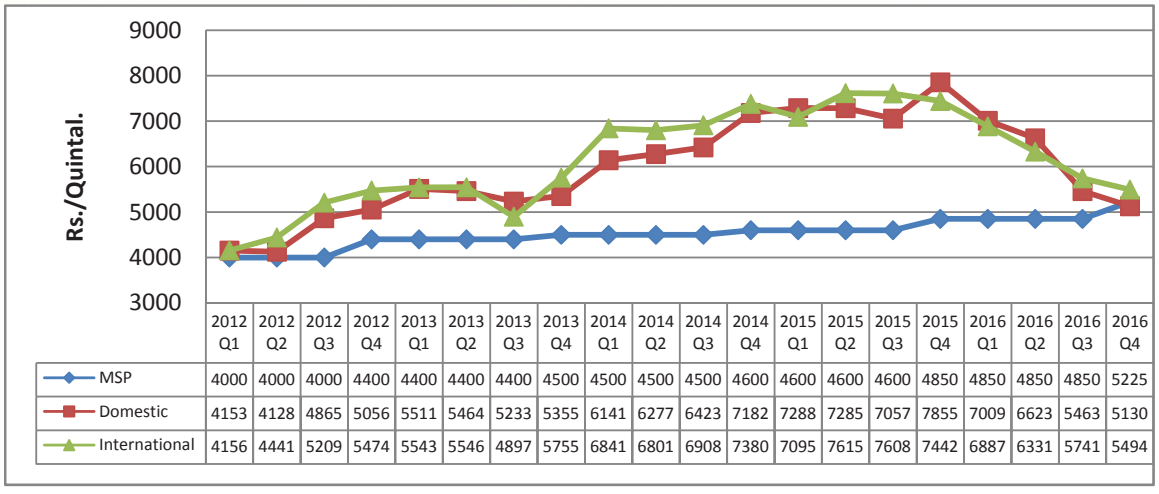


	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	3800	3800	3800	4300	4300	4300	4300	4300	4300	4300	4300	4350	4350	4350	4350	4625	4625	4625	4625	5000
Domestic	3841	3814	4172	3813	3934	3922	3994	4366	4679	4992	5802	5208	5499	6501	7397	9499	8521	9925	8855	7009
International	3100	3169	4105	3470	3439	3645	3486	3661	4288	5430	6000	5471	5675	7607	7614	1182	9056	1067	9497	7202

Note: Weighted wholesale price of AP, Bihar, Gujarat, MP, Maharashtra, TN, UP and WB, which cover 82 percent of production in 2016-17, MSPs are inclusive of Bonus.

Source: DES for domestic wholesale prices & NAFED for International prices, C&F at Mumbai.

Chart 4.8: MSP, Domestic and International Prices of Moong, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	4000	4000	4000	4400	4400	4400	4400	4500	4500	4500	4500	4600	4600	4600	4600	4850	4850	4850	4850	5225
Domestic	4153	4128	4865	5056	5511	5464	5233	5355	6141	6277	6423	7182	7288	7285	7057	7855	7009	6623	5463	5130
International	4156	4441	5209	5474	5543	5546	4897	5755	6841	6801	6908	7380	7095	7615	7608	7442	6887	6331	5741	5494

Note: Weighted wholesale price of AP, Bihar, Gujarat, Karnataka, MP, Maharashtra, Rajasthan, Punjab, TN and UP, which cover 86 percent of production in 2016-17, MSPs are inclusive of Bonus.
Source: DES for domestic wholesale prices & NAFED for International prices, C&F at Mumbai.

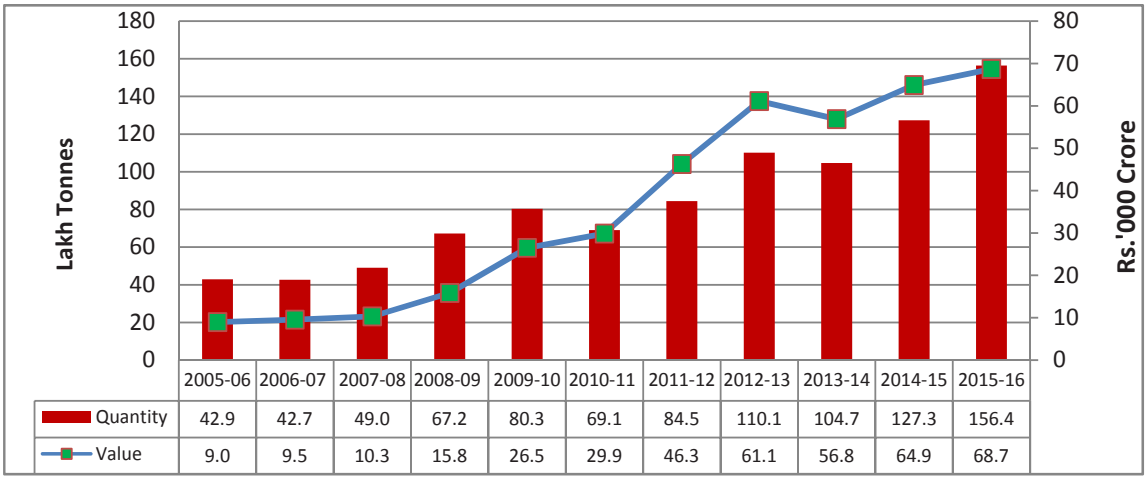
Oilseeds/Edible Oils

4.11 As per USDA, the global production of major oilseeds was 521 million tonnes in TE2015-16, out of which about 28 percent was traded. Soybean has the largest contribution in total oilseeds production, with a share of 58.6 percent followed by rapeseed (13.6 percent), cotton seed (8.1 percent), peanuts (7.8 percent) and sunflower seed (7.8 percent). USA is the largest producer with a share of 21.2 percent followed by Brazil (18.5 percent). Other major producers are Argentina (11.8 percent), China (11.0 percent) and India (6.3 percent). Brazil and USA export about 70 percent of global exports, with a share of 35.1 percent and 34.7 percent, respectively. China and EU account for 70 percent of global imports, with a share of 57.4 percent and 12.9 percent, respectively.

4.12 As per USDA, the global production of edible oils was 175.4 million tonnes in TE2015-16, out of which about 42 percent was traded. Palm oil has the largest share (34.2 percent) in total edible oils production followed by soybean oil (27.8 percent), rapeseed oil (15.7 percent) and sunflower oil (8.7 percent). Indonesia is the largest producer with a share of 20.8 percent followed by China (14.4 percent), Malaysia (12.3 percent) and EU (10.4 percent). India's share in global production of edible oils is only 3.9 percent. Indonesia and Malaysia account for more than 60 percent of global exports with a share of 35.4 percent and 25.2 percent, respectively. India was the largest importer of edible oils with a share of 19.4 percent, followed by EU (14.2 percent) and China (12.2 percent) in TE2015-16.

4.13 As per DGCIS, India's imports of edible oils have increased from 42.9 lakh tonnes valued at ₹ 9 thousand crores in 2005-06 to 156.4 lakh tonnes valued at ₹ 68.7 thousand crores in 2015-16 (Chart 4.9). Imports of edible oils have significantly increased during 2014-15 and 2015-16 due to fall in domestic production coupled with decline in international prices of edible oils, particularly palm oil. Imports of edible oils in India as percentage of total availability have increased from about 39 percent in TE 2005-06 to about 60 percent in TE2015-16.

Chart 4.9: India's Imports of Edible Oils, 2005-06 to 2015-16



	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	42.9	42.7	49.0	67.2	80.3	69.1	84.5	110.1	104.7	127.3	156.4
Value	9.0	9.5	10.3	15.8	26.5	29.9	46.3	61.1	56.8	64.9	68.7

Source: DGCIS

Soybean Complex

4.14 As per USDA, the global production of soybean was 305.3 million tonnes during TE2015-16, out of which about 41 percent was traded. Global production of soybean has declined from 319.8 million tonnes in 2014-15 to 313.5 million tonnes in 2015-16. USA is the largest producer of soybean with a share of 33.3 percent, followed by Brazil (30.6 percent) and Argentina (18.7 percent). India's share in global production of soybean is 2.8 percent. Brazil and USA contribute 80 percent of world exports, with a share of 40.9 percent and 39.7 percent, respectively. China and EU account for about three-fourth of total world imports of soybean, with a share of 62.6 percent and 11.4 percent, respectively.

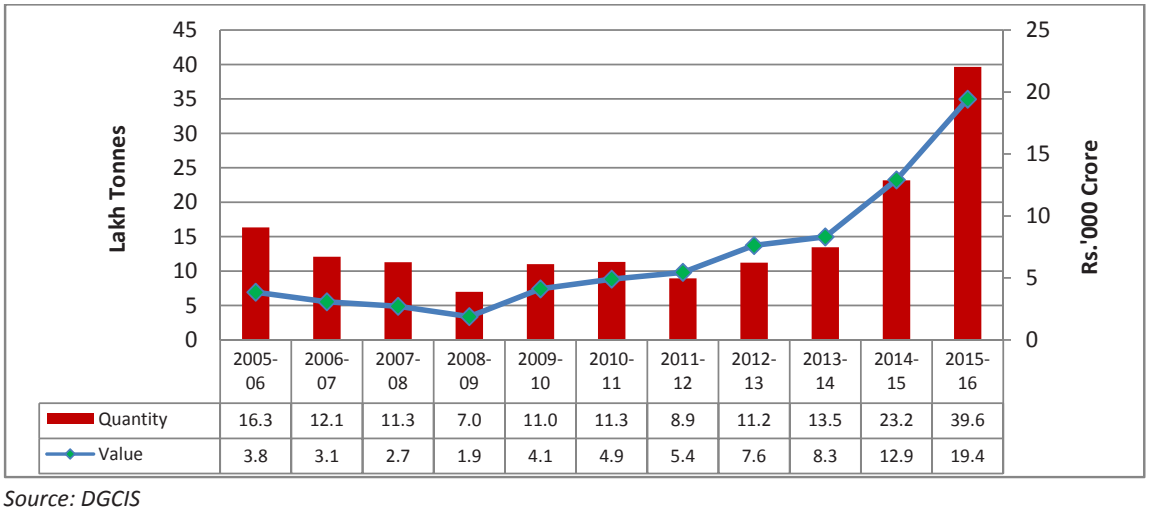
4.15 The global production of soybean oil was 48.8 million tonnes, out of which 22 percent was traded. China is the largest producer with a share of 27.5 percent, followed by USA (19.7 percent), Argentina (15.6 percent) and Brazil (15.4 percent). These top four producers account for about 80 percent of total world production of soybean

oil. India's share in global production of soybean oil is 2.7 percent. Argentina and Brazil account for nearly 60 percent of total world exports, with a share of 46.1 percent and 13.7 percent, respectively. India is the largest importer, with a share of 28.7 percent followed by China (8.8 percent). India's imports of soybean oil have increased from about 1.1 million tonnes in 2010-11 to 3.96 million tonnes in 2015-16.

4.16 The global production of soybean meal was 205.2 million tonnes in TE2015-16, out of which 31 percent was traded. As in case of soybean oil, China is the largest producer of soybean meal with a share of 28.9 percent, followed by USA (19.2 percent), Argentina (14.9 percent) and Brazil (14.7 percent). India's share in global production of soybean meal is 2.9 percent. Argentina, Brazil and USA export nearly 85 percent of total world exports, with a share of 43.9 percent, 22.9 percent and 17.4 percent, respectively. EU is the largest importer of soybean meal with a share of 31.6 percent, followed by Vietnam (7.0 percent) and Indonesia (6.7 percent).

4.17 India exports small quantities of soybean. However, the country imports soybean oil to meet domestic demand. Imports of soybean oil have fluctuated between 7 lakh tonnes in 2008-09 and 39.6 lakh tonnes in 2015-16 (Chart 4.10). Imports of soybean oil have significantly increased in 2014-15 and 2015-16 due to decline in domestic production and also decline in international prices of soybean oil during this period.

Chart 4.10: India's Imports of Soybean Oil, 2005-06 to 2015-16



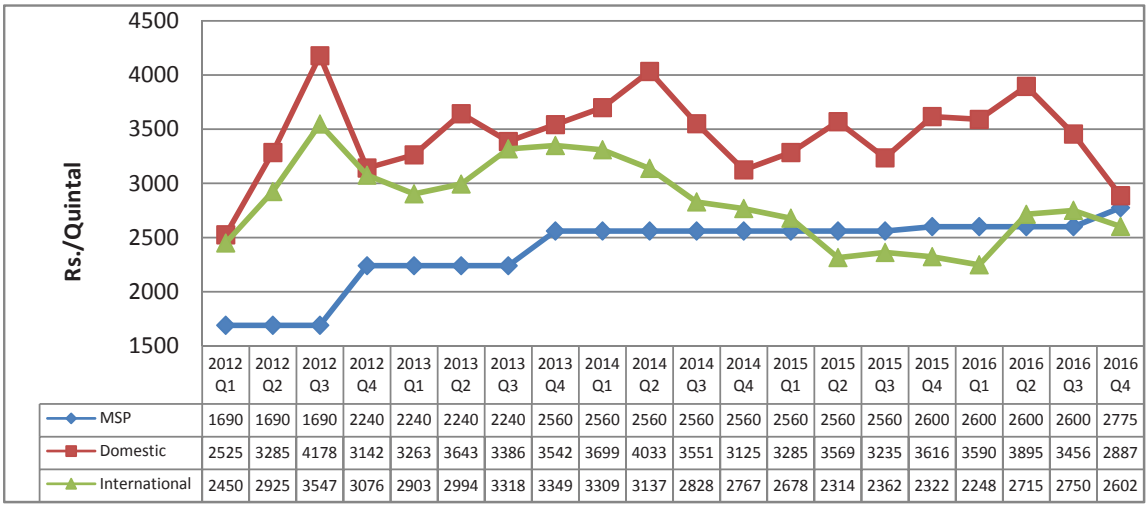
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	16.3	12.1	11.3	7.0	11.0	11.3	8.9	11.2	13.5	23.2	39.6
Value	3.8	3.1	2.7	1.9	4.1	4.9	5.4	7.6	8.3	12.9	19.4

Source: DGCIS

4.18 Domestic wholesale prices of soybean have been higher than international prices during the period 2012 to 2016, while MSP has been lower than domestic and international prices from 2012 to 2015 (Q_1) after which it was above international prices till 2016

(Q3) before rising again (Chart 4.11). The MSP of soybean, which was lower than world prices, is currently higher than international prices. Domestic wholesale prices of soybean oil have been continuously higher than international prices but the gap has widened after 2013, thereby increase in imports (Chart 4.12). However, there is a broad consistency in the trend of domestic and international prices.

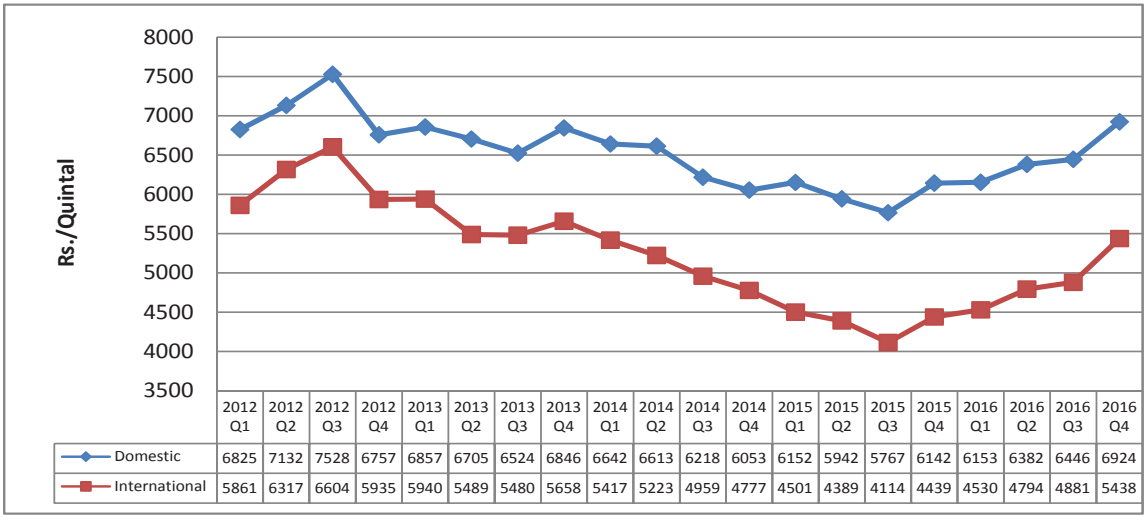
Chart 4.11: MSP, Domestic and International Prices of Soybean, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	1690	1690	1690	2240	2240	2240	2240	2560	2560	2560	2560	2560	2560	2560	2560	2600	2600	2600	2600	2775
Domestic	2525	3285	4178	3142	3263	3643	3386	3542	3699	4033	3551	3125	3285	3569	3235	3616	3590	3895	3456	2887
International	2450	2925	3547	3076	2903	2994	3318	3349	3309	3137	2828	2767	2678	2314	2362	2322	2248	2715	2750	2602

Note: 1. Argentina Up River, FOB Crude; IGC
2. Weighted wholesale price of MP, Maharashtra and Rajasthan, which cover 93 percent of production in 2016- 17, MSPs are inclusive of Bonus.
Source: DES for domestic wholesale prices and USDA for international prices.

Chart 4.12: Domestic and International Prices of Soybean Oil, 2012 to 2016

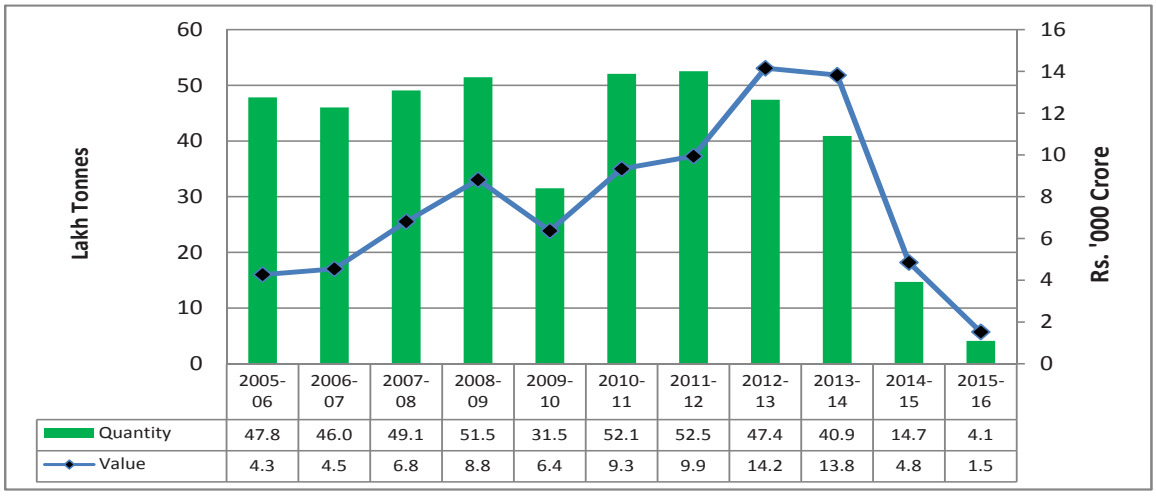


	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
Domestic	6825	7132	7528	6757	6857	6705	6524	6846	6642	6613	6218	6053	6152	5942	5767	6142	6153	6382	6446	6924
International	5861	6317	6604	5935	5940	5489	5480	5658	5417	5223	4959	4777	4501	4389	4114	4439	4530	4794	4881	5438

Note: Argentina Up River, FOB Crude; IGC.
Source: The Solvent Extractors Association of India for domestic wholesale prices and USDA for International Prices

4.19 As per DGCIS, India's exports of soybean meal have continuously declined since 2011-12, from a peak of 52.5 lakh tonnes in 2011-12 to 4.1 lakh tonnes in 2015-16 (Chart 4.13). However soybean meal exports have again picked up since October 2016 and were over 6 lakh tonnes during April 2016-Januay 2017, 81.8 percent higher than in April 2015-Jan 2016. Bangladesh, Japan and France were major destinations for India's exports during this period. Domestic wholesale prices of soybean meal have been continuously higher than international prices from 2013 (Q_4) to 2016 (Q_4) [Chart 4.14], indicating that Indian exports are not competitive.

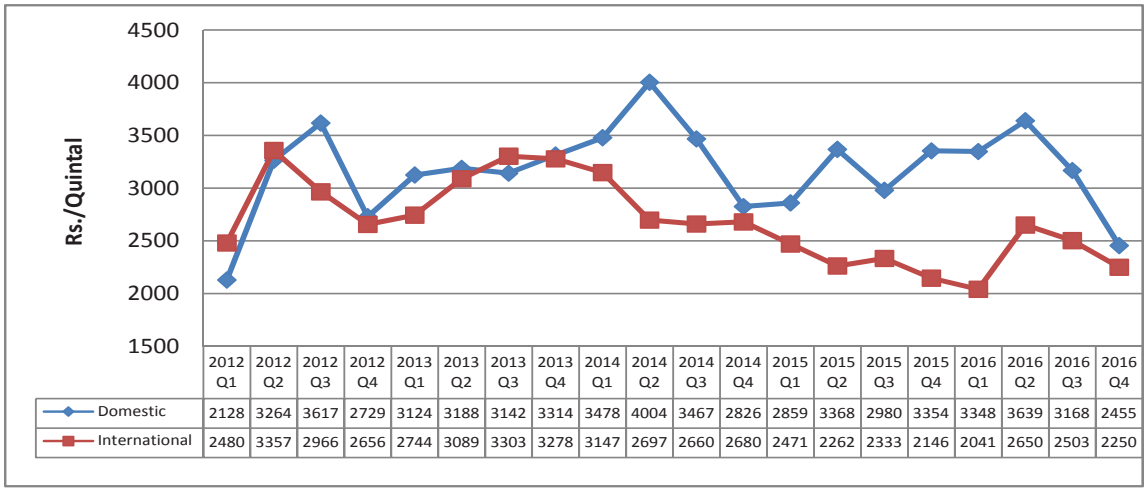
Chart 4.13: India's Exports of Soybean Meal, 2005-06 to 2015-16



	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	47.8	46.0	49.1	51.5	31.5	52.1	52.5	47.4	40.9	14.7	4.1
Value	4.3	4.5	6.8	8.8	6.4	9.3	9.9	14.2	13.8	4.8	1.5

Source: DGCIS

Chart 4.14: Domestic and International Prices of Soybean Meal, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
Domestic	2128	3264	3617	2729	3124	3188	3142	3314	3478	4004	3467	2826	2859	3368	2980	3354	3348	3639	3168	2455
International	2480	3357	2966	2656	2744	3089	3303	3278	3147	2697	2660	2680	2471	2262	2333	2146	2041	2650	2503	2250

Note: Argentina Pellets, Up River, FOB; IGC.

Source: The Solvent Extractors Association of India for domestic WS prices and USDA for International Prices.

Groundnut Complex

4.20 As per USDA, global production of groundnut was 40.5 million tonnes in TE2015-16, out of which 8 percent was traded. China, India, Nigeria and USA produce more than two-third of world production, with a share of 41.1 percent, 13.0 percent, 7.3 percent and 5.7 percent, respectively. The share of India, Argentina, USA and China in world export is 24.5 percent, 23.5 percent, 16.9 percent and 15.6 percent, respectively accounting for more than 80 percent of world exports. EU is the largest importer of groundnut with a share of 30.3 percent, followed by Indonesia (9.9 percent), China (9.0 percent) and Vietnam (8.9 percent). India's exports of groundnut have increased from 1.9 lakh tonnes in 2005-06 to 8.3 lakh tonnes in 2011-12 (Chart 4.15). However, exports of groundnut declined subsequently to 5.4 lakh tonnes in 2015-16.

Chart 4.15: India's Exports of Groundnut, 2005-06 to 2015-16

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	1.9	2.5	2.7	3.0	3.4	4.3	8.3	5.4	5.1	7.1	5.4
Value	0.5	0.8	1.1	1.2	1.4	2.2	5.2	4.1	3.2	4.7	4.1

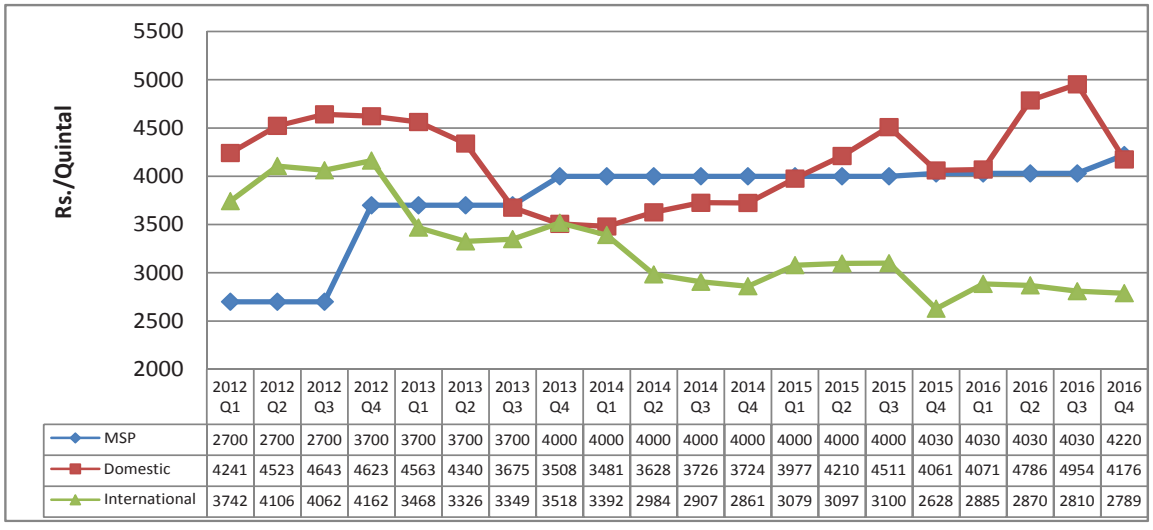
Source: DGCIS

4.21 Global production of groundnut oil was 5.5 million tonnes in TE2015-16 out of which only about 4 percent was traded. It shows that most of groundnut oil is produced mostly for self-consumption. China and India produce more than two-third of the total world production, with a share of 50.2 percent and 18.8 percent, respectively. China, EU and USA are the main importers of groundnut oil, whereas India, China, EU and USA export in small quantities.

4.22 It may be seen from Chart 4.16 that during 2012 to 2016, domestic prices of groundnut have been higher than international prices, except 2013 (Q_4). India's exports of groundnut are mainly to South-East Asian Countries, Gulf countries and to neighboring countries like Pakistan and Sri Lanka, where it has freight advantage in comparison to other competitors like Argentina and USA. MSP of groundnut,

which was lower than domestic prices during 2015 (Q_2) to 2016 (Q_3), has become higher than domestic prices as well as international prices. Domestic prices of groundnut oil have been continuously higher than international prices from 2014 (Q_4) onwards (Chart 4.17). However, domestic price fell below MSP in 2016 (Q_4), which necessitated government intervention.

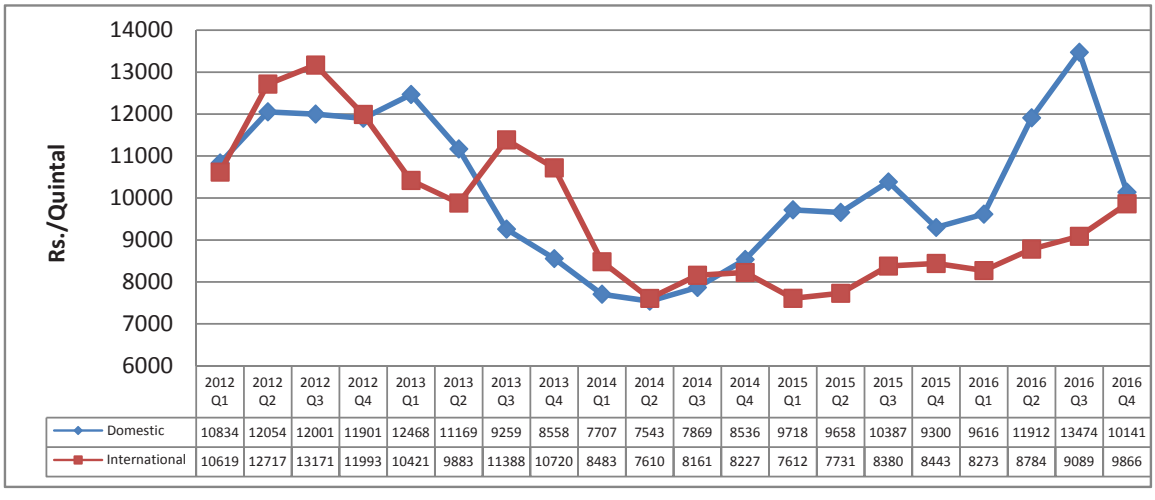
Chart 4.16: MSP, Domestic and International Prices of Groundnut, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	2700	2700	2700	3700	3700	3700	3700	4000	4000	4000	4000	4000	4000	4000	4000	4030	4030	4030	4030	4220
Domestic	4241	4523	4643	4623	4563	4340	3675	3508	3481	3628	3726	3724	3977	4210	4511	4061	4071	4786	4954	4176
International	3742	4106	4062	4162	3468	3326	3349	3518	3392	2984	2907	2861	3079	3097	3100	2628	2885	2870	2810	2789

Note: 1. US Farm Price, In shell.
2. Weighted wholesale price of AP, Gujarat, Karnataka, Rajasthan and TN, which cover 89 percent of production in 2016-17.
Source: DES for domestic wholesale prices and USDA for international price.

Chart 4.17: Domestic and International Prices of Groundnut Oil, 2012 to 2016



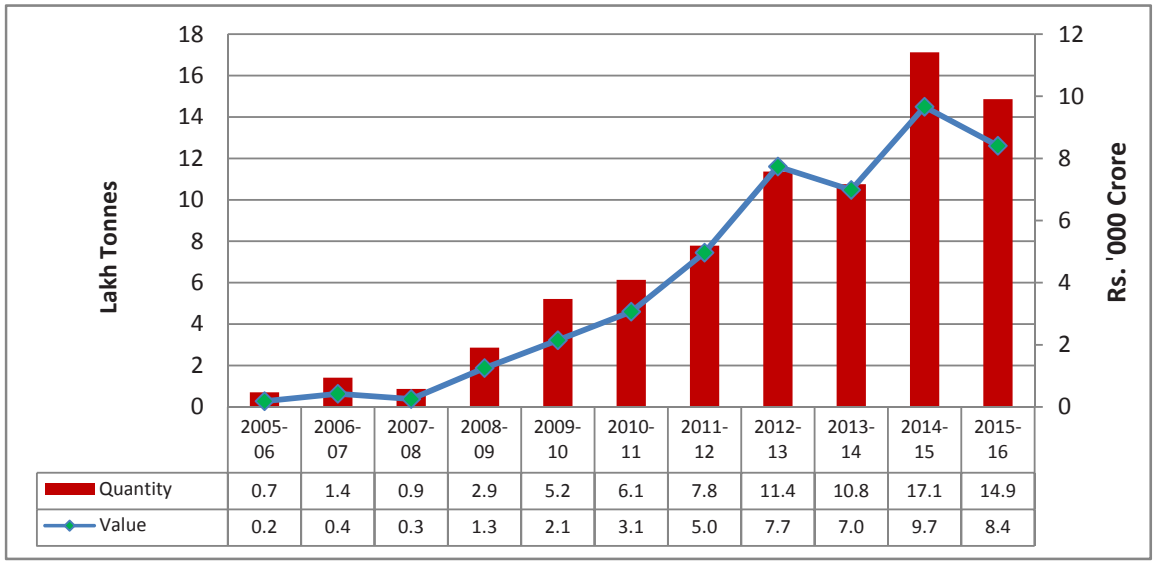
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
Domestic	10834	12054	12001	11901	12468	11169	9259	8558	7707	7543	7869	8536	9718	9658	10387	9300	9616	11912	13474	10141
International	10619	12717	13171	11993	10421	9883	11388	10720	8483	7610	8161	8227	7612	7731	8380	8443	8273	8784	9089	9866

Note: South East Mills FOB; Tank cars Crude; USDA.
Source: The Solvent Extractors Association of India for domestic WS prices and USDA for International Prices.
Sunflower Seed and Oil

4.23 Global production of sunflower seed, as per USDA, was 40.5 million tonnes in TE2015-16, out of which only 4.7 percent was traded. Ukraine and Russia produce more than half of total world production with a share of 27.6 percent and 23.0 percent, respectively. Other major producers are EU (21.0 percent) and Argentina (6.4 percent). EU is the largest exporter with a share of 29.5 percent followed by Argentina (7.8 percent), Russia (5.3 percent) and Ukraine (3.5 percent). Turkey is the largest importer with a share of 30.6 percent, followed by EU (25.5 percent) and Russia (5.2 percent). Global production of sunflower oil was 15.3 million tonnes in TE 2015-16, out of which more than 50 percent was traded. Ukraine, Russia and EU produce about three-fourth of total world production with a share of 30.7 percent, 23.2 percent and 20.4 percent, respectively. Ukraine and Russia accounts for about 75 percent of the global exports with a share of 54.0 percent and 20.6 percent respectively. India is the largest importer with a share of 23.1 percent followed by EU (16.4 percent) and Turkey (11.4 percent).

4.24 As per DGCIS, India exports small quantities of sunflower seed, whereas its imports are nil. Imports of sunflower oil have increased from a small quantity of 0.7 lakh tonnes in 2005-06 to 17.1 lakh tonnes in 2014-15, before declining to 14.9 lakh tonnes in 2015-16 (Chart 4.18).

Chart 4.18: India's imports of Sunflower Oil, 2005-06 to 2015-16



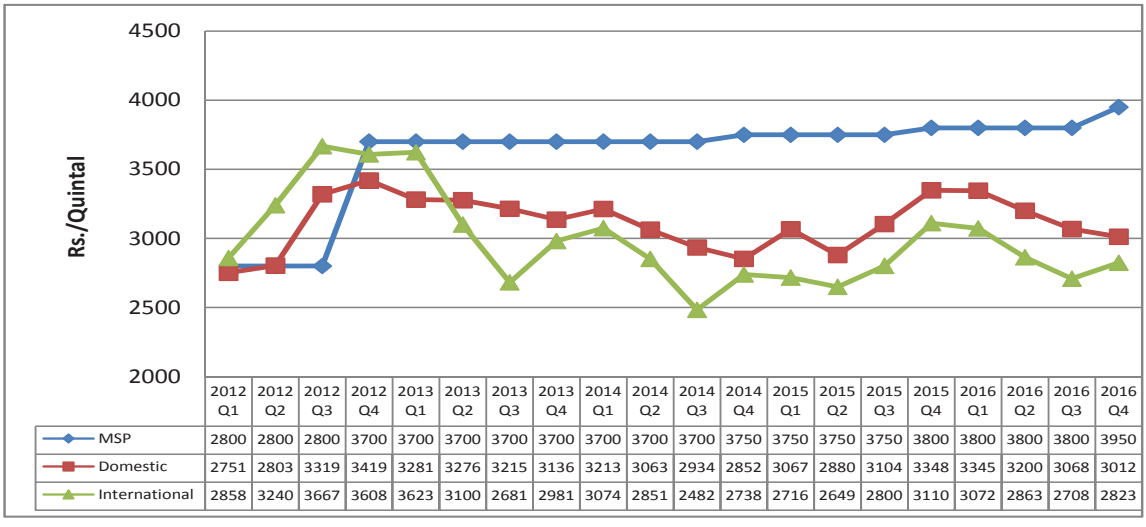
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	0.7	1.4	0.9	2.9	5.2	6.1	7.8	11.4	10.8	17.1	14.9
Value	0.2	0.4	0.3	1.3	2.1	3.1	5.0	7.7	7.0	9.7	8.4

Source: DGCIS

4.25 It may be seen from Chart 4.19 that domestic prices of sunflower seed have been continuously higher than international prices from 2013 (Q_2) onwards. MSP of

sunflower seed has been continuously higher than domestic as well as international prices from 2012 (Q_4) onwards. In case of sunflower oil, also domestic wholesale prices have been higher than international prices from 2012 (Q_4) onwards (Chart 4.20).

Chart 4.19: MSP, Domestic and International Prices of Sunflower Seed, 2012 to 2016



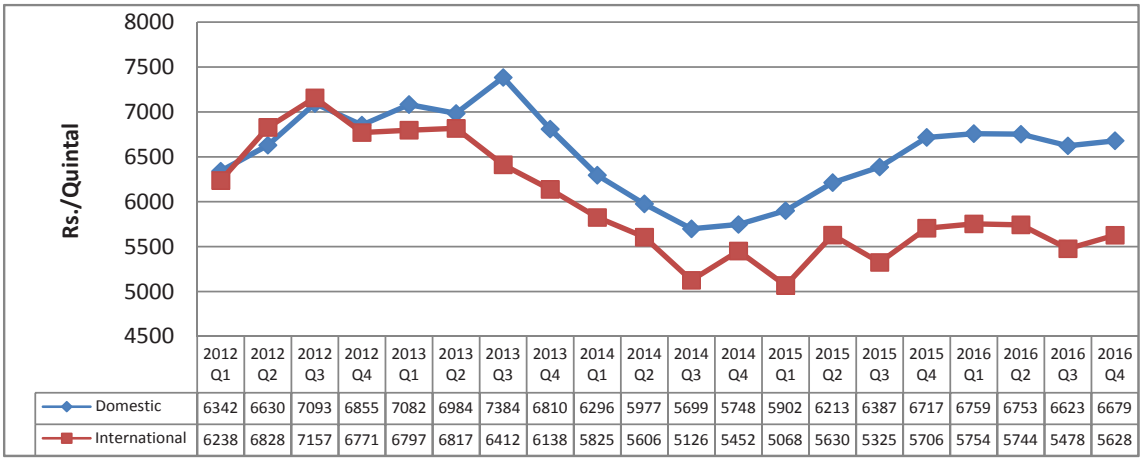
	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	2800	2800	2800	3700	3700	3700	3700	3700	3700	3700	3700	3750	3750	3750	3750	3800	3800	3800	3800	3950
Domestic	2751	2803	3319	3419	3281	3276	3215	3136	3213	3063	2934	2852	3067	2880	3104	3348	3345	3200	3068	3012
International	2858	3240	3667	3608	3623	3100	2681	2981	3074	2851	2482	2738	2716	2649	2800	3110	3072	2863	2708	2823

Note: 1. Rotterdam/Amsterdam CIF; EU; Oil World.

2. Weighted wholesale price of AP, Karnataka, Maharashtra and TN, which cover 60 percent of production in 2016-17, MSPs are inclusive of Bonus.

Source: DES for domestic wholesale prices and USDA for international prices.

Chart 4.20: Domestic and International Prices of Sunflower Oil, 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
Domestic	6342	6630	7093	6855	7082	6984	7384	6810	6296	5977	5699	5748	5902	6213	6387	6717	6759	6753	6623	6679
International	6238	6828	7157	6771	6797	6817	6412	6138	5825	5606	5126	5452	5068	5630	5325	5706	5754	5744	5478	5628

Note: EU FOB NW Euro; Oil World.

Source: The Solvent Extractors Association of India for domestic WS prices and USDA for International Prices.

Trade Policy – Oilseeds/Edible Oils

4.26 Exports of oilseeds are free while imports of oilseeds are under OGL with an import duty of 30 percent since January, 2003 subjects to quarantine condition. Edible oils were under negative list of imports till April, 1994 when imports of Palmolein were placed under OGL subject to 65 percent imports duty. Subsequently, import of other edible oils were also placed under OGL and import duty was as high as 80 percent on crude oil and 90 percent on refined edible oils during early-2000s but was reduced to zero percent on crude and 7.5 percent on refined edible oils in April, 2008. Import duty on crude edible oils was increased to 2.5 percent in January, 2013 which was further increased to 7.5 percent in December, 2014 and to 12.5 percent in September, 2015. Import duty on refined edible oils was also increased to 10 percent in January, 2014 which was further increased to 15 percent in December, 2014 and to 20 percent in September, 2015. However, import duty was reduced on crude palm oil to 7.5 percent and on refined palm oil to 15 percent from September, 2016. Tariff values for imports of edible oils were also raised on 31st January 2017. In order to improve self-sufficiency in edible oils, import duty needs to be linked to domestic production and international prices. Duty differential between crude and refined oil should be increased to discourage imports of refined oil and encourage domestic refining industry.

4.27 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) Caster 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 material) 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, (f) organic edible oils subject to export contracts being registered and certified as 'Organic' by APEDA, and (g) Rice Bran oil in bulk (irrespective of any pack size). In addition, export of edible oils in branded consumer packs of up to 5 kg is permitted with a Minimum Export Price (MEP) of US $ 900 per MT. India's trade policy for major Kharif crops is summarized in Table 4.1

Table 4.1: India's Trade Policy – Kharif Crops

Sl. No.	Crop/ Commodity	Trade Policy				
		Import Policy			Export Policy	
		OGL/ Import ban	Import duty (%)	Bound Duty (%)	OGL/ Export ban	Export duty (%)
A-Cereals						
1	Rice	OGL	(Rice in husk, Husked brown rice; Broken rice) – 80 (Semi-milled or Wholly milled rice)- 70	80 70	OGL	Zero
2	Maize	OGL	50	70	OGL	Zero
3	Jowar	OGL	80	80	OGL	Zero
B-Pulses						
4	Tur	OGL	Zero	100	Export ban [except (i) Kabuli chana (ii) 10000 tonnes per annum of organic pulses and lentils]	
5	Urad	OGL	Zero	100		
6	Moong	OGL	Zero	100		
C-Oilseeds/Edible Oils						
7	Soybean	Restricted@	30	100	OGL	Zero
8	Groundnut	Restricted@	30	100	OGL	Zero
9	Sunflower seed	OGL	30	100	OGL	Zero
10	Soybean oil (crude)	OGL	12.5	45	Export ban*	
11	Groundnut oil (crude)	OGL	12.5	300	Export ban*	
12	Sunflower oil (crude)	OGL	12.5	300	Export ban*	
13	Soybean Oil (refined)	OGL	20.0	45	Export ban*	
14	Groundnut oil (refined)	OGL	20.0	300	Export ban*	
15	Sunflower oil (refined)	OGL	20.0	300	Export ban*	
16	Soybean meal	OGL	Zero	100	OGL	Zero
D- Commercial Crops						
17	Cotton	OGL	Zero	100	OGL	Zero

Note: *@ Import permitted for sowing without a licence subject to the new Policy on Seed Development, 1988 and in accordance with import permit granted under Plant Quarantine (Regulation of Imports into India) Order, 2003.*

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

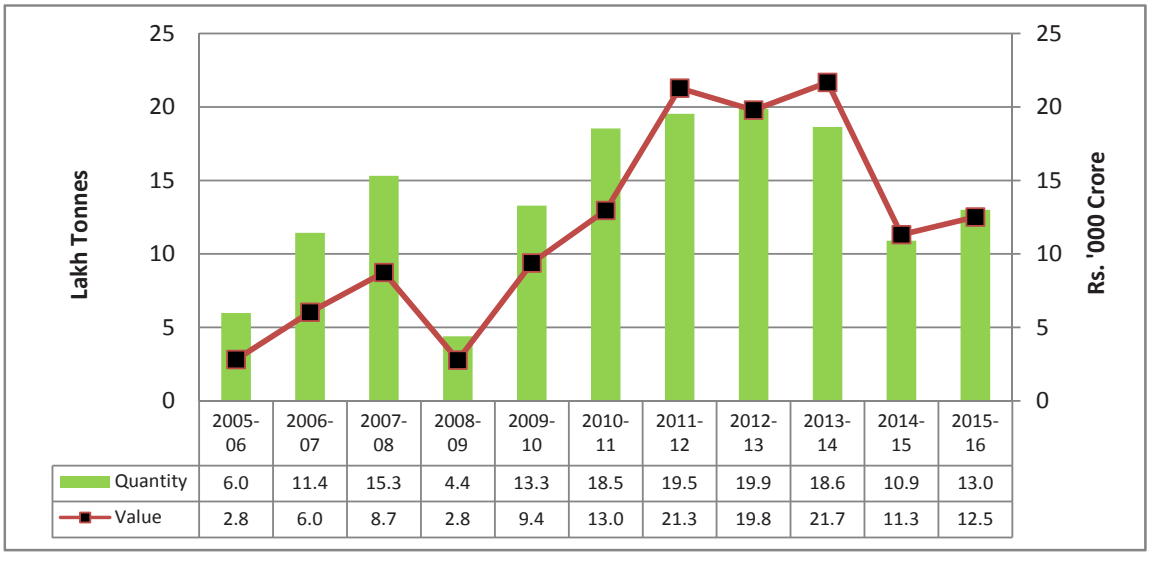
Source: *CBEC and DGFT*

Cotton

4.28 Global production of cotton has declined from 26 million tonnes in 2014-15 to 21 million tonnes in 2015-16. As per USDA, out of total production of 24.4 million tonnes in TE 2015-16, about one-third was traded. India and China produce more than half of world production with a share of 25.9 percent and 25.2 percent, respectively. Other major producers are USA (12.5 percent), Pakistan (8.1 percent) and Brazil (6.2 percent). USA is the largest exporter with a share of 27.7 percent, followed by India (17.2 percent), Brazil (9.4 percent) and Australia (9.1 percent). China is the largest importer with a share of 23.8 percent followed by Bangladesh (15.3 percent), Turkey (10.8 percent), Vietnam (10.6 percent) and Indonesia (8.2 percent).

4.29 India is the second largest exporter of cotton in the world. During the period from 2005-06 to 2015-16, India's exports of cotton have fluctuated between a low of 4.4 lakh tonnes in 2008-09 to a high of 19.9 lakh tonnes in 2012 -13 (Chart 4.21). Exports of cotton declined to 18.6 lakh tonnes in 2013-14 and 10.9 lakh tonnes in 2014-15 but increased to 13 lakh tonnes in 2015-16. The main reason for decline in exports of cotton in 2014-15 was steep decline in import demand from China due to slow down in Chinese economy and government's desire to reduce cotton reserve stocks. Domestic prices of cotton (raw) have generally followed the trend of international prices (Chart 4.22). MSP of cotton (raw) has been lower than domestic as well as international prices during 2012 to 2016.

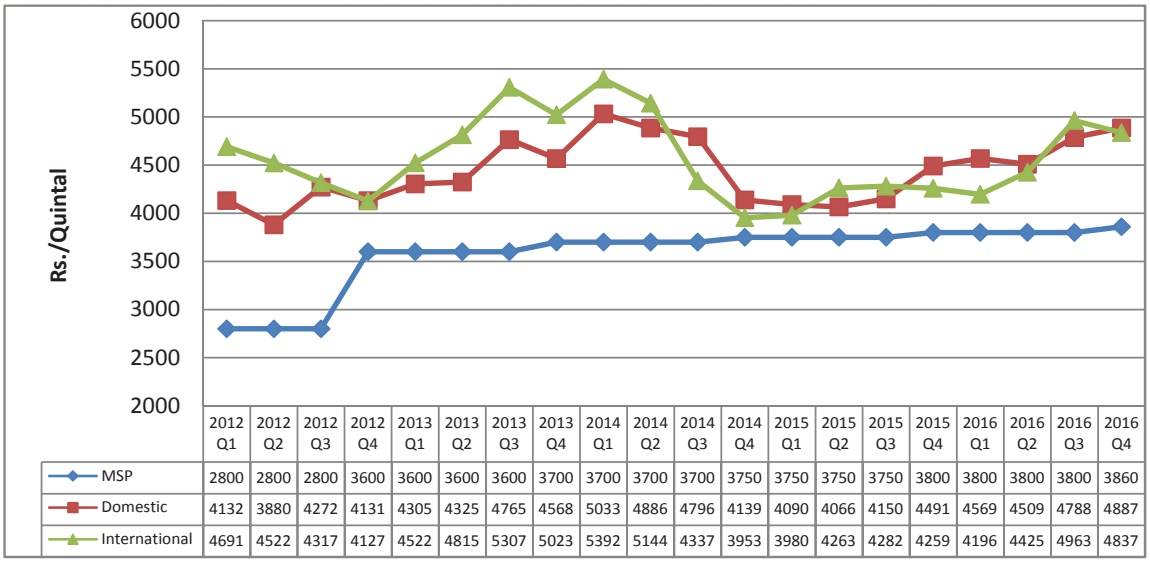
Chart 4.21: India's Exports of Cotton, 2005-06 to 2015-16



	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Quantity	6.0	11.4	15.3	4.4	13.3	18.5	19.5	19.9	18.6	10.9	13.0
Value	2.8	6.0	8.7	2.8	9.4	13.0	21.3	19.8	21.7	11.3	12.5

Source: DGCIS

Chart 4.22: MSP, Domestic and International Prices of Cotton (Raw), 2012 to 2016



	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4
MSP	2800	2800	2800	3600	3600	3600	3600	3700	3700	3700	3700	3750	3750	3750	3750	3800	3800	3800	3800	3860
Domestic	4132	3880	4272	4131	4305	4325	4765	4568	5033	4886	4796	4139	4090	4066	4150	4491	4569	4509	4788	4887
International	4691	4522	4317	4127	4522	4815	5307	5023	5392	5144	4337	3953	3980	4263	4282	4259	4196	4425	4963	4837

Note: *1. Cotton (Cotton Outlook "Cotlook A index"), middling 1-3/32 inch, traded in Far East, C/F beginning 2006; previously Northern Europe, c.i.f.*
2. Weighted wholesale price of AP, Gujarat, Haryana and Karnataka, which cover 50 percent of production in 2016-17.

Source: *DES for domestic wholesale prices and World Bank for international prices.*

4.30 Quantitative restrictions (QRs) on export of cotton were removed by the Government in July, 2001 and its exports were placed under OGL. To curb the rising price trend in the domestic market, the Government imposed export duty of ₹ 2500 per tonne on raw cotton in April, 2010 to avoid disruption in supply chain of cotton in the country till the end of cotton season 2009-10. Cotton exports were placed on restricted category in May, 2010 but exports were allowed at zero export duty in August, 2010 with the restrictions that the contracts for exports are registered with DGFT prior to shipment. Cotton exports are currently free and the registration requirement for export of cotton has been dispensed with vide Notification dated 08.12.2014. Import of cotton was placed under OGL in April 1994. Import duty of 5 percent was levied on import of cotton in March 1999 which was increased to 10 percent in January 2002 in order to avoid imports of cheaper cotton. However, import duty was reduced to zero in July 2008, which continues to be at the same level.

Trade Outlook

4.31 As per FAO's forecast in March 2017, world trade in cereals is predicted to be below the 2015-16 level, mainly driven by a sharp reduction in trade of coarse cereals, while trade of rice is expected to expand. International trade in rice in 2017 is forecast

to increase by 4 percent and India and Vietnam are expected to benefit. Oilseeds complex has experienced upward movement in price in January 2017 and palm oil prices are expected to be high in coming months due to low inventory levels and slow recovery in production. Prices of soybean and sunflower oil are expected to decline on expectation of increase in global supplies. World cotton trade is forecast to reach 36.7 million bales, 1.1 percent higher than the last year and stocks to be lower by 7.7 percent, indicating higher prices in the coming months.

4.32 India's agri-exports have marginally increased by 1.3 percent from ₹ 165.2 thousand crores in 2015-16 (April-December) to ₹ 167.4 thousand crores in 2016-17 (April-December). Agri-imports have increased from ₹ 125.1 thousand crores to ₹ 135.1 thousand crores with a growth rate of 8 percent during the corresponding period mainly due to increase in imports of wheat, cotton (raw), sugar, spices, pulses and edible oils. Exports of marine products (25.0 percent), spices (12.5 percent), sugar (6.6 percent), fresh vegetables (5.6 percent) and oil meals (3.4 percent) have increased in 2016-17 (April-December). Major exports which declined during 2016-17 (April-December) are cotton (37.4 percent), guargum meal (19.2 percent), rice (7.5 percent), meat and processed meat (4.2 percent). Imports of major agri-commodities that have increased in 2016-17 (April-December) include wheat (224.7 percent), cotton (158.1 percent), sugar (78.7 percent), spices (8.7 percent), pulses (5.9 percent) and edible oils (3.0 percent). Major agri-commodities for which imports declined are cashew (7.7 percent), wood and wood products (7.5 percent) and fresh fruits (4.9 percent). India's agri-exports in 2016-17 are likely to increase slightly compared with 2015-16 mainly due to lack of robust demand for agricultural commodities because of global slowdown. Agri-imports in 2016-17 are likely to increase due to widening of gap between production and consumption of edible oils, pulses and demand for exotic varieties of fresh fruits. There has been increase in demand for better quality wheat and long staple cotton, so imports of these commodities are likely to increase during this period.

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Chapter 5

Costs, Returns and Inter-Crop Price Parity

5.1 Cost of production (CoP) is an important factor in the determination of Minimum Support Prices (MSP) of the agricultural crops. Besides cost, the Commission considers other important factors such as demand and supply situation, trends in domestic and international prices, inter-crop price parity, terms of trade between agricultural and non-agricultural sectors and likely impact of MSP on consumers and overall economy, in addition to rational utilization of scarce natural resources like land and water. Thus, pricing policy is rooted not only in the "cost plus approach" though cost is one of the important factors.

5.2 The Commission uses the cost estimates provided by the Directorate of Economics & Statistics (DES), Ministry of Agriculture and Farmers Welfare, under Comprehensive Scheme (CS) for studying the Cost of Cultivation of Principal Crops in India. Since CS data are generally available with a time lag of three years in case of kharif crops, these need to be projected for ensuing season i.e. 2017-18. These projected cost estimates are factored into formulation of price policy recommendations by the Commission.

5.3 The projected CoP estimates of 14 crops for kharif season 2017-18 are based on actual estimates for the latest three years *viz*. 2012-13 to 2014-15 but for some states actual estimates are available for two years and for some states for one year. The availability of data for some states for one or two years is due to change in selection of sample (states) for different crops in the block period 2014-17 under CS Scheme. These projections capture change in overall input cost separately for the season 2017-18 over each of the past three years *viz*. 2012-13, 2013-14 and 2014-15 as per availability of data. An assessment of likely change in input cost for the season 2017-18 with reference to each of the above mentioned three

consecutive years is made by constructing the Composite Input Price Index (CIPI) based on the latest prices of different inputs like human labour, bullock labour, machine labour, manures, fertilizers, seeds, pesticides and irrigation charges as per data available from Labour Bureau, State governments, Office of the Economic Adviser, Ministry of Commerce and Industry, Fertilizer Association of India (FAI) etc. Based on CIPI thus constructed, the Commission projected CoP for KMS 2017-18.

5.4 The Commission undertakes cost projections on the basis of latest three years' cost estimates for each state under certain implicit assumptions. One, since projections for each crop grown in a state are made three years ahead, it is assumed that fixed cost components would not, in all likelihood, undergo any significant change in the intervening period. Two, since yield level varies from year to year due to multiplicity of factors, projections of cost for the last three years, latest being 2014-15, have been undertaken for each state to smoothen out erratic fluctuations in yield and hence in cost of production.

Costs and Returns of Kharif Crops, TE2014-15

5.5 Before giving cost projections, the Commission first examines the actual costs and returns of the crops, for which latest CS data is available from the DES. It is pertinent to point out that the gross value of output is estimated at the prevailing market prices during harvest season in the village/cluster of villages where the crop is grown and harvested. With this stipulation, an analysis of profitability and rate of return over costs A_2, A_2+FL and C_2 for the mandated crops during TE2014-15 is presented.

5.6 Profitability of a crop can be examined from three perspectives. First, gross returns over cost A_2, which is defined as gross value of output (GVO) less cost A_2, second is gross returns over A_2+FL, which is defined as GVO less cost A_2+FL and third is net returns, which represent GVO less cost C_2. The average returns (both gross and net) of various kharif crops for TE2014-15 are presented in Table 5.1 and Chart 5.1. It may be seen from Table 5.1 that the gross returns over A_2 and A_2+FL are positive for all kharif crops while the net returns over C_2 are positive in all kharif crops, except jowar, bajra, ragi, sunflower and nigerseed. The average gross returns over A_2 varied from 46 percent in ragi to 214 percent in sesamum. Likewise, average gross returns over A_2+FL range from 4 percent in ragi to 103 percent in sesamum. The net returns were the highest (₹ 8347) in case of sesamum, followed by tur (₹ 6585) and groundnut (₹ 6092). The net returns were negative in respect of ragi,

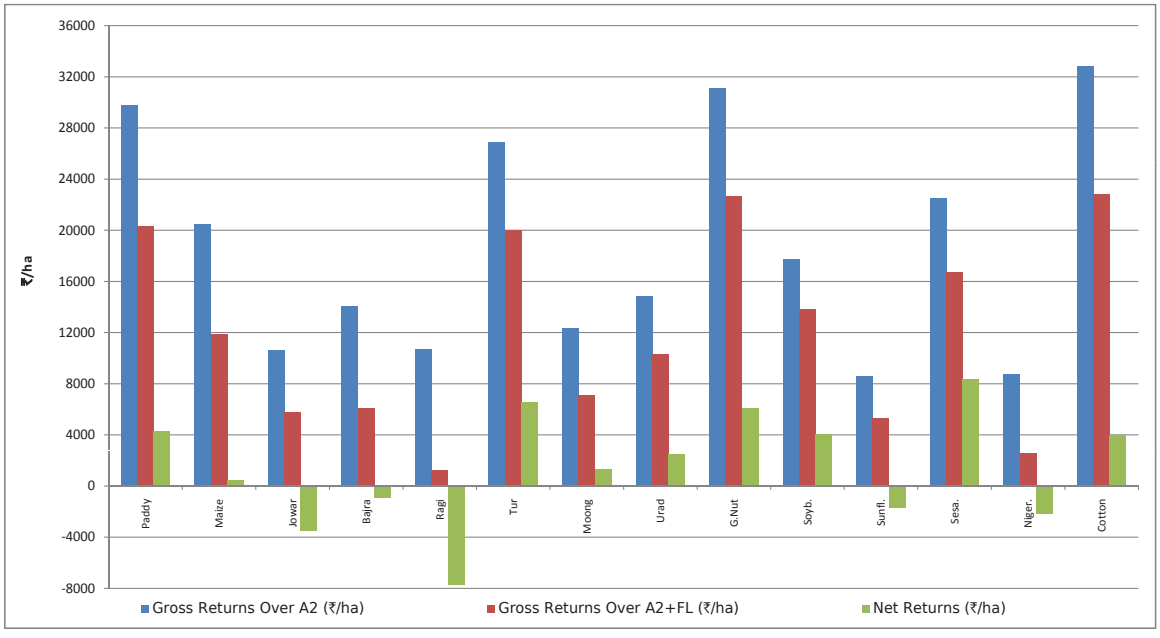
jowar, bajra, sunflower and nigerseed. This implies that there is a need to improve yields of these crops through appropriate research and extension strategies. The state-wise details of average returns are given in Annex Table 5.1.

Table 5.1: Gross and Net Returns of Kharif Crops, TE2014-15

Crop	Cost A_2	Cost A_2+FL	Cost C_2	GVO	Gross Returns over A_2		Gross Returns over A_2+FL		Net Returns	
	₹/ha				₹/ha (Col.5-Col.2)	Percent (Col.6/Col.2)*100	₹/ha (Col.5-Col.3)	Percent (Col.8/Col.3)*100	₹/ha (Col.5-Col.4)	Percent (Col.10/Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A. Cereals										
Paddy	28,039	37,451	53,538	57,803	29,764	106	20,352	54	4,265	8
Maize	21,262	29,858	41,271	41,732	20,470	96	11,874	40	461	1
Jowar	18,818	23,685	32,947	29,474	10,656	57	5,790	24	-3,473	-11
Bajra	11,627	19,589	26,587	25,657	14,031	121	6,068	31	-930	-3
Ragi	23,189	32,690	41,602	33,914	10,724	46	1,223	4	-7,688	-18
B. Pulses										
Arhar (Tur)	21,723	28,546	42,002	48,586	26,864	124	20,041	70	6,585	16
Moong	11,295	16,505	22,321	23,612	12,316	109	7,106	43	1,290	6
Urad	12,048	16,562	24,372	26,863	14,815	123	10,301	62	2,491	10
C. Oilseeds										
Groundnut	35,751	44,157	60,758	66,851	31,099	87	22,693	51	6,092	10
Soybean	20,408	24,319	34,112	38,147	17,739	87	13,827	57	4,035	12
Sunflower	15,777	19,024	26,027	24,359	8,582	54	5,336	28	-1,668	-6
Sesamum	10,522	16,270	24,655	33,002	22,480	214	16,732	103	8,347	34
Nigerseed	5,944	12,129	16,827	14,670	8,726	147	2,541	21	-2,157	-13
D. Commercial Crop										
Cotton	40,802	50,837	69,664	73,618	32,817	80	22,782	45	3,954	6

Source: CACP, using CS data.

Chart 5.1: Gross and Net Returns of Kharif Crops, TE2014-15



Source: CACP Calculations.

Agricultural Wages and Input Price Movement

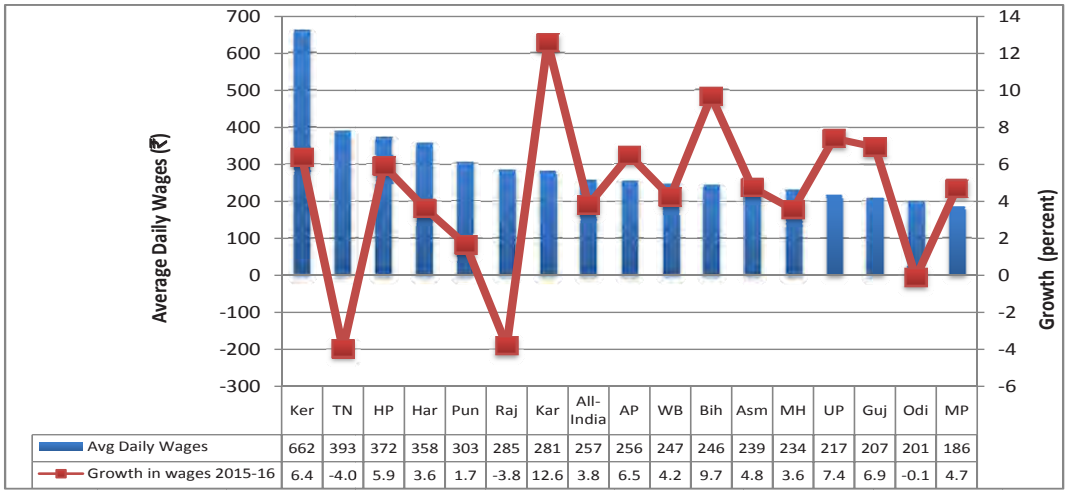
5.7 Table 5.2 presents annual average growth in wage rates of agricultural labour in nominal and real terms (2015-16=100) in major states and at all-India level during 2013-14 to 2015-16. At all-India level, agricultural labour wages increased by 18.7 percent in 2013-14, 12.8 percent in 2014-15 and 3.8 percent in 2015-16 at current prices. The increase in real wages was 8 percent, 6.9 percent and (-) 1.4 percent in corresponding years. This reflects a declining trend in growth of agricultural labour wages in nominal and real terms over the last three years. Further, Chart 5.2 reflects annual average daily wages of agricultural labour in 2015-16 and growth in wages during 2015-16 over 2014-15. The state-wise and all-India details of monthly average daily wage rates of agricultural labour in nominal terms of major crop growing states are given in Annex Table 5.2.

Table 5.2: Annual Average Growth in Wages of Agricultural Labour

State	Growth (%) at Current Prices			Growth (%) at Constant Prices (2015-16=100)		
	2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
Andhra Pradesh	4.5	7.3	6.5	-6.5	0.7	0.0
Assam	26.3	22.2	4.8	16.5	14.6	2.9
Bihar	23.9	16.2	9.7	10.6	11.8	8.5
Gujarat	23.9	21.6	6.9	10.7	14.9	0.3
Haryana	35.6	7.3	3.6	23.5	0.4	0.0
Himachal Pradesh	24.6	9.0	5.9	11.7	2.3	1.2
Karnataka	26.3	9.1	12.6	14.7	2.7	4.0
Kerala	19.9	11.4	6.4	3.4	2.4	1.9
Madhya Pradesh	20.0	18.1	4.7	12.7	15.7	0.1
Maharashtra	16.4	5.9	3.6	10.0	-1.1	-2.2
Odisha	21.6	18.8	-0.1	7.5	11.0	3.0
Punjab	8.8	3.7	1.7	0.0	-1.1	-2.1
Rajasthan	14.6	17.8	-3.8	4.4	11.3	-8.5
Tamil Nadu	29.1	23.9	-4.0	15.5	14.7	-11.6
Uttar Pradesh	17.9	6.9	7.4	6.8	3.5	0.8
West Bengal	24.2	9.1	4.2	11.4	5.5	3.4
All-India	**18.7**	**12.8**	**3.8**	**8.0**	**6.9**	**-1.4**

Note: Average is from July to June.
Source: Labour Bureau, Shimla.

Chart 5.2: Average Daily Wages of Agricultural Labour 2015-16 and Growth in Wages 2015-16 over 2014-15

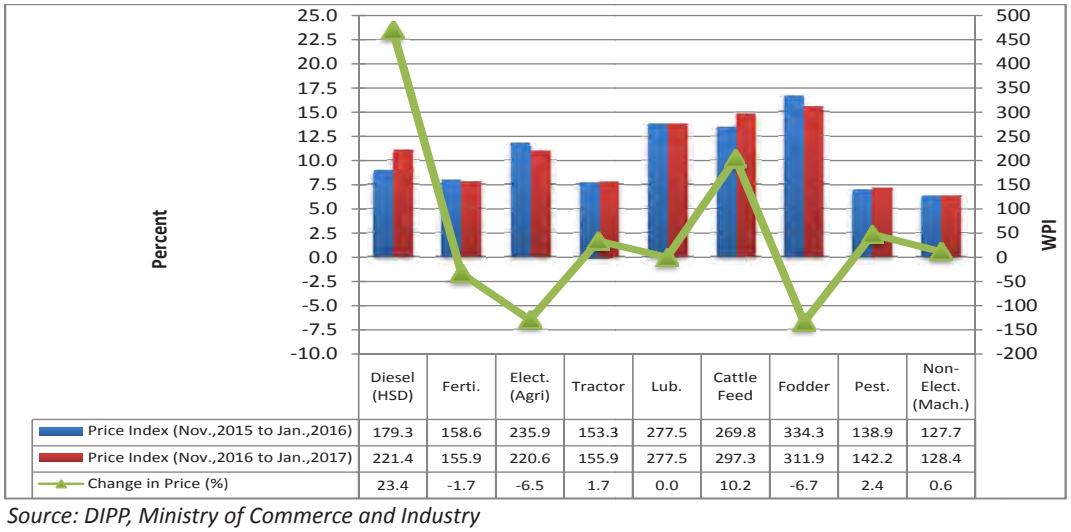


	Ker	TN	HP	Har	Pun	Raj	Kar	All-India	AP	WB	Bih	Asm	MH	UP	Guj	Odi	MP
Avg Daily Wages	662	393	372	358	303	285	281	257	256	247	246	239	234	217	207	201	186
Growth in wages 2015-16	6.4	-4.0	5.9	3.6	1.7	-3.8	12.6	3.8	6.5	4.2	9.7	4.8	3.6	7.4	6.9	-0.1	4.7

Source: Labour Bureau, Shimla

5.8 Chart 5.3 presents trends in prices of farm inputs (based on WPI 2004-05=100) during November 2016 to January 2017 over November 2015 to January 2016. The chart shows that prices of HSD, tractors, cattle feed, pesticides and non-electrical machinery have increased in the range of 0.6 percent to 23.4 percent, while prices of fertilizers, fodder and electricity for agriculture have declined in the range of 1.7 percent to 6.7 percent. In case of lubricants, there was no change in the price during the corresponding period (details in Annex Table 5.3).

Chart 5.3: Movements in Prices of Farm Inputs
(Nov. 2016 to Jan. 2017 over Nov. 2015 to Jan. 2016)



	Diesel (HSD)	Ferti.	Elect. (Agri)	Tractor	Lub.	Cattle Feed	Fodder	Pest.	Non-Elect. (Mach.)
Price Index (Nov.,2015 to Jan.,2016)	179.3	158.6	235.9	153.3	277.5	269.8	334.3	138.9	127.7
Price Index (Nov.,2016 to Jan.,2017)	221.4	155.9	220.6	155.9	277.5	297.3	311.9	142.2	128.4
Change in Price (%)	23.4	-1.7	-6.5	1.7	0.0	10.2	-6.7	2.4	0.6

Source: DIPP, Ministry of Commerce and Industry

Cost Projections for KMS 2017-18

5.9 Based on the state-wise costs and CIPI, crop-wise cost of cultivation is projected. Then cost of production is then obtained by using 5-year olympic average yield. Subsequently, all-India weighted average cost of production with weights being shares of states in the national production in TE2015-16, has been projected for KMS 2017-18 (Table 5.3).

Table 5.3: Projected Costs of Production of Mandated Crops during Kharif Marketing Season, 2017-18

(₹/qtl)

Crops	Cost of Production		
	A_2	A_2+FL	C_2
Paddy	840	1117	1484
Jowar	1214	1556	2089
Bajra	571	949	1278
Maize	761	1044	1396
Ragi	1384	1861	2351
Arhar (Tur)	2463	3318	4612
Moong	2809	4286	5700
Urad	2393	3265	4517
Groundnut	2546	3159	4089
Soybean	1787	2121	2921
Sunflower	2933	3481	4526
Sesamum	2685	4067	5706
Nigerseed	1788	3912	5108
Cotton	2622	3276	4376

Source: CACP Calculations.

The state-wise and all-India projected costs of 14 kharif crops covered under MSP for KMS 2017-18 are given in Annex Table 5.4. Also state-wise actual costs for 2012-13 to 2014-15 are given in Annex Tables 5.5a to 5.5n.

Comparison of Projected Cost Estimates with State Estimates

5.10 The Commission has made a comparison of its projected costs of mandated kharif crops with those provided by some states for few crops for KMS 2017-18. The projected cost estimates of states and CACP for various kharif crops are

given in Annex Table 5.6. The estimated cost of cultivation for fixation of MSP for kharif 2017-18 for all the major kharif crops is provided by Andhra Pradesh and Telangana states, Odisha for paddy, Bihar for paddy and maize and Punjab for paddy and cotton. It was observed that in case of paddy in Andhra Pradesh, the main reason for difference between the state projections and CACP projections based on CS data are lower yield levels reported by the State. In case of soybean, sesamum and cotton both Andhra Pradesh and Telangana have reported lower yields as compared to CS yields. Labour charges including human, bullock and machine labour provided by states are generally on the higher side. States have also included 10 percent managerial cost over C_2, which has resulted in higher cost estimates by states. For Bihar, CoP estimates for paddy and maize are higher than CACP projections due to same reasons as for the states of Andhra Pradesh and Telangana. Bihar has also included interest on land @ 5 percent and land development cost in overhead cost. For Odisha, the major points of discrepancies between the two sets of data in projected CoC of paddy are higher labour charges including human, bullock and machine labour and the expenditure on fertilizer and manure. Punjab has used the cost of cultivation data and then projected it for KMS 2017-18. However, in some crops, the state estimates are lower than the corresponding CACP projections. It may also be mentioned that State Governments have considered various other charges such as 25 percent farmer's margin, 10 percent weather risk, 25 percent profit over and above the projected cost of production, which are not included in the CACP estimates.

5.11 The Commission computes all-India weighted average and composite index of all the crops for the years 2014-15 to 2017-18. For this, on the basis of state-wise indices, an all India crop-wise weighted average input price index for all inputs, with weights being relative shares of the states in total crop area in TE2015-16 has been calculated. These indices are used to compute all-India weighted average composite input price index for kharif crops, with weights being relative shares of the crops in the total production (TE2015-16). It may be observed from Table 5.4 that the all-India kharif crops CIPI is showing an upward trend with an increase of 3.9 percent in 2017-18 over 2016-17.

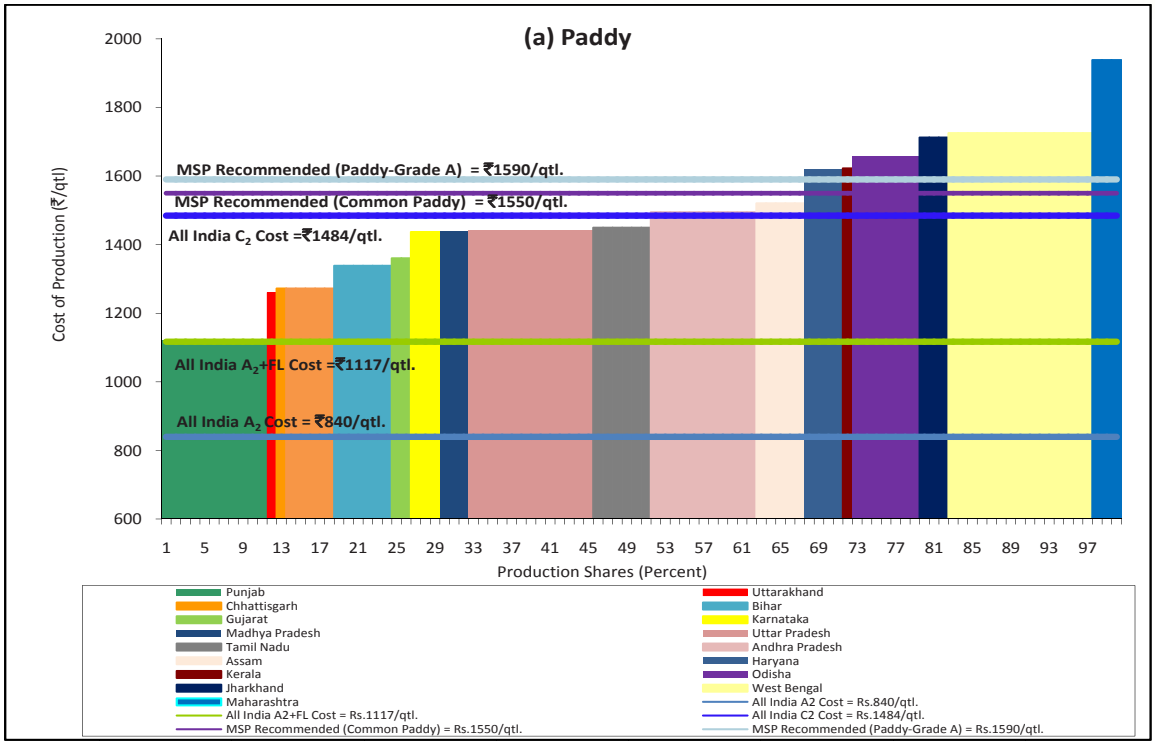
Table 5.4: All-India Kharif Crops Input Price Index (Base 2004-05 = 100)

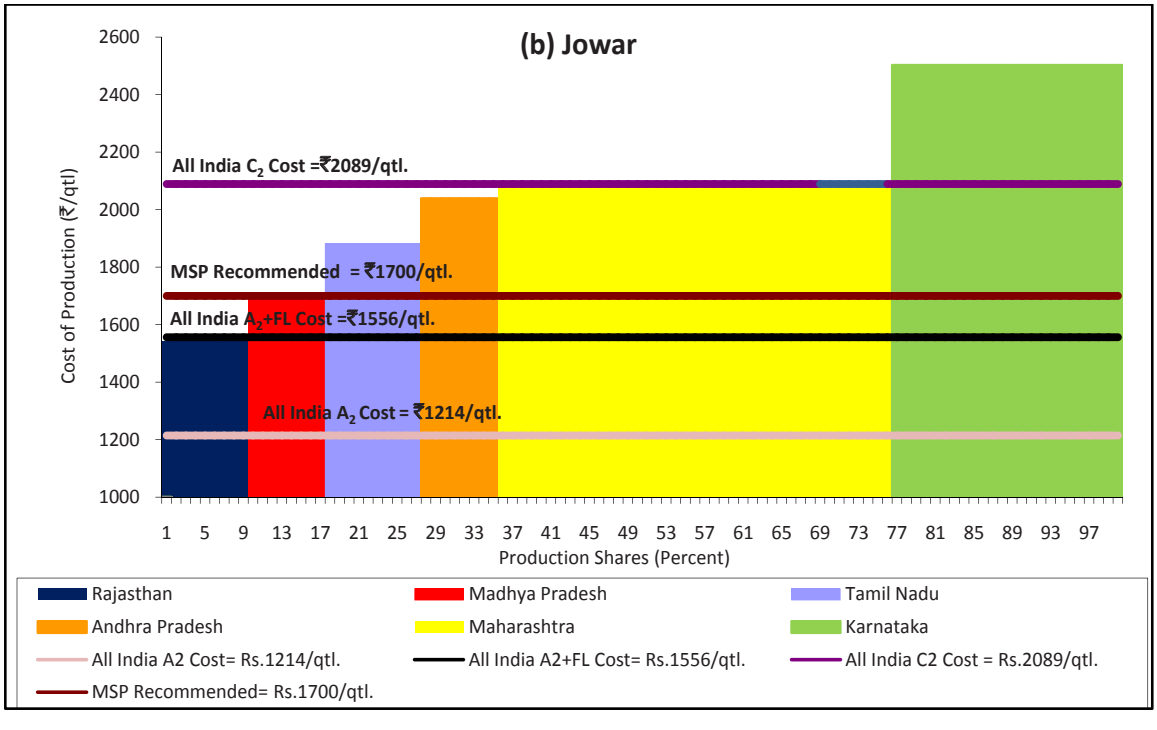
Inputs	Weights (2014-15)	Crops Input Price Index (CIPI)				Percentage Change in Input Price Index 2017-18 over 2016-17
		2014-15	2015-16	2016-17	2017-18	
Human Labour (HL)	0.53	391.56	408.51	425.28	442.89	4.1
Bullock Lobour (BL)	0.06	309.07	328.02	335.13	342.39	2.2
Machine Labour (ML)	0.13	209.89	183.05	205.72	216.47	5.2
Seeds	0.08	312.32	322.24	332.39	343.04	3.2
Fertilizers	0.10	164.45	168.81	173.28	177.89	2.7
Manures	0.03	300.78	309.92	318.97	328.34	2.9
Insecticides	0.03	135.90	138.28	140.71	146.42	4.1
Irrigation Charges	0.04	153.71	157.01	160.38	163.83	2.2
Composite Input Price Index (CIPI)		**313.27**	**321.50**	**335.49**	**348.52**	**3.9**
Percentage Change (year-on-year)		**---**	**2.6**	**4.4**	**3.9**	**---**

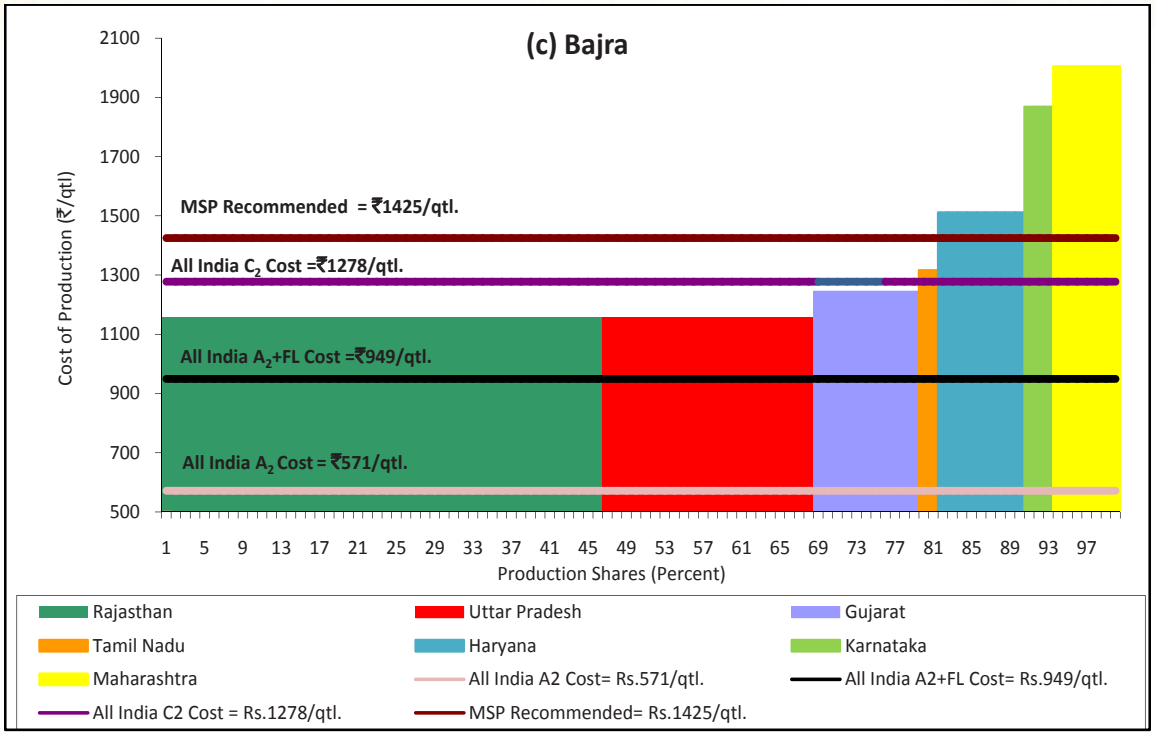
Source: CACP Calculations

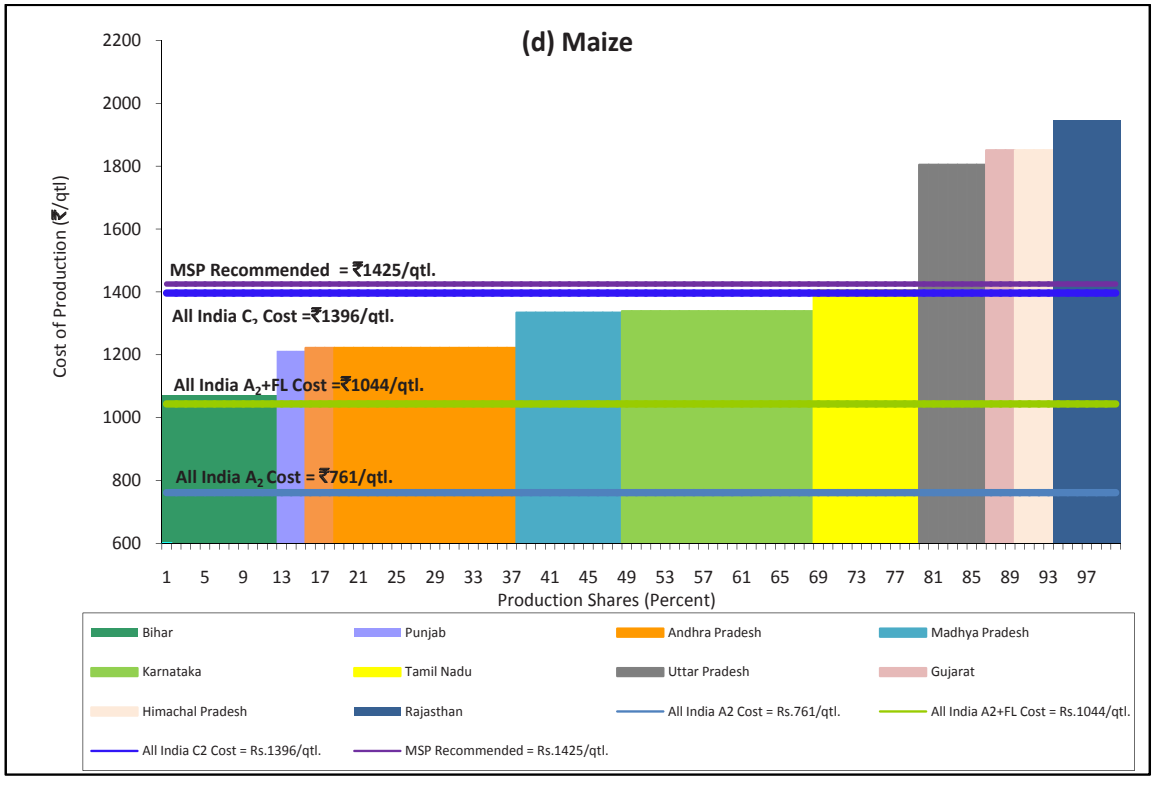
5.12 Charts 5.4 (a) to (m) depict the cost of production (C_2) by states in ascending order of the cost with their corresponding relative shares in total production of respective crops. It may be noted that percentage of production covered by the all-India weighted average cost of production and MSP vary from crop to crop. For example, the extent of production covered at C_2 cost is 51 percent in paddy, 45 percent in cotton, 68 percent in maize, 47 percent in arhar (tur), 28 percent in groundnut and 58 percent in soybean. It may be noted that the share of production covered at MSP over C_2 cost are 68 percent in case of paddy (common and grade A), 45 percent in case of cotton (long staple), 40 percent in case of cotton (medium staple), 79 percent in case of maize, 86 percent in case of arhar (tur), 81 percent in case of groundnut and 58 percent in case of soybean.

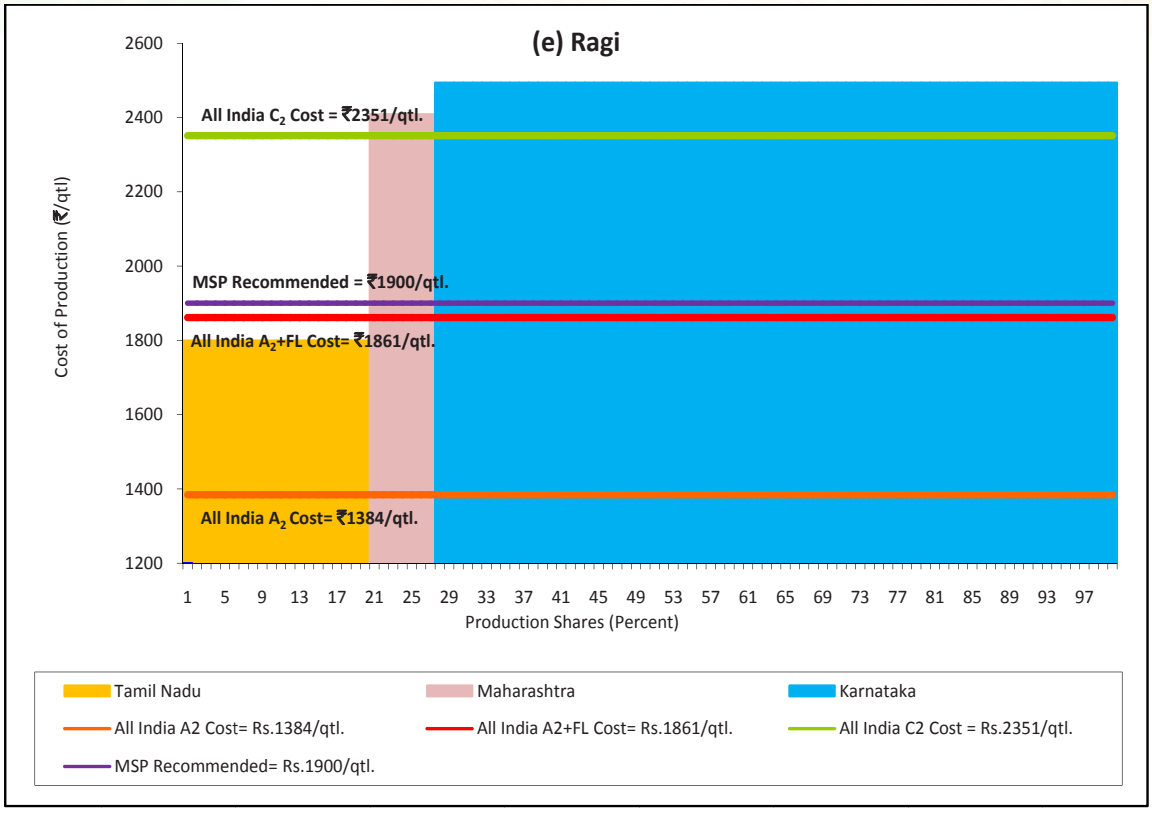
Chart 5.4: Supply Curve and Projected Costs, KMS 2017-18

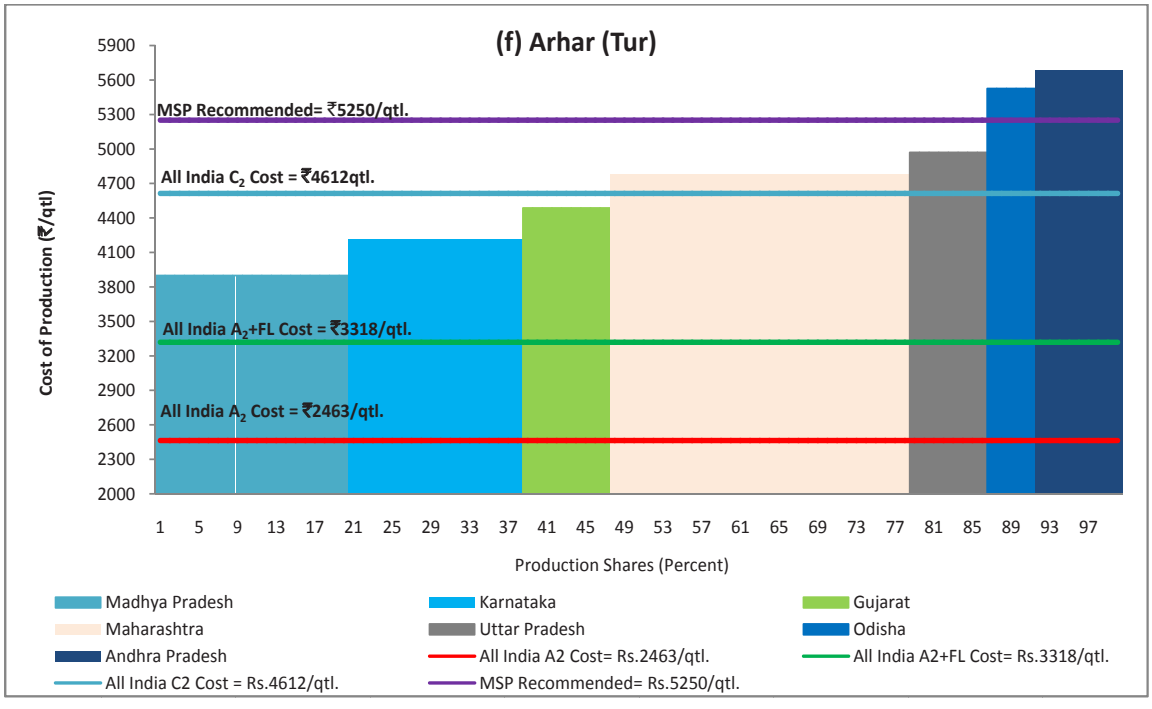


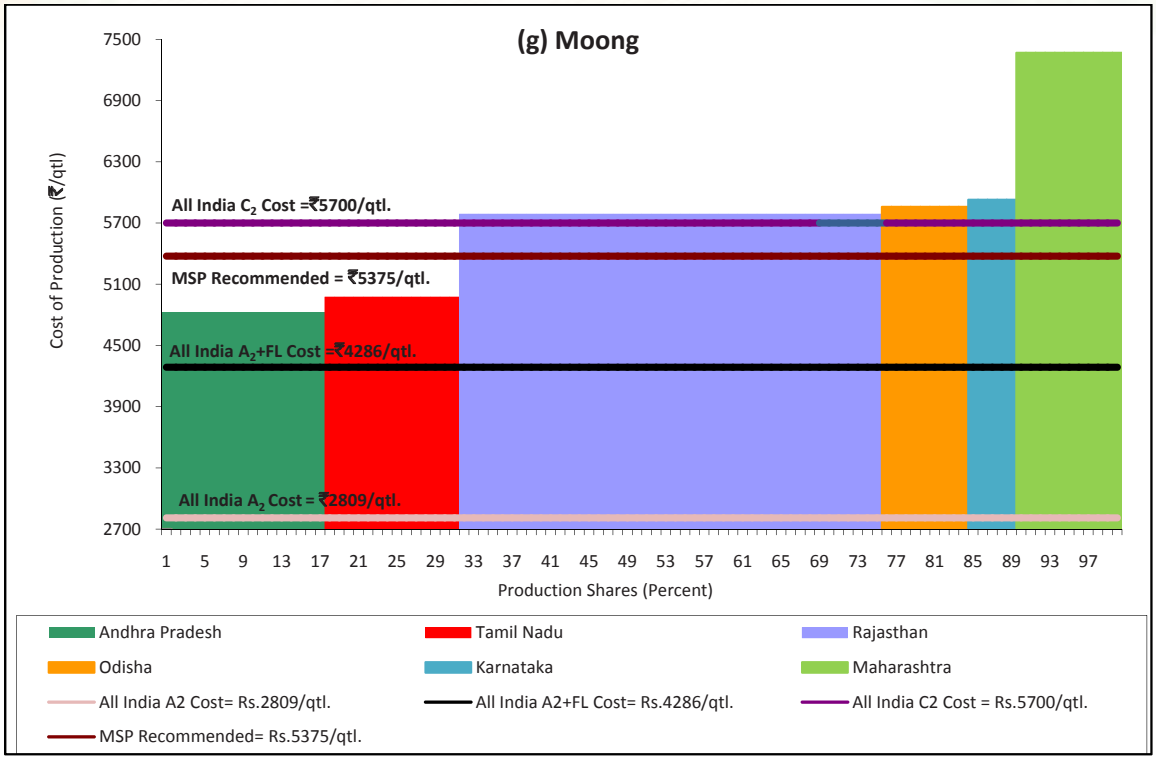


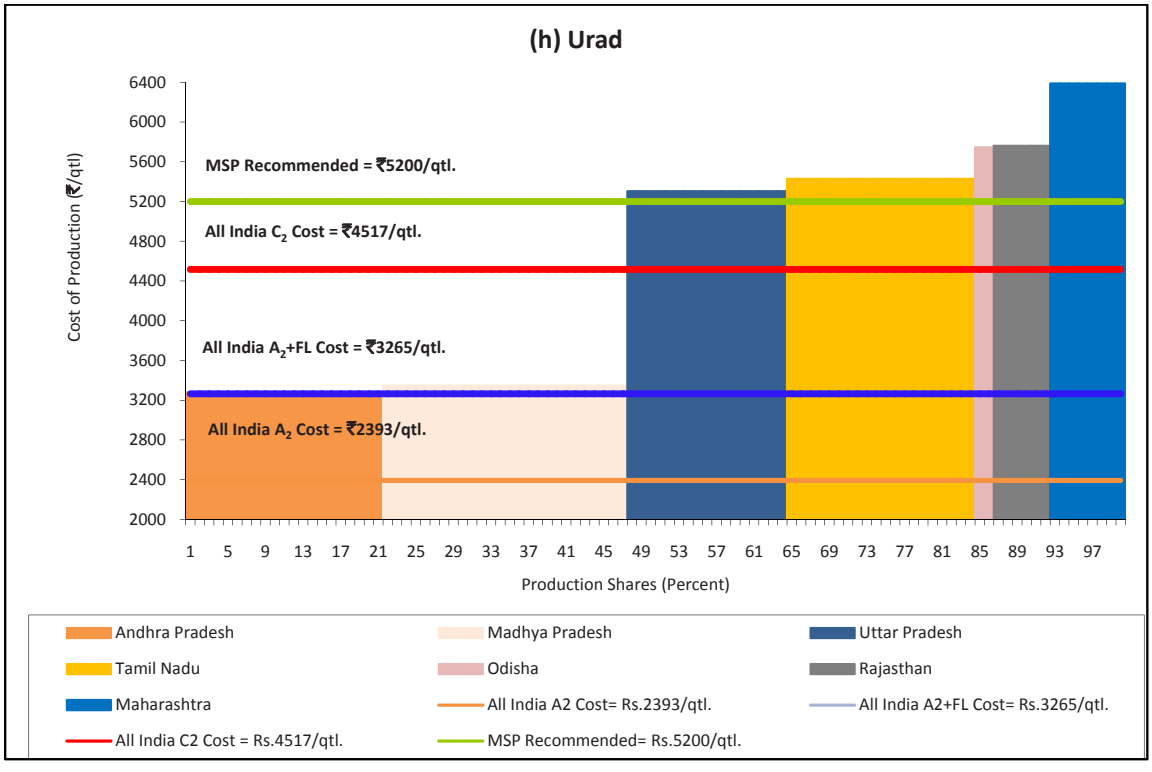

(c) Bajra
Cost of Production (₹/qtl)
2100
1900
1700
1500
1300
1100
900
700
500
MSP Recommended = ₹1425/qtl.
All India C2 Cost =₹1278/qtl.
All India A2+FL Cost =₹949/qtl.
All India A2 Cost = ₹571/qtl.
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
Production Shares (Percent)
Rajasthan
Uttar Pradesh
Gujarat
Tamil Nadu
Haryana
Karnataka
Maharashtra
All India A2 Cost= Rs.571/qtl.
All India A2+FL Cost= Rs.949/qtl.
All India C2 Cost = Rs.1278/qtl.
MSP Recommended= Rs.1425/qtl.

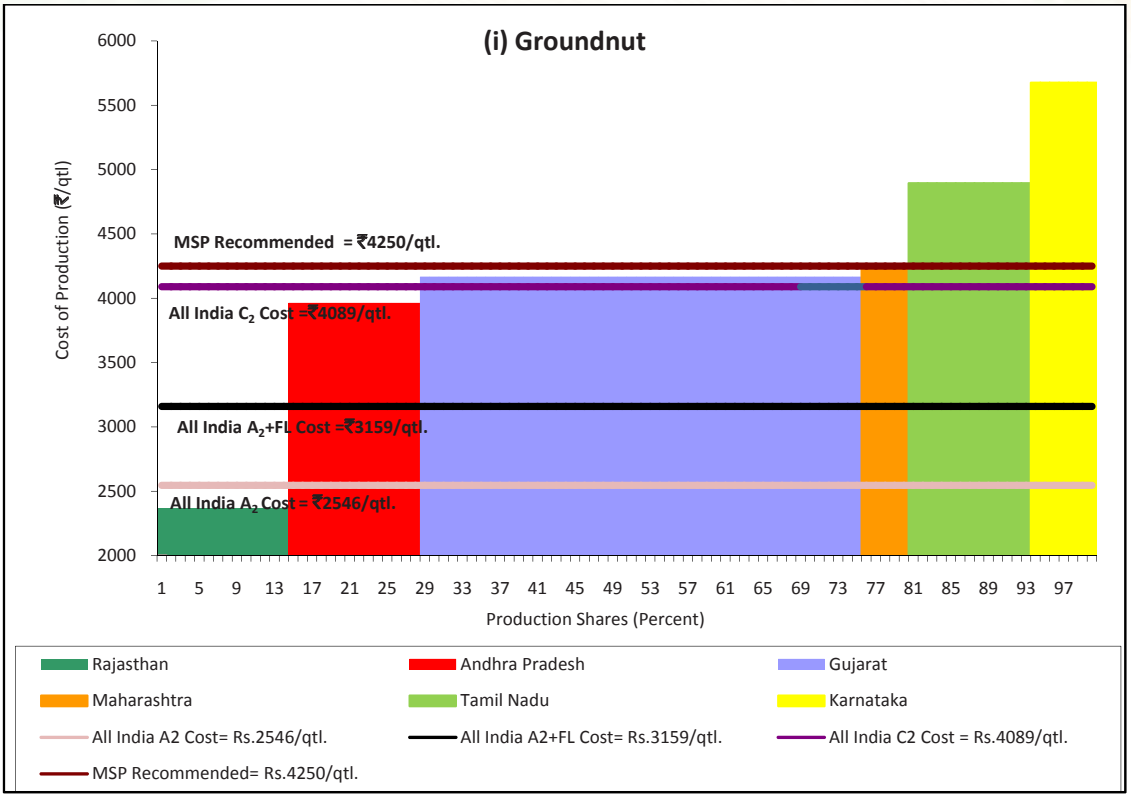

(d) Maize
Cost of Production (₹/qtl)
2200
2000
1800
1600
1400
1200
1000
800
600
MSP Recommended = ₹1425/qtl.
All India C2 Cost =₹1396/qtl.
All India A2+FL Cost =₹1044/qtl.
All India A2 Cost = ₹761/qtl.
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
Production Shares (Percent)
Bihar
Punjab
Andhra Pradesh
Madhya Pradesh
Karnataka
Tamil Nadu
Uttar Pradesh
Gujarat
Himachal Pradesh
Rajasthan
All India A2 Cost = Rs.761/qtl.
All India A2+FL Cost = Rs.1044/qtl.
All India C2 Cost = Rs.1396/qtl.
MSP Recommended = Rs.1425/qtl.

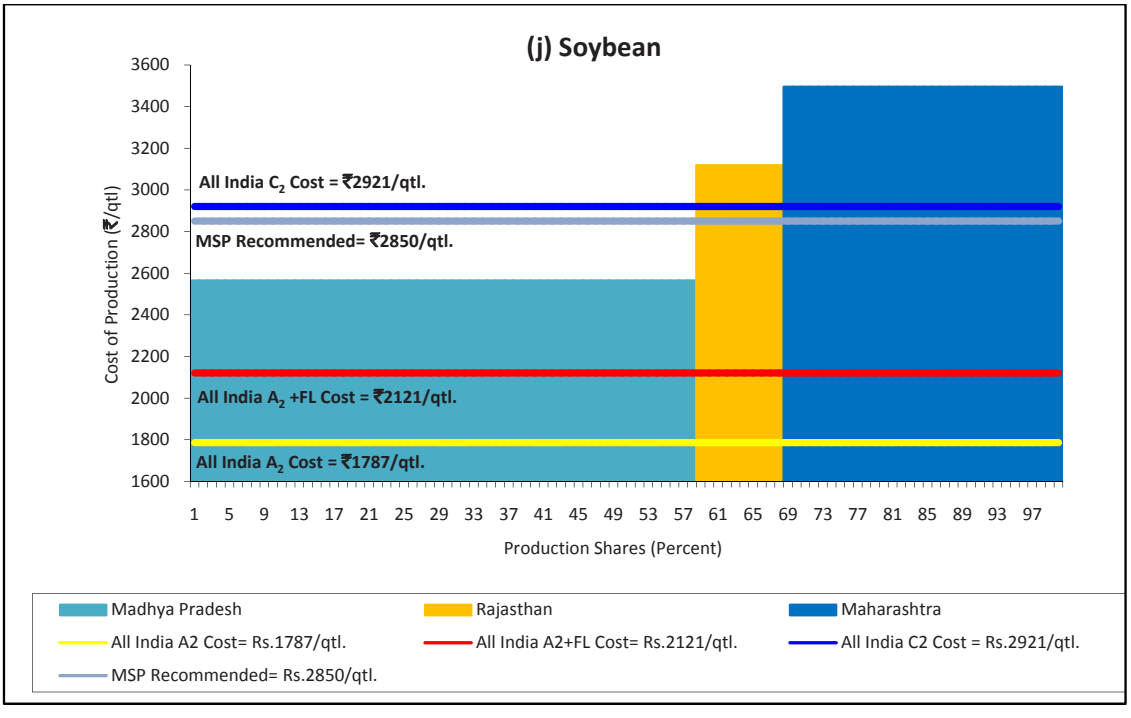

(e) Ragi
Cost of Production (₹/qtl)
Production Shares (Percent)
All India C2 Cost = ₹2351/qtl.
MSP Recommended = ₹1900/qtl.
All India A2+FL Cost= ₹1861/qtl.
All India A2 Cost= ₹1384/qtl.
Tamil Nadu
Maharashtra
Karnataka
All India A2 Cost= Rs.1384/qtl.
All India A2+FL Cost= Rs.1861/qtl.
All India C2 Cost = Rs.2351/qtl.
MSP Recommended= Rs.1900/qtl.

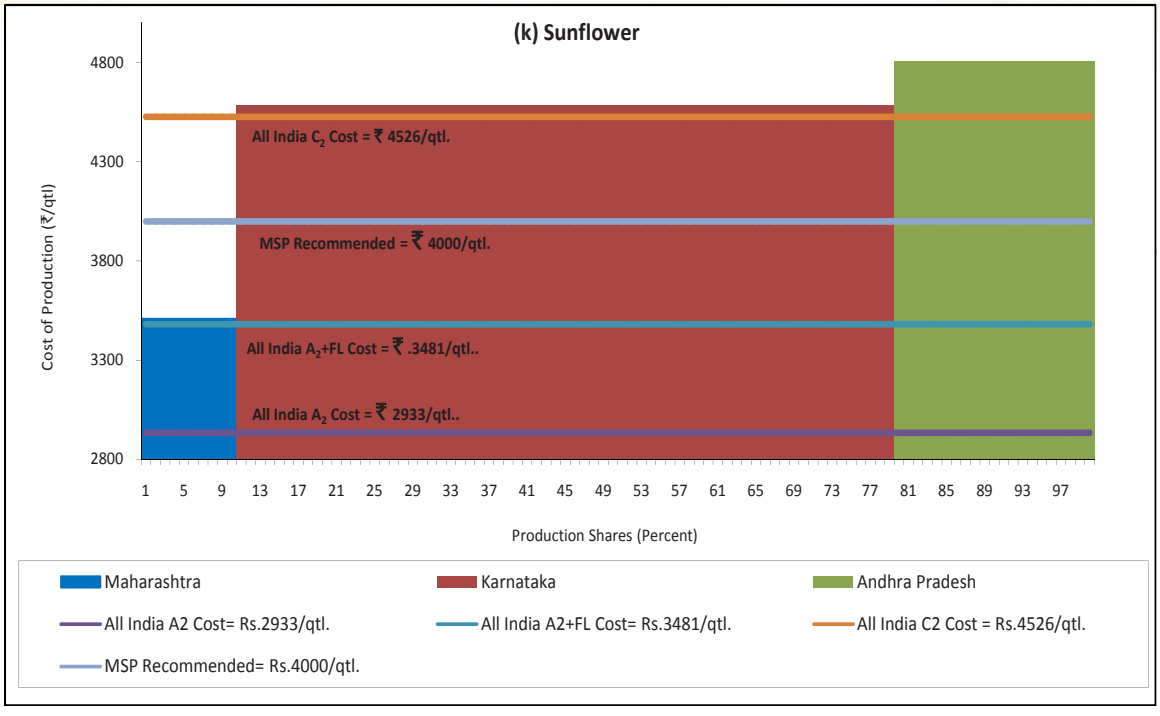

(f) Arhar (Tur)
Cost of Production (₹/qtl)
Production Shares (Percent)
MSP Recommended= ₹5250/qtl.
All India C2 Cost = ₹4612qtl.
All India A2+FL Cost = ₹3318/qtl.
All India A2 Cost = ₹2463/qtl.
Madhya Pradesh
Karnataka
Gujarat
Maharashtra
Uttar Pradesh
Odisha
Andhra Pradesh
All India A2 Cost= Rs.2463/qtl.
All India A2+FL Cost= Rs.3318/qtl.
All India C2 Cost = Rs.4612/qtl.
MSP Recommended= Rs.5250/qtl.

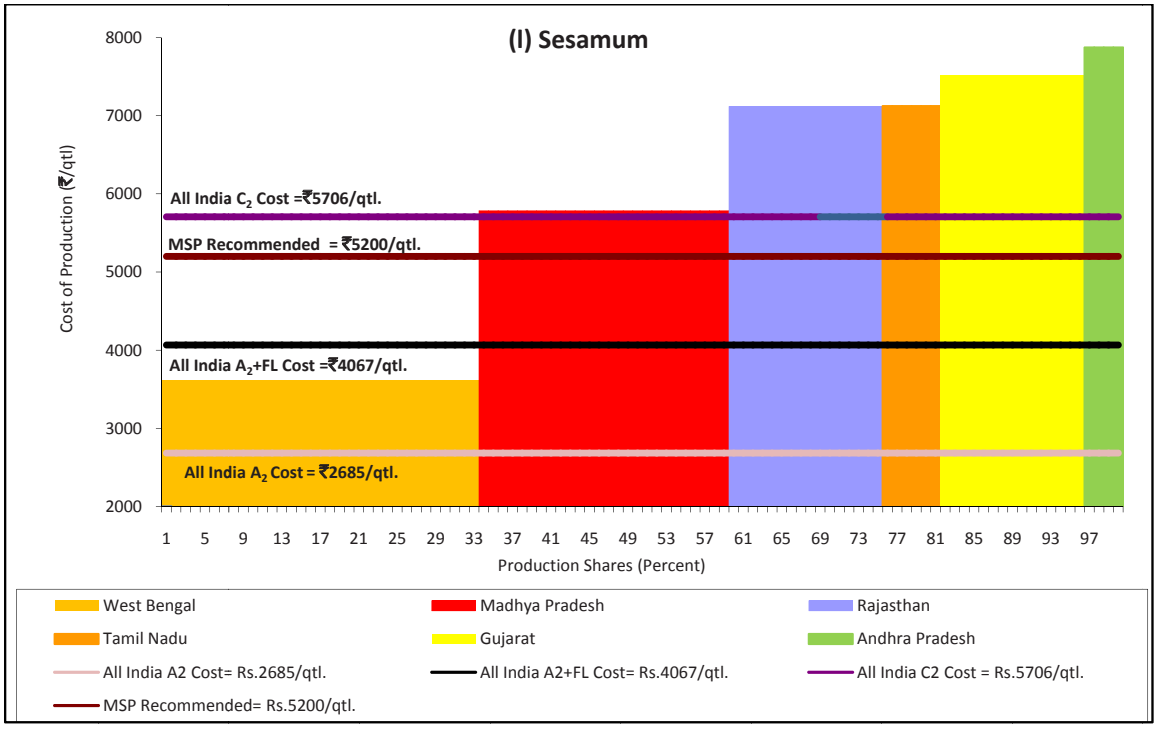

(g) Moong
Cost of Production (₹/qtl)
7500
6900
6300
5700
5100
4500
3900
3300
2700
All India C2 Cost =₹5700/qtl.
MSP Recommended = ₹5375/qtl.
All India A2+FL Cost =₹4286/qtl.
All India A2 Cost = ₹2809/qtl.
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
Production Shares (Percent)
Andhra Pradesh
Tamil Nadu
Rajasthan
Odisha
Karnataka
Maharashtra
All India A2 Cost= Rs.2809/qtl.
All India A2+FL Cost= Rs.4286/qtl.
All India C2 Cost = Rs.5700/qtl.
MSP Recommended= Rs.5375/qtl.

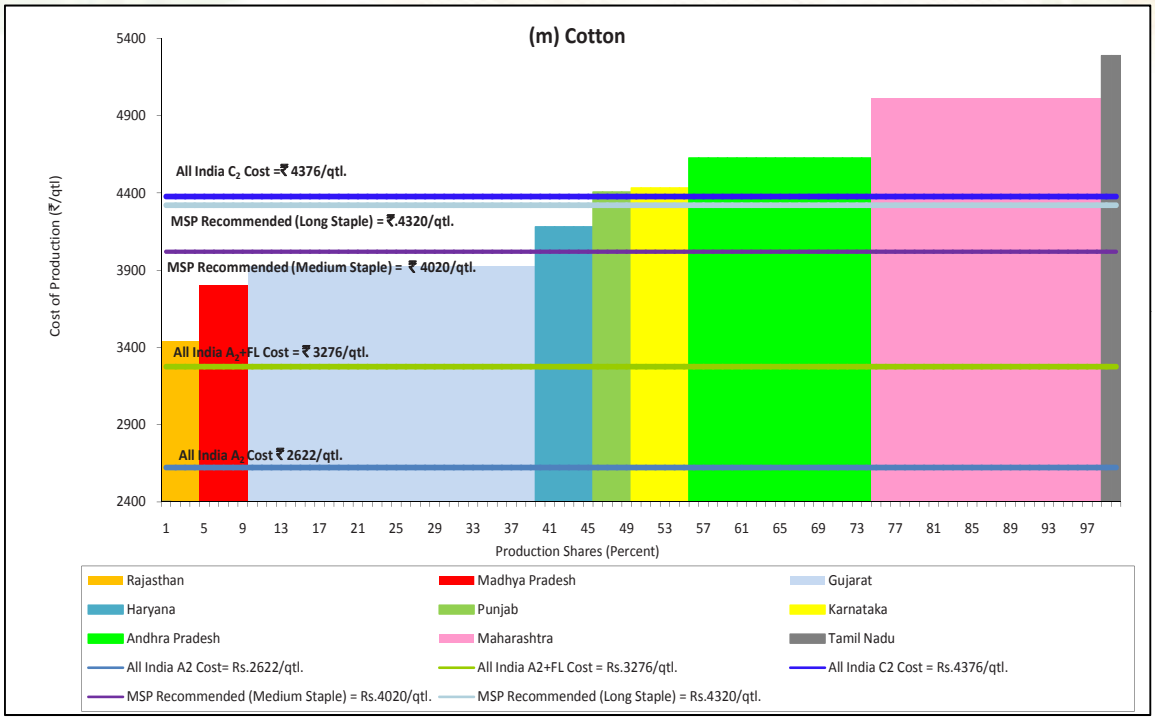

(h) Urad
Cost of Production (₹/qtl)
6400
6000
5600
5200
4800
4400
4000
3600
3200
2800
2400
2000
MSP Recommended = ₹5200/qtl.
All India C2 Cost = ₹4517/qtl.
All India A2+FL Cost = ₹3265/qtl.
All India A2 Cost = ₹2393/qtl.
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
Production Shares (Percent)
Andhra Pradesh
Madhya Pradesh
Uttar Pradesh
Tamil Nadu
Odisha
Rajasthan
Maharashtra
All India A2 Cost= Rs.2393/qtl.
All India A2+FL Cost= Rs.3265/qtl.
All India C2 Cost = Rs.4517/qtl.
MSP Recommended= Rs.5200/qtl.


(i) Groundnut
Cost of Production (₹/qtl)
Production Shares (Percent)
MSP Recommended = ₹4250/qtl.
All India C2 Cost =₹4089/qtl.
All India A2+FL Cost =₹3159/qtl.
All India A2 Cost = ₹2546/qtl.
Rajasthan
Andhra Pradesh
Gujarat
Maharashtra
Tamil Nadu
Karnataka
All India A2 Cost= Rs.2546/qtl.
All India A2+FL Cost= Rs.3159/qtl.
All India C2 Cost = Rs.4089/qtl.
MSP Recommended= Rs.4250/qtl.


(j) Soybean
Cost of Production (₹/qtl)
Production Shares (Percent)
All India C2 Cost = ₹2921/qtl.
MSP Recommended= ₹2850/qtl.
All India A2 +FL Cost = ₹2121/qtl.
All India A2 Cost = ₹1787/qtl.
Madhya Pradesh
Rajasthan
Maharashtra
All India A2 Cost= Rs.1787/qtl.
All India A2+FL Cost= Rs.2121/qtl.
All India C2 Cost = Rs.2921/qtl.
MSP Recommended= Rs.2850/qtl.


(k) Sunflower
Cost of Production (₹/qtl)
4800
4300
3800
3300
2800
All India C2 Cost = ₹ 4526/qtl.
MSP Recommended = ₹ 4000/qtl.
All India A2+FL Cost = ₹ .3481/qtl..
All India A2 Cost = ₹ 2933/qtl..
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
Production Shares (Percent)
Maharashtra
Karnataka
Andhra Pradesh
All India A2 Cost= Rs.2933/qtl.
All India A2+FL Cost= Rs.3481/qtl.
All India C2 Cost = Rs.4526/qtl.
MSP Recommended= Rs.4000/qtl.


(l) Sesamum
Cost of Production (₹/qtl)
8000
7000
6000
5000
4000
3000
2000
All India C2 Cost =₹5706/qtl.
MSP Recommended =₹5200/qtl.
All India A2+FL Cost =₹4067/qtl.
All India A2 Cost = ₹2685/qtl.
1 5 9 13 17 21 25 29 33 37 41 45 49 53 57 61 65 69 73 77 81 85 89 93 97
Production Shares (Percent)
West Bengal
Madhya Pradesh
Rajasthan
Tamil Nadu
Gujarat
Andhra Pradesh
All India A2 Cost= Rs.2685/qtl.
All India A2+FL Cost= Rs.4067/qtl.
All India C2 Cost = Rs.5706/qtl.
MSP Recommended= Rs.5200/qtl.



Inter-Crop Price Parity

5.13 Inter-crop price parity being one of the factors for determination of MSP, per hectare returns of different crops that are substitutes for each other are computed. Table 5.5 outlines relative returns measured in percentage terms over A_2, A_2+FL and C_2 for various kharif crops with reference to that of paddy. It is observed that relative gross returns over cost A_2 for all kharif crops vary from 29 percent in sunflower and nigerseed to 110 percent in cotton. The relative gross returns over A_2+FL for all crops except groundnut and cotton are lower as compared to paddy. Out of all the kharif crops, the ratio of net returns is the highest for arhar (tur) at 154 percent, whereas it is lowest for ragi at (-) 180 percent.

Table 5.5: Crop-wise Relative Returns (Percent), TE2014-15

Crops	Relative Gross Returns over A_2 with respect to Paddy	Relative Gross Returns over A_2+FL with respect to Paddy	Relative Net Returns with respect to Paddy
A. Cereals			
Paddy	100	100	100
Maize	69	58	11

Table 5.5: Crop-wise Relative Returns (Percent), TE2014-15

Crops	Relative Gross Returns over A_2 with respect to Paddy	Relative Gross Returns over A_2+FL with respect to Paddy	Relative Net Returns with respect to Paddy
Jowar	36	28	-81
Bajra	47	30	-22
Ragi	36	6	-180
B. Pulses			
Arhar (Tur)	90	98	154
Moong	41	35	30
Urad	50	51	58
C. Oilseeds			
Groundnut	104	112	143
Soybean	60	68	95
Sunflower	29	26	-39
Sesamum	76	82	196
Nigerseed	29	12	-51
D. Commercial Crop			
Cotton	110	112	93

Source: CACP Calculations.

Recapitulation

5.14 To sum up, the pricing policy is not rooted in the 'cost plus' exercise, though cost is one of important determinants. Given the time lag of about three years in the availability of data from field levels to DES, the Commission by constructing CIPI projects A_2+FL and C_2 cost per quintal for paddy, jowar, bajra, maize, ragi, arhar (tur), moong, urad, groundnut, soybean, sunflower, sesamum, nigerseed and cotton for the ensuing 2017-18 kharif season. As CIPI constructed is all-India weighted average and composite index of all the crops for different years, it gives a brief picture of possible changes in input prices over the years. Consequently, as CIPI is used to obtain projected CoP with the help of Olympic yield, a direct relationship may be observed between percentage change in all-India CIPI and average percentage change in A_2+FL cost of production for all the crops for the year 2017-18 over 2016-17. The percentage change in the all-India projected A_2+FL cost varied from (-) 8.9 percent for urad to 16.2 percent for nigerseed and C_2 cost varied from (-) 4.9 percent for groundnut to 18.2 percent for nigerseed in 2017-18 over 2016-17 (details in Annex Table 5.7). The Commission recommends that time lag in availability of cost data needs to be reduced by shifting from paper-based data collection to electronic systems.

*****

Chapter 6

Considerations for Price Policy and Recommendations

6.1 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 impact 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 MSPs. The Commission on the basis of detailed analysis of relevant issues in this report suggests the following non-price and price policy recommendations

Non-Price Policy Recommendations

Procurement Efficiency of Rice

6.2 Procurement of rice has increased from 32.16 million tonnes in 2014-15 to 34.22 million tonnes in 2015-16. Share of DCP states in procurement has increased from about 30.6 percent in KMS 2010-11 to 54.3 percent in KMS 2015-16. However, in some major rice producing eastern states like Assam, Bihar, Uttar Pradesh and West Bengal, the procurement is very low. Therefore to make the price support more effective, there is a need to strengthen procurement operations in these States.

Pulses

6.3 The country has achieved a record production of pulses during 2016-17, as a result of which market prices are lower than MSP. Participation of FCI in addition to NAFED and SFAC in procurement of pulses has yielded moderate results. Therefore, there is a need for effective involvement of states in procurement of pulses. Also, the infrastructure of NAFED and SFAC needs to be strengthened with administrative and financial support to take up procurement of pulses on a substantial scale throughout

the country. Since pulses have relatively short shelf life, there is a need to evolve a suitable mechanism for disposal of these stocks.

6.4 Productivity of pulses is very low as these are generally grown in marginal lands with low inputs. Large yield gaps exist between the actual yields and potential yields in kharif pulses. Therefore production of kharif pulses can increase by about 1.6 to 3.5 million tonnes with the existing technologies by bridging the yield gap. The newly developed extra early-maturing variety of tur (PUSA Arhar-16) would certainly help in increasing pulses production. Pulses should also be promoted as inter-crops along with cereals, oilseeds and sugarcane. There is a tremendous opportunity for cultivation of a second crop on available soil moisture after harvest of rice in Chhattisgarh, Bihar, West Bengal and Madhya Pradesh. The residual moisture left in the soil at the time of rice harvest is often sufficient to raise short-duration pulses and oilseed crops. This will augment domestic production of pulses and restore soil health.

6.5 Pulses play an important role in maintaining soil health as they have unique ability to fix atmospheric nitrogen, which enhances soil fertility and productivity. Therefore, farmers growing pulses can be given a direct incentive for their contribution towards positive externality in the form of nitrogen fixation. Assuming two commonly reported levels of nitrogen fixation by pulses (40 kg N/ha and 60 kg N/ha), pulses can save cost of nitrogenous fertilizer by ₹ 1792 – ₹ 2688 per hectare.

6.6 Keeping in view a record pulse production and comfortable availability as well as depressed market prices, the Commission recommends removal of stock limits/ licensing requirements of pulses. This will allow traders and other market participants to freely buy, stock and sell pulses, and also help in improving market prices.

Oilseeds

6.7 India's imports of edible oils have reached alarming proportions at ₹ 68700 crores in 2015-16. The imports of soybean, rapeseed and sunflower oil have increased phenomenally during last five years, which has an adverse impact on domestic producers. The import duty on refined oils should be significantly higher than crude oils to improve capacity utilization of domestic refining industry, which can create additional jobs. Import duty on edible oils particularly soft oils may be appropriately increased.

6.8 To increase the production of oilseeds in the country, there is a need for time bound result-oriented programme for improving oilseed productivity. To finance this programme, the Commission suggests to impose a cess of 0.25-0.50 percent on import of edible oils to create an "Oilseed Development Fund" which should be managed by Ministry of Agriculture and Farmers Welfare.

Cotton

6.9 Kala-cotton, desi cotton grown in parts of Gujarat, requires opening of balls manually. The State government of Gujarat has requested that arrangements for procurement of such cotton by CCI should be made from factory gate**.** Extra-long staple cotton varieties, which are mainly grown in limited areas of Tamil Nadu and Karnataka, fetch a very high price and used for producing fine and superfine counts of yarn. Production of such varieties needs to be encouraged so as to enhance the income of farmers and reduce imports.

Soil Health Management

6.10 For proper soil management, efforts are required to prepare a taluk or block level soil health map of India by involving ICAR, which will give information on the type of soil in each village with recommendations for proper type and dose of nutrients. This will reduce imbalance in usage of fertilizers and hence fertilizer subsidy. At the same time, it will help in maintaining the soil health for sustainable production. It may be pertinent to add that the objective of SHC Scheme is not only soil testing and distribution of cards, but improving soil health which can be achieved by suitably advising the farmers.

Farm Mechanisation

6.11 Investment in large machinery in not a viable option for marginal and small farmers. Hence, there is a need to promote farm mechanization through Custom Hiring Centres (CHCs) established through Public-Private-Partnership (PPP), private entrepreneurs, co-operative basis, farmer's organizations and charitable trusts. The Commission had recommended in its earlier reports that farm mechanization need to be promoted among small and marginal farmers through Custom Hiring Centres (CHC).

Fertilizers Sector Initiatives

6.12 The Direct Benefit Transfer (DBT) of fertilizer subsidy being implemented on pilot basis in 16 districts is different from the DBT in other schemes as the subsidy is released to the fertilizer companies instead of the farmers, after fertiliser is sold by the retailers to the beneficiaries. The Commission recommends that a quick

assessment of this pilot should be undertaken to understand problems faced by farmers and other stakeholders. The DBT of fertiliser subsidy to farmers can be effectively implemented only after complete computerization of land records and addressing the issue of informal/oral tenancy prevalent in many states.

Risk Management

6.13 Destruction of crops by wild animals has increased in many states. To save the crops from attack of wild animals, barbed fencing is the only way out. According to estimates provided by the Department of Agriculture, Government of Uttarakhand, cost of barbed wire fencing is around ₹ 85000 per hectare. The Commission recommends that central/state governments should work out a plan and provide some subsidy so as to enable the farmers/groups of farmers to fence their fields to protect them from wild animals. Government of Gujarat has recently announced 50 percent subsidy on fencing of fields

Awareness Creation about MSP and FAQ

6.14 In order to strengthen MSP operations, awareness about MSP and FAQ norms need to be created. As per NSSO data only one-third of rice and wheat farmers are aware of the minimum support price programme. There is need to create awareness about MSP. This calls for giving wide publicity about MSP and procurement agencies in regional/vernacular electronic and print media at least 15 days before the procurement starts so as to reach out to farmers in far off areas. In addition, farmers need to be trained on FAQ norms and post-harvest handling of commodities so as to minimize post-harvest losses and better prices to farmers. Furthermore to instill confidence among farmers for procurement of their produce, a legislation conferring on farmers 'The Right to Sell at MSP' may be brought out.

Institutional Agricultural Credit

6.15 The share of institutional credit to small and marginal farmers as well as eastern and north eastern regions is very low. Therefore, special efforts are needed to extend institutional credit facilities to small and marginal farmers and central, eastern and north-eastern regions. In addition, in order to sustain and improve growth in agricultural sector, the Commission recommends that Scheme of interest subvention should be extended to investment credit to improve capital formation in agriculture.

Market Outlook Forecasting

6.16 Governments of Gujarat and Rajasthan have initiated system of preparing of market outlook reports for major crops, which help in temporal and spatial integration of markets and prices thus strengthening the market intelligence network and reducing the volatility in market prices. CACP feels that such exercise should be undertaken by other states for forecasting market outlook of major crops.

MSPs Recommended for KMS 2017-18

6.17 Taking terms of reference into consideration, the Commission recommends the MSPs for 14 Kharif crops for KMS 2017-18 as given in the Table 6.1. It may be noted that percentage of production covered by the all-India weighted average cost of production and MSP vary from crop to crop. For example, the extent of production covered at all-India weighted average C_2 cost is 51 percent in paddy, 45 percent in cotton, 68 percent in maize, 47 percent in arhar (tur), 28 percent in groundnut and 58 percent in soybean. It may be noted that the share of production covered at MSP over C_2 cost are 68 percent in paddy (common and grade A), 45 percent in cotton (long staple), 40 percent in cotton (medium staple), 79 percent in maize, 86 percent in arhar (tur), 81 percent in groundnut and 58 percent in soybean.

Incentivising Efficiency: Linking MSP of Sunflower Seeds with Oil Content

6.18 There are variations in oil content of different varieties of sunflower and therefore uniform MSP may not be desirable. The Commission is of the opinion that farmers be incentivized for higher 'oil content'. The Commission recommends that the MSP of sunflower be linked to the basic 'oil content' of 35 percent in sunflower seeds. As per CACP's calculations, farmers should be compensated an additional ₹17.08 per quintal for every 0.25 percent point increase in the oil content beyond this level. The Commission also recommends that such a dispensation of linking MSP with oil content in other oilseeds where variation in oil content is high, may be introduced in a phased manner to incentivize farmers to adopt high oil content varieties and thereby increase production of edible oils in the country.

Table 6.1: Recommended MSPs of Kharif Crops (KMS 2017-18) and their Justification (₹/qtl)

Crops	Projected Costs			MSP for KMS		MSP Recommended for the KMS 2017-18	Gross Margins w.r.t MSP 2017-18 being recommended (Percent)	Remarks
	A_2	A_2+FL	C_2	2015-16	2016-17			
Paddy Common	839	1117	1484	1410 (3.68)	1470 (4.26)	1550 (5.44)	38.76	Stocks higher than buffer stocks norms but declining. Market prices below MSP in eastern region, special focus is needed to improve procurement operations. Recommended MSP fully covers Cost C_2.
Paddy Grade A	-	-	-	1450 (3.57)	1510 (4.14)	1590 (5.30)	-	
Jowar- Hybrid	1214	1556	2089	1570 (2.61)	1625 (3.50)	1700 (4.62)	9.25	Market prices higher than MSP. Recommended MSP covers A_2+FL Cost
Jowar- Maldandi	-	-	-	1590 (2.58)	1650 (3.77)	1725 (4.55)	-	
Bajra	571	949	1278	1275 (2.00)	1330 (4.31)	1425 (7.14)	50.16	MSP covers Cost C_2. MSP higher than domestic prices.
Ragi	1384	1861	2351	1650 (6.45)	1725 (4.55)	1900 (10.14)	2.10	MSP covers A_2+FL. Market prices way above MSP. Low crop yields.
Maize	761	1044	1396	1325 (1.15)	1365 (3.02)	1425 (4.40)	36.49	MSP fully covers Cost C_2. High gross margins would help in crop diversification.
Arhar	2463	3318	4612	4425 (1.72)	4625# (4.52)	5250@ (13.51)	58.23	Market prices high but declining. MSP higher than Cost C_2 to incentivize pulses producers.
Moong	2809	4286	5700	4650 (1.09)	4800# (3.23)	5375@ (11.98)	25.41	MSP fully covers Cost C_2 but market prices below MSP. Need to strengthen procurement operations.
Urad	2393	3265	4517	4425 (1.72)	4575# (3.39)	5200@ (13.66)	59.26	To maintain inter-crop parity among kharif pulses.

Table 6.1: Recommended MSPs of Kharif Crops (KMS 2017-18) and their Justification (₹/qtl)

Crops	Projected Costs			MSP for KMS		MSP Recommended for the KMS 2017-18	Gross Margins w.r.t MSP 2017-18 being recommended (Percent)	Remarks
	A_2	A_2+FL	C_2	2015-16	2016-17			
Groundnut	2546	3159	4089	4030 (0.75)	4120^ (2.23)	4250 (3.16)	34.54	MSP covers C_2 Cost. Domestic and international prices below MSP.
Sunflower Seed*	2933	3481	4526	3800 (1.33)	3850^ (1.32)	4000 (3.90)	14.91	Yield levels low and fluctuating. MSP covers A_2+FL cost and much higher than domestic and international prices.
Soyabean (Yellow)	1787	2121	2921	2600 (1.56)	2675^ (2.28)	2850 (6.54)	34.37	Low yield levels. MSP covers A_2+FL cost and is higher than international prices. Significant increase in exports of soybean meal in recent months.
Sesamum	2685	4067	5706	4700 (2.17)	4800# (2.13)	5200 (8.33)	27.86	Market prices low. MSP much higher than A_2+FL cost. High MSP will encourage farmers to grow sesamum.
Nigerseed	1788	3912	5108	3650 (1.39)	3725^ (2.05)	3950 (6.04)	0.97	MSP covers A_2+FL cost. Productivity low leading to high cost of production.
Cotton (Medium Staple)	2622	3276	4376	3800 (1.33)	3860 (1.58)	4020 (4.15)	22.71	Comfortable stock-to-use ratio and domestic and international prices ruling above MSP.
Cotton (Long Staple)	-	-	-	4100 (1.23)	4160 (1.46)	4320 (3.85)	-	

Note: Figures in parenthesis represent increase in MSP over the previous year.
 # Additional bonus of ₹ 200
@ Additional bonus of ₹ 425
^ Additional bonus of ₹ 100
**Corresponding to oil content of 35 percent*

The Commission is of the considered opinion that these non-price and price policy recommendations would steer farmers to adopt better technologies and earn higher returns. It would also contribute to suitable diversification of crops in line with emerging demand patterns and would enhance the growth of agriculture sector.

(Vijay Paul Sharma)
Chairman

(Suresh Pal)
Member (Official)

(Shailja Sharma)
Member Secretary

31st March, 2017

Annex Tables

Annex Table 1.1: All India Estimates of Production of Agricultural Commodities

(Million tonnes)

Sl.No.	Crops		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
1	Rice	Kharif	84.91	75.92	80.65	92.78	92.37	91.50	91.39	91.41	96.02
		Rabi	14.27	13.18	15.33	12.52	12.87	15.15	14.09	13.00	12.84
		Total	99.18	89.09	95.98	105.30	105.24	106.65	105.48	104.41	108.86
2	Wheat	Rabi	80.68	80.80	86.87	94.88	93.51	95.85	86.53	92.29	96.64
3	Barley	Rabi	1.69	1.35	1.66	1.62	1.75	1.83	1.61	1.44	1.85
4	Jowar	Kharif	3.05	2.76	3.44	3.29	2.84	2.39	2.30	1.82	1.91
		Rabi	4.19	3.94	3.56	2.69	2.44	3.15	3.15	2.42	2.84
		Total	7.25	6.70	7.00	5.98	5.28	5.54	5.45	4.24	4.75
5	Bajra	Kharif	8.89	6.51	10.37	10.28	8.74	9.25	9.18	8.07	9.42
6	Maize	Kharif	14.12	12.29	16.64	16.49	16.20	17.14	17.01	16.05	19.27
		Rabi	5.61	4.43	5.09	5.27	6.05	7.11	7.16	6.51	6.89
		Total	19.73	16.72	21.73	21.76	22.26	24.26	24.17	22.57	26.15
7	Ragi	Kharif	2.04	1.89	2.19	1.93	1.57	1.98	2.06	1.82	1.75
	Coarse Cereals	Kharif	28.54	23.83	33.08	32.44	29.80	31.20	30.94	28.15	32.77
		Rabi	11.49	9.72	10.32	9.58	10.25	12.09	11.92	10.37	11.57
		Total	40.04	33.55	43.40	42.01	40.04	43.29	42.86	38.52	44.34
	Cereals	Kharif	113.49	99.78	113.77	125.22	122.16	122.70	122.34	119.56	128.79
		Rabi	106.40	103.65	112.48	116.98	116.63	123.09	112.53	115.66	121.05
		Total	219.89	203.44	226.24	242.20	238.78	245.79	234.87	235.22	249.84
8	Tur (Arhar)	Kharif	2.27	2.46	2.86	2.65	3.02	3.17	2.81	2.56	4.23
9	Moong	Kharif	0.78	0.44	1.53	1.24	0.79	0.96	0.87	1.00	1.51
		Rabi	0.26	0.25	0.27	0.40	0.40	0.65	0.64	0.59	0.62
		Total	1.03	0.69	1.80	1.63	1.19	1.61	1.50	1.59	2.13
10	Urad	Kharif	0.84	0.81	1.40	1.23	1.43	1.15	1.28	1.25	2.11
		Rabi	0.33	0.43	0.36	0.53	0.47	0.55	0.68	0.70	0.78
		Total	1.17	1.24	1.76	1.77	1.90	1.70	1.96	1.95	2.89
11	Gram	Rabi	7.06	7.48	8.22	7.70	8.83	9.53	7.33	7.06	9.12
12	Lentil (Masur)	Rabi	0.95	1.03	0.94	1.06	1.13	1.02	-	-	-

Contd.

Annex Table 1.1: All India Estimates of Production of Agricultural Commodities

(Million hectares)

Sl.No.	Crops		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
	Pulses	Kharif	4.69	4.20	7.12	6.06	5.92	5.99	5.73	5.53	8.72
		Rabi	9.88	10.46	11.12	11.03	12.43	13.25	11.42	10.82	13.41
		Total	14.57	14.66	18.24	17.09	18.34	19.25	17.15	16.35	22.14
	Foodgrains	Kharif	118.14	103.95	120.85	131.27	128.07	128.69	128.06	125.09	137.51
		Rabi	116.33	114.15	123.64	128.01	129.06	136.35	123.96	126.47	134.47
		Total	234.47	218.11	244.49	259.29	257.13	265.04	252.02	251.57	271.98
13	Groundnut	Kharif	5.62	3.85	6.64	5.13	3.19	8.06	5.93	5.37	7.05
		Rabi	1.55	1.58	1.62	1.84	1.51	1.66	1.47	1.37	1.42
		Total	7.17	5.43	8.26	6.96	4.69	9.71	7.40	6.73	8.47
14	Soybean	Kharif	9.91	9.96	12.74	12.21	14.67	11.86	10.37	8.57	14.13
15	Sunflower	Kharif	0.36	0.21	0.19	0.15	0.19	0.15	0.11	0.07	0.09
		Rabi	0.80	0.64	0.46	0.37	0.36	0.35	0.32	0.23	0.15
		Total	1.16	0.85	0.65	0.52	0.54	0.50	0.43	0.30	0.24
16	Sesamum	Kharif	0.64	0.59	0.89	0.81	0.69	0.71	0.83	0.85	0.82
17	Nigerseed	Kharif	0.12	0.10	0.11	0.10	0.10	0.10	0.08	0.07	0.08
18	Rapeseed/ Mustard	Rabi	7.20	6.61	8.18	6.60	8.03	7.88	6.28	6.80	7.91
19	Safflower	Rabi	0.19	0.18	0.15	0.15	0.11	0.11	0.09	0.05	0.06
	Nine Oilseeds	Kharif	17.81	15.73	21.92	20.69	20.79	22.61	19.19	16.68	23.91
		Rabi	9.91	9.15	10.56	9.11	10.15	10.14	8.32	8.57	9.69
		Total	27.72	24.88	32.48	29.80	30.94	32.75	27.51	25.25	33.60
20	Cotton$		29.00	30.50	33.90	35.50	37.00	39.80	38.00	30.01	32.51
	Cotton$$		29.00	30.50	33.90	36.70	37.00	39.80	38.60	33.80	35.10
	Jute#		9.63	11.23	10.01	10.74	10.34	11.08	10.62	9.94	9.62
	Mesta#		0.73	0.59	0.61	0.66	0.59	0.61	0.51	0.58	0.44
21	Jute & Mesta#		10.37	11.82	10.62	11.40	10.93	11.69	11.13	10.52	10.06
22	Sugarcane		285.03	292.30	342.38	361.04	341.20	352.14	362.33	348.45	309.98

** : Second Advance Estimates (2016-17)*
$: CAB estimates of million bales of 170 kgs each
$$: E&S estimates of Million bales of 170 kgs each
 # : Million bales of 180 kgs each
Source: DES, Ministry of Agriculture and Farmers Welfare, Cotton Advisory Board.

Annex Table 1.2: All India Estimates of Area of Agricultural Commodities

(Million hectares)

Sl.No.	Crops		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
1	Rice	Kharif	40.81	37.62	38.05	40.14	38.91	39.45	39.83	39.66	39.00
		Rabi	4.73	4.30	4.81	3.87	3.84	4.69	4.28	3.84	3.75
		Total	45.54	41.92	42.86	44.01	42.75	44.14	44.11	43.50	42.74
2	Wheat	Rabi	27.75	28.46	29.07	29.86	30.00	30.47	31.47	30.42	30.23
3	Barley	Rabi	0.71	0.62	0.71	0.64	0.70	0.67	0.71	0.59	0.73
4	Jowar	Kharif	2.89	3.24	3.07	2.62	2.43	2.28	2.27	2.14	1.90
		Rabi	4.64	4.55	4.31	3.63	3.79	3.52	3.89	3.94	3.19
		Total	7.53	7.79	7.38	6.25	6.21	5.79	6.16	6.08	5.09
5	Bajra	Kharif	8.75	8.90	9.61	8.78	7.30	7.81	7.32	7.13	7.49
6	Maize	Kharif	6.89	7.06	7.28	7.38	7.21	7.31	7.56	7.18	8.03
		Rabi	1.28	1.20	1.27	1.40	1.46	1.76	1.62	1.63	1.65
		Total	8.17	8.26	8.55	8.78	8.67	9.07	9.19	8.81	9.68
7	Ragi	Kharif	1.38	1.27	1.29	1.18	1.13	1.19	1.21	1.14	1.09
	Coarse Cereals	Kharif	20.83	21.31	22.05	20.75	18.82	19.27	18.95	18.23	19.07
		Rabi	6.62	6.37	6.29	5.67	5.94	5.95	6.22	6.15	5.57
		Total	27.45	27.68	28.34	26.42	24.76	25.22	25.17	24.39	24.64
	Cereals	Kharif	61.64	58.92	60.10	60.89	57.73	58.72	58.78	57.89	58.07
		Rabi	39.10	39.13	40.17	39.40	39.78	41.11	41.97	40.42	39.55
		Total	100.74	98.05	100.27	100.29	97.52	99.83	100.75	98.31	97.62
8	Tur (Arhar)	Kharif	3.38	3.47	4.37	4.01	3.89	3.90	3.85	3.96	5.13
9	Moong	Kharif	2.24	2.46	2.85	2.61	1.97	2.34	2.03	2.76	3.29
		Rabi	0.60	0.63	0.76	0.78	0.74	1.04	0.99	1.07	1.01
		Total	2.84	3.07	3.51	3.39	2.72	3.38	3.02	3.83	4.30
10	Urad	Kharif	2.02	2.23	2.51	2.36	2.44	2.35	2.49	2.72	3.36
		Rabi	0.65	0.73	0.74	0.86	0.69	0.72	0.76	0.90	0.99
		Total	2.67	2.96	3.25	3.22	3.13	3.06	3.25	3.62	4.35
11	Gram	Rabi	7.89	8.17	9.19	8.30	8.52	9.93	8.25	8.40	9.49
12	Lentil (Masur)	Rabi	1.38	1.48	1.60	1.56	1.42	1.34	-		
	Pulses	Kharif	9.81	10.58	12.32	11.19	9.95	10.33	9.99	11.31	13.90
		Rabi	12.29	12.70	14.08	13.27	13.30	14.88	13.56	13.60	14.96
		Total	22.09	23.28	26.40	24.46	23.26	25.21	23.55	24.91	28.86

Contd.

Annex Table 1.2: All India Estimates of Area of Agricultural Commodities

(Million hectares)

Sl.No.	Crops		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
	Foodgrains	Kharif	71.45	69.51	72.42	72.08	67.69	69.05	68.77	69.21	71.97
		Rabi	51.39	51.83	54.25	52.67	53.09	55.99	55.53	54.01	54.51
		Total	122.83	121.33	126.67	124.75	120.78	125.04	124.30	123.22	126.48
13	Groundnut	Kharif	5.29	4.62	4.98	4.32	3.93	4.65	4.01	3.84	4.56
		Rabi	0.88	0.86	0.88	0.95	0.79	0.86	0.76	0.76	0.76
		Total	6.16	5.48	5.86	5.26	4.72	5.51	4.77	4.60	5.32
14	Soybean	Kharif	9.51	9.73	9.60	10.11	10.84	11.72	10.91	11.60	11.34
15	Sunflower	Kharif	0.66	0.57	0.32	0.26	0.30	0.25	0.22	0.16	0.16
		Rabi	1.15	0.91	0.61	0.47	0.53	0.42	0.37	0.33	0.21
		Total	1.81	1.48	0.93	0.73	0.83	0.67	0.59	0.49	0.37
16	Sesamum	Kharif	1.81	1.94	2.08	1.90	1.71	1.68	1.75	1.95	1.68
17	Nigerseed	Kharif	0.39	0.38	0.37	0.36	0.31	0.30	0.23	0.25	0.25
18	Rapeseed/ Mustard	Rabi	6.30	5.59	6.90	5.89	6.36	6.65	5.80	5.75	6.32
19	Safflower	Rabi	0.29	0.29	0.24	0.25	0.18	0.18	0.17	0.13	0.12
	Nine Oilseeds	Kharif	18.53	17.97	18.23	18.42	18.32	19.65	18.21	18.86	18.94
		Rabi	9.03	7.99	9.00	7.89	8.16	8.40	7.39	7.22	7.70
		Total	27.56	25.96	27.22	26.31	26.48	28.05	25.60	26.09	26.63
20	Cotton		9.41	10.13	11.24	12.18	11.98	11.96	12.82	12.29	10.81
	Jute		0.79	0.81	0.77	0.81	0.78	0.76	0.75	0.73	0.70
	Mesta		0.12	0.09	0.10	0.10	0.09	0.08	0.06	0.05	0.05
21	Jute & Mesta		0.90	0.91	0.87	0.90	0.86	0.84	0.81	0.78	0.75
22	Sugarcane		4.42	4.17	4.88	5.04	5.00	4.99	5.07	4.93	4.52

** : Second Advance Estimates (2016-17)*

Source : DES, Ministry of Agriculture and Farmers Welfare

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

(Kgs per hectare)

Sl.No.	Crops		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
1	Rice	Kharif	2081	2018	2120	2311	2374	2319	2295	2305	2462
		Rabi	3019	3064	3185	3238	3353	3232	3291	3382	3427
		Total	2178	2125	2239	2393	2462	2416	2391	2400	2547
2	Wheat	Rabi	2907	2839	2989	3177	3117	3145	2750	3034	3197
3	Barley	Rabi	2394	2172	2357	2516	2521	2718	2280	2439	2533
4	Jowar	Kharif	1055	853	1119	1257	1171	1050	1014	849	1008
		Rabi	904	865	827	741	644	896	808	615	889
		Total	962	860	949	957	850	957	884	697	933
5	Bajra	Kharif	1015	731	1079	1171	1198	1184	1255	1132	1257
6	Maize	Kharif	2048	1740	2285	2234	2246	2346	2249	2236	2399
		Rabi	4387	3694	4003	3765	4152	4050	4414	4006	4176
		Total	2414	2024	2540	2478	2566	2676	2632	2563	2702
7	Ragi	Kharif	1477	1489	1705	1641	1396	1661	1706	1601	1610
	Coarse Cereals	Kharif	1371	1119	1500	1563	1583	1619	1633	1544	1718
		Rabi	1735	1525	1641	1689	1725	2034	1915	1686	2077
		Total	1459	1212	1531	1590	1617	1717	1703	1579	1799
	Cereals	Kharif	1841	1693	1893	2056	2116	2089	2081	2065	2218
		Rabi	2721	2649	2800	2969	2931	2995	2681	2862	3061
		Total	2183	2075	2256	2415	2449	2462	2331	2393	2559
8	Tur (Arhar)	Kharif	671	711	655	662	776	813	729	646	824
9	Moong	Kharif	348	180	538	475	398	410	428	363	459
		Rabi	423	397	354	508	539	620	640	554	608
		Total	364	226	514	483	436	475	498	416	494
10	Urad	Kharif	419	363	557	523	586	490	516	459	630
		Rabi	506	587	489	621	679	768	891	773	783
		Total	440	418	542	549	606	555	604	537	665
11	Gram	Rabi	895	915	895	928	1036	960	889	840	962
12	Lentil (Masur)	Rabi	693	697	591	678	797	758	-		
	Pulses	Kharif	478	397	578	541	594	580	573	489	628
		Rabi	804	823	790	831	934	891	842	796	897
		Total	659	630	691	699	789	763	728	656	767

Contd.

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

(Kgs per hectare)

Sl.No.	Crops		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17*
	Foodgrains	Kharif	1654	1496	1669	1821	1892	1864	1862	1808	1911
		Rabi	2264	2203	2279	2430	2431	2435	2232	2342	2467
		Total	1909	1798	1930	2078	2129	2120	2028	2042	2150
13	Groundnut	Kharif	1063	835	1335	1188	811	1735	1478	1399	1546
		Rabi	1764	1830	1846	1938	1908	1926	1948	1801	1872
		Total	1163	991	1411	1323	994	1764	1552	1465	1592
14	Soybean	Kharif	1041	1024	1327	1208	1353	1012	951	738	1245
15	Sunflower	Kharif	540	378	608	566	622	621	512	420	529
		Rabi	696	700	748	783	674	826	866	698	747
		Total	639	576	701	706	655	750	736	608	650
16	Sesamum	Kharif	354	303	429	426	402	426	474	436	490
17	Nigerseed	Kharif	297	266	290	269	325	328	328	295	340
18	Rapeseed/ Mustard	Rabi	1143	1183	1185	1121	1262	1185	1083	1183	1251
19	Safflower	Rabi	642	621	617	580	591	638	515	416	481
	Nine Oilseeds	Kharif	961	875	1203	1123	1135	1151	1054	884	1263
		Rabi	1097	1146	1174	1155	1244	1207	1126	1186	1258
		Total	1006	958	1193	1133	1168	1168	1075	968	1261
20	Cotton $		524	512	513	496	525	566	504	415	511
	Cotton$$		524	503	517	512	525	566	511	484	568
	Jute		2207	2492	2329	2389	2396	2639	2549	2457	2465
	Mesta		1141	1122	1115	1248	1237	1338	1525	1945	1567
21	Jute & Mesta		2071	2349	2192	2268	2281	2512	2473	2421	2404
22	Sugarcane		64553	70020	70091	71667	68254	70520	71512	70720	68566

** : Second Advance Estimates (2016-17)*

$: CAB estimates

$$: E&S estimates

Source: DES, Ministry of Agriculture and Farmers Welfare

Annex Table 1.4: Share of Kharif Crops (under MSP) in Total Production, TE2016-17

(Percent)

Sl.No.	Crops	AP	TG	AP+TG	Asm	Bih	CG	Guj	Har	HP	JK	Jhar	Kar	Ker	MP	MH	Odi	Pun	Raj	TN	UP	UK	WB	Others	Total
1	Rice	7.0	3.7	10.7	4.9	6.4	6.1	1.7	3.9	0.1	0.6	2.9	2.9	0.5	3.6	2.7	7.2	10.7	0.3	6.0	11.8	0.6	14.3	2.3	100
2	Jowar	6.6	1.6	8.2	0.0	0.0	0.1	3.2	0.6	0.0	0.0	0.0	20.1	0.0	8.4	38.1	0.1	0.0	8.2	9.7	3.1	0.0	0.0	0.1	100
3	Bajra	0.7	0.1	0.8	0.0	0.0	0.0	9.7	8.3	0.0	0.1	0.0	2.2	0.0	6.4	6.5	0.0	0.0	44.2	1.7	19.9	0.0	0.0	0.1	100
4	Maize	7.3	9.1	16.4	0.4	10.1	0.9	2.6	0.1	2.8	1.9	2.0	14.6	0.0	10.7	9.9	0.7	1.8	6.0	8.9	5.7	0.2	2.9	1.8	100
5	Ragi	1.8	0.1	1.9	0.0	0.5	0.1	0.9	0.0	0.1	0.2	0.7	62.9	0.0	0.2	5.8	1.8	0.0	0.0	15.7	0.0	8.3	0.7	0.2	100
6	Tur	4.5	4.1	8.6	0.2	1.0	1.1	9.0	0.9	0.0	0.0	6.0	15.1	0.0	20.0	24.0	3.8	0.2	0.3	2.0	7.2	0.1	0.1	0.4	100
7	Urad	17.1	1.1	18.2	1.4	0.6	1.4	3.1	0.0	0.2	0.1	4.3	1.1	0.0	24.9	5.9	1.2	0.0	6.8	14.0	13.1	0.5	2.5	0.6	100
8	Moong	8.7	3.7	12.4	0.4	5.7	0.3	4.6	1.4	0.0	0.0	1.1	3.8	0.0	6.8	8.5	5.3	1.9	34.1	8.3	3.0	0.0	2.2	0.3	100
9	Groundnut	9.0	3.4	12.4	0.0	0.0	0.5	40.2	0.1	0.0	0.0	0.3	6.0	0.0	5.0	4.7	0.8	0.0	14.4	11.8	1.0	0.0	2.5	0.1	100
10	Sesamum	2.5	0.8	3.2	1.0	0.3	0.9	10.2	0.2	0.1	0.2	0.2	2.6	0.0	23.4	0.5	0.6	0.2	12.9	4.2	12.5	0.1	25.7	0.9	100
11	Nigerseed	3.9	0.0	3.9	5.3	0.0	14.2	4.6	0.0	0.0	0.0	2.4	2.6	0.0	29.3	3.8	30.2	0.0	0.0	0.0	0.0	0.0	3.7	0.1	100
12	Soybean	0.0	2.8	2.8	0.0	0.0	0.7	0.6	0.0	0.0	0.0	0.0	1.7	0.0	55.4	28.4	0.0	0.0	9.6	0.0	0.2	0.1	0.0	0.5	100
13	Sunflower	8.2	5.0	13.3	0.0	5.1	0.1	0.0	7.9	0.0	0.0	0.2	46.9	0.0	0.3	5.4	7.9	2.7	0.0	3.4	1.1	0.0	5.2	0.5	100
14	Cotton	6.8	11.5	18.3	0.0	0.0	0.0	30.2	5.5	0.0	0.0	0.0	5.9	0.0	5.8	23.2	1.1	3.6	4.4	1.6	0.0	0.0	0.0	0.3	100

Source: DES, Ministry of Agriculture and Farmers Welfare

Annex Table 1.5: Trends in WPI Based Inflation (Percent)

Commodity	Jan 16	Feb 16	Mar 16	April 16	May 16	Jun 16	Jul 16	Aug 16	Sep 16	Oct 16	Nov 16	Dec16	Jan 17
Food Articles	6.5	3.9	4.1	4.7	8.2	8.6	12.6	8.9	6.4	4.8	2.1	-0.7	-0.6
Cereals	2.9	3.3	4.4	4.2	5.9	7.8	9.2	9.5	9.1	8.3	9.6	7.5	5.9
Pulses	45.0	38.4	34.4	36.5	35.8	26.6	38.3	34.2	24.0	22.0	21.8	18.1	6.2
Vegetables	12.7	-2.9	-2.0	2.9	13.3	17.2	28.4	0.2	-10.9	-10.0	-23.7	-33.1	-32.3
Fruits	-2.0	-1.7	-2.6	-1.8	3.9	6.4	17.4	13.9	14.1	6.0	2.4	0.0	3.6

Source: Office of Economic Advisor, DIPP

Annex Table 1.6: Soil Testing Labs and Their Capacity

Zone	No. of Soil Testing Labs	Capacity per annum (No. of Soil Samples in lakh Numbers)
South Zone (5 states)	242	68.67
West Zone (6 states)	525	56.05
North Zone (7 states)	464	57.14
East Zone (4 states)	122	9.62
North East Zone (8 states)	61	3.77
All India	**1414**	**195.26**

Note: STLs as on 15.11.2016
Source: DAC, Ministry of Agriculture and Farmers Welfare

Annex Table 2.1 : Stock-to-Use Ratios (Percent) of Kharif Crops (2014-15 to 2016-17)

S.No.	Particulars	Rice			Total Pulses			Cotton		
		(In Million Tonnes)			(In Million Tonnes)			(Million bales of 170 Kg each)		
		2014-15	2015-16	2016-17	2014-15	2015-16	2016-17	2014-15	2015-16	2016-17
1	Opening Stocks ^	18.60	14.20	15.90	1.70	1.70	1.70	3.30	6.62	4.32
2	Production	105.48	104.32	107.00	17.15	16.47	21.80	38.60	33.80	35.10
3	Imports*	0.00	0.00	0.00	4.64	5.90	6.50	1.44	2.00	1.70
4	Total Supply (1+2+3)	124.08	118.52	122.90	23.49	24.07	30.00	43.34	42.42	41.12
5	Exports*	11.20	10.20	10.50	0.10	0.05	0.50	5.77	6.90	5.00
6	Consumption$	98.68	92.42	94.40	21.69	22.32	27.80	30.94	31.20	31.30
7	Total Use (5+6)	109.88	102.62	104.90	21.79	22.37	28.30	36.72	38.10	36.30
8	Ending Stock (4-7)	14.20	15.90	18.00	1.70	1.70	1.70	6.62	4.32	4.82
9	Stock to Use Ratio (%) (8/7)	12.92	15.50	17.16	7.80	7.60	6.01	18.04	11.35	13.29

Sources: (i) NCAER
(ii) Office of The Textile Commissioner, Ministry of Textiles.

Annex Table 2.2: Possible Savings from Taxes as a Consequence of Delinking MSP from Taxes/ Levies - Paddy

S. No.	Year	MSP Rs./ qtl	Andhra Pradesh					Chattisgarh					Punjab				
			Tax Rate (Percent)	Procure-ment (Million Tonnes)	Total Taxes Realised (Rs.Cr)	Taxes at MSP of 2004-05 level (Rs. Cr)	Savings {Col. (6) - Col. (7)} (Rs. Crore)	Tax Rate (Percent)	Procurement (Million Tonnes)	Total Taxes Realised (Rs.Cr)	Taxes at MSP of 2004-05 level (Rs. Cr)	Savings {Col.(11) - Col. (12)} (Rs. Crore)	Tax Rate (Percent)	Procurement (Million Tonnes)	Total Taxes Realised (Rs.Cr)	Taxes at MSP of 2004-05 level (Rs. Cr)	Savings {Col.(16) - Col. (17)} (Rs. Crore)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1	2005-06	570	4.00	7.46	170.04	170.04	0.00	0.00	4.90	0.00	0.00	0.00	4.00	13.30	303.18	303.18	0.00
2	2006-07	580	4.00	7.99	185.45	182.25	3.20	0.00	4.30	0.00	0.00	0.00	4.00	11.74	272.45	267.75	4.70
3	2007-08	645	4.00	11.40	294.00	259.82	34.19	0.00	4.11	0.00	0.00	0.00	4.00	11.97	308.86	272.95	35.91
4	2008-09	850	11.50	13.59	1328.13	890.63	437.50	6.20	4.27	225.13	150.97	74.16	11.50	12.83	1254.23	841.07	413.16
5	2009-10	1000	11.50	11.33	1303.24	742.85	560.39	6.20	5.04	312.20	177.95	134.25	12.50	13.91	1739.06	991.27	747.80
6	2010-11	1000	12.50	14.41	1801.69	1026.96	774.73	6.20	5.62	348.38	198.58	149.80	12.50	12.95	1618.98	922.82	696.16
7	2011-12	1080	12.50	11.31	1527.26	806.05	721.20	6.20	6.17	413.33	218.15	195.18	14.50	11.60	1816.09	958.49	857.60
8	2012-13	1250	12.50	9.71	1516.72	691.62	825.10	6.20	7.21	558.47	254.66	303.81	14.50	12.84	2326.59	1060.93	1265.67
9	2013-14	1310	11.00	5.61	807.88	351.52	456.36	7.20	6.44	606.95	264.09	342.86	14.50	12.16	2309.56	1004.92	1304.64
10	2014-15	1360	11.00	5.38	804.94	337.37	467.58	7.20	5.13	502.71	210.69	292.01	14.50	11.68	2303.08	965.26	1337.82
11	2015-16	1410	13.22	6.50	1212.05	489.98	722.07	9.59	5.16	698.15	282.23	415.92	14.50	14.03	2867.52	1159.21	1708.31
12	2016-17*	1470	13.13	3.54	682.50	264.64	417.86	9.59	6.99	985.89	382.28	603.60	14.50	16.57	3531.06	1369.19	2161.87
13	**Total**			**108**	**11634**	**6214**	**5420**		**65**	**4651**	**2140**	**2512**		**156**	**20651**	**10117**	**10534**

Contd.

Annex Table 2.2: Possible Savings from Taxes as a Consequence of Delinking MSP from Taxes/ Levies - Paddy

S. No.	Year	MSP Rs./ qtl	Haryana					Odisha				
			Tax Rate (Percent)#	Procure-ment (Million Tonnes)	Total Taxes Realised (Rs.Cr)	Taxes at MSP of 2004-05 level (Rs Cr)	Savings {Col.(21) - Col.(22)} (Rs. Crore)	Tax Rate (Percent)	Procure-ment (Million Tonnes)	Total Taxes Realised (Rs.Cr)	Taxes at MSP of 2004-05 level (Rs. Cr)	Savings {Col.(26) - Col.(27)} (Rs. Crore)
(1)	(2)	(3)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
1	2005-06	570	4.00	3.08	70.25	70.25	0.00	3.00	2.68	45.79	45.79	0.00
2	2006-07	580	4.00	2.67	61.84	60.77	1.07	4.00	3.00	69.67	68.47	1.20
3	2007-08	645	4.00	2.36	60.91	53.83	7.08	4.00	3.54	91.22	80.61	10.61
4	2008-09	850	10.50	2.14	190.77	127.93	62.84	5.00	4.20	178.56	119.74	58.82
5	2009-10	1000	10.50	2.73	286.49	163.30	123.19	6.50	3.75	243.46	138.77	104.69
6	2010-11	1000	10.50	2.53	265.76	151.48	114.28	6.50	3.70	240.34	136.99	103.35
7	2011-12	1080	11.50	3.01	373.88	197.32	176.55	4.00	4.30	185.72	98.02	87.70
8	2012-13	1250	11.50	3.91	562.61	256.55	306.06	4.00	5.42	271.00	123.58	147.43
9	2013-14	1310	11.50	3.61	543.61	236.53	307.08	5.00	4.23	277.05	120.55	156.50
10	2014-15	1360	11.50	3.02	472.71	198.12	274.59	11.89	5.23	845.79	354.48	491.30
11	2015-16	1410	11.50	4.29	695.90	281.32	414.58	9.22	5.05	656.75	265.50	391.26
12	2016-17*	1470	11.50	5.35	905.19	350.99	554.20	9.13	2.85	382.19	148.20	234.00
13	**Toatal**			**39**	**4490**	**2148**	**2342**		**48**	**3488**	**1701**	**1787**

*Note : * : Procurement is as on 28.02.2017 (AP excludes Telangana from 2013-14 onwards)*
 # : VAT introduced w.e.f. 1.4.2003 on sale within Haryana
Tax Free in Chattisgarh during 2005-06 to 2007-08.
Source: FCI and DFPD

Annex Table 2.3: States/Centres with Prices of Kharif Crops Below MSP During 2016-17 Marketing Season

Rs./qtl

S.No.	State	Centre	MSP	Month		
				Oct	Nov	Dec
A-Paddy			**1470**			
1	Assam	Dhubri		1437	1437	1375
2	Assam	Dhubri		1325	1325	1237
3	Assam	Dibrugarh		1325	1325	1237
4	Assam	Dibrugarh		1437	1438	1375
5	Assam	Jorhat		1325	1325	1237
6	Assam	Jorhat		1437	1438	1375
7	Assam	Tezpur		1325	1325	1237
8	Assam	Tezpur		1437	1438	1375
9	Assam	Tihu		1325	1325	1237
10	Assam	Tihu		1437	1438	1375
11	Chhattisgarh	Bilaspur		1350	1340	1320
12	Chhattisgarh	Jagdalpur		1350	1405	1380
13	Chhattisgarh	Raipur		1312	1260	1265
14	Gujarat	Bansda		1350	1400	1355
15	Gujarat	Bavla		1440	1460	
16	Gujarat	Chikhali			1350	1350
17	Karnataka	Raichur		1275	1441	
18	Madhya Pradesh	Balaghat		1400		
19	Tamil Nadu	Chidambaram		1452	1452	1452
20	Tamil Nadu	Cuddalore		1389		
21	Tamil Nadu	Thanjavur		1425	1450	
22	Tripura	Taliamura		1320	1330	1340
23	Uttar Pradesh	Pilibhit		1215	1310	
24	West Bengal	Ahmadpur		1380	1120	1040
25	West Bengal	Ahmadpur		1370	1150	1110
26	West Bengal	Ballichak		1450	1450	1250
27	West Bengal	Bankura Sadar		1420	1360	1100

Contd.

Annex Table 2.3: States/Centres with Prices of Kharif Crops Below MSP During 2016-17 Marketing Season

Rs./qtl

S.No.	State	Centre	MSP	Month		
				Oct	Nov	Dec
A-Paddy			**1470**			
28	West Bengal	Bankura Sadar		1450	1420	1200
29	West Bengal	Belda		1450	1430	1230
30	West Bengal	Belda		1350	1320	1140
31	West Bengal	Bolpur		1380	1150	
32	West Bengal	Contai		1350	1230	1150
33	West Bengal	Dubrajpur		1380	1130	1030
34	West Bengal	Dubrajpur		1380	1380	
35	West Bengal	Garbeta		1410	1400	1220
36	West Bengal	Indas		1450	1400	1200
37	West Bengal	Jhantipari		1420	1380	1100
38	West Bengal	Matiahat		1380	1380	1380
39	West Bengal	Midnapore		1380	1350	1150
40	West Bengal	Pundibari		1300	1200	1150
41	West Bengal	Rampurhat		1370	1120	1000
42	West Bengal	Ratanpurhat		1380	1100	1050
43	West Bengal	Sainthiya		1360	1120	1025
44	West Bengal	Suri		1390	1150	
45	West Bengal	Suri		1390	1140	1050
B-Tur			**5050**			
1	Gujarat	Patan		4450	4250	3925
2	Gujarat	Talod				4415
3	Haryana	Hissar				4000
C-Bajra			**1330**			
1	Gujarat	Nadiad			1250	1175
2	Karnataka	Raichur		1306		1111
3	Maharashtra	Pachora		1200	1200	1250
4	Uttar Pradesh	Agra		1280	1320	
5	Uttar Pradesh	Hathras				1325
6	Uttar Pradesh	Jaswant Nagar				1170

Contd.

Annex Table 2.3: States/Centres with Prices of Kharif Crops Below MSP During 2016-17 Marketing Season

Rs./qtl

S.No.	State	Centre	MSP	Month		
				Oct	Nov	Dec
D-Groundnut			**4220**			
1	Andhra Pradesh	Adoni		4032	4090	
2	Gujarat	Bhuj		4125	4125	
3	Gujarat	Gondal		3870	3755	3750
4	Gujarat	Idar		3500	3750	3750
5	Gujarat	Jamnagar		3500	3968	
6	Gujarat	Junagadh		3555	3683	3470
7	Gujarat	Rajkot		3688	3945	3783
8	Gujarat	Rajkot		3578	4125	3975
9	Gujarat	Talod		3525	4000	
10	Karnataka	Bagalkot		2635	3121	4023
11	Karnataka	Bangalore		4200	4100	4000
12	Rajasthan	Gangapur City		4000	3650	3650
13	Rajasthan	Pilli Banga		3065	3190	3140
E-Jowar			**1625**			
1	Maharashtra	Chalisgaon		1450	1300	1250
2	Maharashtra	Nanded		1400	1500	1300
3	Rajasthan	Ajmer		1380	1490	1525
4	Rajasthan	Jaipur		1475	1575	1600
5	Rajasthan	Jhalwar		1040	1302	1275
6	Rajasthan	Nimbahera		1160	1200	1200
7	Uttar Pradesh	Bahraich		1560	1570	1565
F-Maize			**1365**			
1	Madhya Pradesh	Chhindwara		1232	1330	1288
2	Madhya Pradesh	Mandla		1200	1200	1200
3	Maharashtra	Jalgaon		1300	1250	1300
4	Punjab	Patiala		1250	1250	1250
5	Uttar Pradesh	Bahraich		1320	1335	1330

Contd.

Annex Table 2.3: States/Centres with Prices of Kharif Crops Below MSP During 2016-17 Marketing Season

Rs./qtl

S.No.	State	Centre	MSP	Month		
				Oct	Nov	Dec
G-Moong			**5225**			
1	Andhra Pradesh	Vijayawada		4500	4500	4300
2	Gujarat	Idar		4200	4250	4000
3	Gujarat	Junagadh		3650	3788	3300
4	Gujarat	Patan		4350	3875	3627
5	Gujarat	Talod		4040		4113
6	Haryana	Hissar		5013		
7	Karnataka	Gadag		4996	4778	4535
8	Karnataka	Gulbarga		4625	4562	4560
9	Madhya Pradesh	Bhopal		3700	3300	4000
10	Madhya Pradesh	Biora		4305		3500
11	Madhya Pradesh	Morena				
12	Maharashtra	Akola		4700	4500	4500
13	Maharashtra	Bhusaval		4500	4500	
14	Rajasthan	Merta City		4730	4770	4700
15	Rajasthan	Sikar			4420	4205
16	Tamil Nadu	Virudhunagar				5000
17	Telangana	Suryapeta		4389	4319	4279
18	Uttar Pradesh	Agra		4850	4900	4650
19	Uttar Pradesh	Kanpur				4600

Source: DES, Ministry of Agriculture and Farmers Welfare

Annex Table 2.4: Centres with Wholesale Prices below MSP for Tur and Moong

Crops	State	Centre	No. of Prices Reported	Prices Below MSP (No's)	Purchase under PSS/ PSF (qtl)
Tur	Karnataka	Yadgiri Gulbarga	141	76	56831
		Raichur	188	106	71164
	Maharashtra	Osmanabad Umerga	23	19	27688
		Sholapur Dudhani	78	28	34036
		Vashim Risod	36	13	20311
Moong	Maharashtra	Akola Akot	71	71	10858
		Amravati Dary-apur	71	71	8942
	Telangana	Khammam	50	50	10513
		Nizamabad Mad-nur	18	3	192

Note: Prices taken from 1st October 2016 to 14th February 2017, Procurement as on 27.2.2017
Source: FCI and AGMARKNET

Annex Table 3.1: Simulation-Impact of Oil Content on MSP of Sunflower

S.No.	Oil Content (%)	Oil Cake(%) {100-col(2)}	Realisation from oil cake on processing of 1 quintal of oilseeds, assuming price of cake/qtl= Rs.2020 {col (3)*Price of Oil cake}/100	Cost of Oil Content i.e. oilseeds without cake (Rs./qtl.), assuming MSP/qtl.=4000 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 (Rs.) 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	1313	2687	19.19	4000
2	35.25	64.75	1308	2692	19.09	4017
3	35.50	64.50	1303	2697	18.99	4034
4	35.75	64.25	1298	2702	18.90	4051
5	36.00	64.00	1293	2707	18.80	4068
6	36.25	63.75	1288	2712	18.71	4085
7	36.50	63.50	1283	2717	18.61	4102
8	36.75	63.25	1278	2722	18.52	4120
9	37.00	63.00	1273	2727	18.43	4137
10	37.25	62.75	1268	2732	18.34	4154
11	37.50	62.50	1263	2738	18.25	4171
12	37.75	62.25	1257	2743	18.16	4188
13	38.00	62.00	1252	2748	18.08	4205
14	38.25	61.75	1247	2753	17.99	4222
15	38.50	61.50	1242	2758	17.91	4239
16	38.75	61.25	1237	2763	17.82	4256
17	39.00	61.00	1232	2768	17.74	4273
18	39.25	60.75	1227	2773	17.66	4290
19	39.50	60.50	1222	2778	17.58	4307
20	39.75	60.25	1217	2783	17.50	4325
21	40.00	60.00	1212	2788	17.43	4342
22	40.25	59.75	1207	2793	17.35	4359
23	40.50	59.50	1202	2798	17.27	4376
24	40.75	59.25	1197	2803	17.20	4393
25	41.00	59.00	1192	2808	17.12	4410
26	41.25	58.75	1187	2813	17.05	4427
27	41.50	58.50	1182	2818	16.98	4444
28	41.75	58.25	1177	2823	16.91	4461

Annex Table 3.1: Simulation-Impact of Oil Content on MSP of Sunflower

S.No.	Oil Content (%)	Oil Cake(%) {100-col(2)}	Realisation from oil cake on processing of 1 quintal of oilseeds, assuming price of cake/qtl= Rs.2020 {col (3)*Price of Oil cake}/100	Cost of Oil Content i.e. oilseeds without cake (Rs./qtl.), assuming MSP/qtl.=4000 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 (Rs.) 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)
29	42.00	58.00	1172	2828	16.84	4478
30	42.25	57.75	1167	2833	16.77	4495
31	42.50	57.50	1162	2839	16.70	4512
32	42.75	57.25	1156	2844	16.63	4529
33	43.00	57.00	1151	2849	16.56	4547
34	43.25	56.75	1146	2854	16.50	4564
35	43.50	56.50	1141	2859	16.43	4581
36	43.75	56.25	1136	2864	16.36	4598
37	44.00	56.00	1131	2869	16.30	4615
38	44.25	55.75	1126	2874	16.24	4632
39	44.50	55.50	1121	2879	16.17	4649
40	44.75	55.25	1116	2884	16.11	4666
41	45.00	55.00	1111	2889	16.05	4683
42	45.25	54.75	1106	2894	15.99	4700
43	45.50	54.50	1101	2899	15.93	4717
44	45.75	54.25	1096	2904	15.87	4734
45	46.00	54.00	1091	2909	15.81	4752
46	46.25	53.75	1086	2914	15.75	4769
47	46.50	53.50	1081	2919	15.70	4786
48	46.75	53.25	1076	2924	15.64	4803
49	47.00	53.00	1071	2929	15.58	4820
50	47.25	52.75	1066	2934	15.53	4837
51	47.50	52.50	1061	2940	15.47	4854
52	47.75	52.25	1055	2945	15.42	4871
53	48.00	52.00	1050	2950	15.36	4888
Average increase in MSP with 0.25 percent increase in oil content					**17.08**	

Contd.

Annex Table 4.1: Quarterly Domestic and International Prices of Kharif Crops

(Rs./qtl)

Sl. No.	Quarter	Paddy		Maize		Jowar		Arhar		Urad		Moong		Cotton	
		D	I*	D	I	D	I	D	I	D	I	D	I	D	I**
1	2012 Q1	1048	1805	1195	1396	1969	1355	3013	3046	3841	3100	4153	4156	4132	4691
2	2012 Q2	1077	2034	1190	1457	2033	1242	3131	3413	3814	3169	4128	4441	3880	4522
3	2012 Q3	1160	2027	1317	1794	1907	1274	3387	4261	4172	4105	4865	5209	4272	4317
4	2012 Q4	1262	1926	1327	1733	1879	1560	3455	3592	3813	3470	5056	5474	4131	4127
5	2013 Q1	1300	1952	1377	1652	1960	1581	3593	3787	3934	3439	5511	5543	4305	4522
6	2013 Q2	1375	1906	1396	1629	2059	1454	3809	3985	3922	3645	5464	5546	4325	4815
7	2013 Q3	1442	1815	1496	1506	2038	1365	3720	3828	3994	3486	5233	4897	4765	5307
8	2013 Q4	1467	1700	1332	1237	2053	1294	4046	3837	4366	3661	5355	5755	4568	5023
9	2014 Q1	1482	1552	1311	1297	2110	1385	3929	3964	4679	4288	6141	6841	5033	5392
10	2014 Q2	1517	1408	1330	1280	2156	1312	4140	4277	4992	5430	6277	6801	4886	5144
11	2014 Q3	1497	1625	1369	1055	2185	1117	4761	4596	5802	6000	6423	6908	4796	4337
12	2014 Q4	1459	1669	1264	1074	2083	1245	4432	4671	5208	5471	7182	7380	4139	3953
13	2015 Q1	1424	1657	1332	1084	2167	1478	4955	6452	5499	5675	7288	7095	4090	3980
14	2015 Q2	1398	1583	1359	1068	2087	1366	6006	7184	6501	7607	7285	7615	4066	4263
15	2015 Q3	1352	1574	1382	1099	2020	1233	7696	9007	7397	7614	7057	7608	4150	4282
16	2015 Q4	1447	1586	1441	1102	2031	1162	8798	9802	9499	11828	7855	7442	4491	4259
17	2016 Q1	1432	1673	1447	1080	2136	1174	7591	8037	8521	9056	7009	6887	4569	4196
18	2016 Q2	1443	1827	1504	1145	2123	1163	7999	9344	9925	10674	6623	6331	4509	4425
19	2016 Q3	1539	1802	1546	1028	2289	1018	6816	7203	8855	9497	5463	5741	4788	4963
20	2016 Q4	1451	1635	1468	1026	2321	934	5570	5130	7009	7202	5130	5494	4887	4837

Note : *1* International Prices of Rice converted into paddy at the ratio of 0.67.*
*2 ** International Prices of Kapas from Cotton (lint) using the ratio of 0.41.*

Annex Table 4.1: Quarterly Domestic and International Prices of Kharif Crops

(Rs./qtl)

Sl. No.	Quarter	Soybean		Soybean Oil		Soybean Meal		Groundnut		Groundnut Oil		Sunflower Seed		Sunflower Oil	
		D	I	D	I	D	I	D	I	D	I	D	I	D	I
1	2012 Q1	2525	2450	6825	5861	2128	2480	4241	3742	10834	10619	2751	2858	6342	6238
2	2012 Q2	3285	2925	7132	6317	3264	3357	4523	4106	12054	12717	2803	3240	6630	6828
3	2012 Q3	4178	3547	7528	6604	3617	2966	4643	4062	12001	13171	3319	3667	7093	7157
4	2012 Q4	3142	3076	6757	5935	2729	2656	4623	4162	11901	11993	3419	3608	6855	6771
5	2013 Q1	3263	2903	6857	5940	3124	2744	4563	3468	12468	10421	3281	3623	7082	6797
6	2013 Q2	3643	2994	6705	5489	3188	3089	4340	3326	11169	9883	3276	3100	6984	6817
7	2013 Q3	3386	3318	6524	5480	3142	3303	3675	3349	9259	11388	3215	2681	7384	6412
8	2013 Q4	3542	3349	6846	5658	3314	3278	3508	3518	8558	10720	3136	2981	6810	6138
9	2014 Q1	3699	3309	6642	5417	3478	3147	3481	3392	7707	8483	3213	3074	6296	5825
10	2014 Q2	4033	3137	6613	5223	4004	2697	3628	2984	7543	7610	3063	2851	5977	5606
11	2014 Q3	3551	2828	6218	4959	3467	2660	3726	2907	7869	8161	2934	2482	5699	5126
12	2014 Q4	3125	2767	6053	4777	2826	2680	3724	2861	8536	8227	2852	2738	5748	5452
13	2015 Q1	3285	2678	6152	4501	2859	2471	3977	3079	9718	7612	3067	2716	5902	5068
14	2015 Q2	3569	2314	5942	4389	3368	2262	4210	3097	9658	7731	2880	2649	6213	5630
15	2015 Q3	3235	2362	5767	4114	2980	2333	4511	3100	10387	8380	3104	2800	6387	5325
16	2015 Q4	3616	2322	6142	4439	3354	2146	4061	2628	9300	8443	3348	3110	6717	5706
17	2016 Q1	3590	2248	6153	4530	3348	2041	4071	2885	9616	8273	3345	3072	6759	5754
18	2016 Q2	3895	2715	6382	4794	3639	2650	4786	2870	11912	8784	3200	2863	6753	5744
19	2016 Q3	3456	2750	6446	4881	3168	2503	4954	2810	13474	9089	3068	2708	6623	5478
20	2016 Q4	2887	2602	6924	5438	2455	2250	4176	2789	10141	9866	3012	2823	6679	5628

Source: 1. DES for domestic wholesale prices for Paddy, Maize, Jowar, Arhar, Urad, Moong, Cotton, Soybean, Groundnut and Sunflower Seed.
2.The Solvent Extractors Association of India for domestic prices for Soybean Oil, Soybean Meal, Groundnut Oil and Sunflower Oil.
3. World Bank for International Prices of Paddy, Maize, Jowar and Cotton**.*
4. USDA for International Prices of Soybean, Soybean Oil, Soybean Meal, Groundnut, Groundnut Oil, Sunflower seed and Sunflower Oil
5. NAFED for International Prices of Pulses viz. Arhar, Urad & Moong.

Annex Table 4.2: India's Agricultural Exports of Major Commoditities

(Rs.'000 crore)

Sl. No.	Commodity	Apr-Dec 2015	Apr-Dec 2016(P)	Percent increase/ decrease over previous year	Share in Total Export
1	Marine Products	24.6	30.8	25.0	18.4
2	Rice	29.2	27.0	-7.5	16.1
3	Meat & Processed Meat	21.3	20.4	-4.2	12.2
4	Spices	12.1	13.7	12.5	8.2
5	Sugar	6.1	6.5	6.6	3.9
6	Oilseeds	5.9	6.3	6.8	3.8
7	Cotton (Raw)	8.8	5.5	-37.4	3.3
8	Fresh Vegetables	4.1	4.3	5.6	2.6
9	Cashew	3.8	3.8	-0.9	2.3
10	Oil Meals	2.9	3.0	3.4	1.8
11	Guargum Meal	2.6	2.1	-19.2	1.3
12	Others	43.7	44.0	0.7	26.3
	Total	165.2	167.4	1.3	

Source: DGCIS

Annex Table 4.3: India's Agricultural Imports of Major Commoditities

(Rs.'000 crore)

Sl. No.	Commodity	Apr-Dec 2015	Apr-Dec 2016(P)	Percent increase/ decrease over previous year	Share in Total Import
1	Vegetable Oils	52.6	54.1	3.0	40.1
2	Pulses	19.2	20.4	5.9	15.1
3	Wood and Wood Products	13.3	12.3	-7.5	9.1
4	Fresh Fruits	8.7	8.3	-4.9	6.1
5	Cashew	7.4	6.8	-7.7	5.1
6	Cotton (Raw)	2.1	5.5	158.1	4.1
7	Sugar	2.8	5.0	78.7	3.7
8	Spices	3.8	4.2	8.7	3.1
9	Wheat	0.8	2.7	224.7	2.0
10	Others	14.3	15.8	10.5	11.7
	Total	125.1	135.1	8.0	

Source: DGCIS

Annex Table 5.1: State-wise Gross and Net Returns of Kharif Crops, TE2014-15

Crop/State	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				Rs/ha (Col.5-Col.2)	Percent (Col.6/Col.2)*100	Rs/ha (Col.5-Col.3)	Percent (Col.8/Col.3)*100	Rs/ha (Col.5-Col.4)	Percent (Col.10/Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Paddy										
Andhra Pradesh	39879	47181	73068	82044	42165	106	34863	74	8976	12
Assam	17942	31733	41753	32227	14285	80	494	2	-9526	-23
Bihar	19221	25409	34700	34238	15017	78	8829	35	-462	-1
Chattisgarh	20794	27131	39832	43466	22672	109	16334	60	3633	9
Gujarat	32431	37414	49721	66517	34087	105	29103	78	16796	34
Haryana	31575	40341	68395	109627	78052	247	69286	172	41232	60
Himachal Pradesh	7925	22347	31031	37513	29588	373	15166	68	6482	21
Jharkhand	17185	22672	31951	29296	12111	70	6623	29	-2656	-8
Kerala	46195	49157	67309	89127	42931	93	39970	81	21818	32
Karnataka	37435	45353	65016	83773	46338	124	38420	85	18757	29
Madhya Pradesh	18958	25672	39182	46139	27182	143	20468	80	6958	18
Maharashtra	35724	46224	59081	54876	19152	54	8651	19	-4205	-7
Odisha	23172	36815	49038	41379	18208	79	4564	12	-7658	-16
Punjab	33352	38807	68794	99277	65925	198	60470	156	30484	44
Tamil Nadu	44770	54138	70527	78169	33400	75	24031	44	7643	11
Uttarakhand	23411	33981	44707	54546	31136	133	20566	61	9840	22
Uttar Pradesh	24705	33799	49303	54228	29523	120	20429	60	4926	10
West Bengal	32966	48100	62916	55057	22091	67	6956	14	-7859	-12
ALL-INDIA	28039	37451	53538	57803	29764	106	20352	54	4265	8

(Continued)

Annex Table 5.1: State-wise Gross and Net Rreturns of Kharif Crops, TE2014-15

Crop/State	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				Rs/ha (Col.5-Col.2)	Percent (Col.6/ Col.2)*100	Rs/ha (Col.5-Col.3)	Percent (Col.8/ Col.3)*100	Rs/ha (Col.5-Col.4)	Percent (Col.10/ Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Maize										
Andhra Pradesh	32409	38929	60836	68966	36557	113	30037	77	8130	13
Bihar	19912	25556	34805	42493	22581	113	16937	66	7688	22
Chattisgarh	8390	16718	22305	19488	11098	132	2770	17	-2817	-13
Gujarat	20978	31384	38316	31831	10853	52	447	1	-6485	-17
Himachal Pradesh	8395	20175	27288	21771	13376	159	1596	8	-5517	-20
Jharkhand	21664	32602	39887	47593	25929	120	14990	46	7706	19
Karnataka	25079	29709	40976	41831	16752	67	12123	41	856	2
Madhya Pradesh	16527	21768	30806	32198	15671	95	10430	48	1393	5
Punjab	31068	38427	51749	49761	18693	60	11334	29	-1988	-4
Rajasthan	15249	32953	41631	37752	22503	148	4799	15	-3879	-9
Tamil Nadu	44075	53886	70866	74530	30455	69	20644	38	3665	5
Uttar Pradesh	12337	22196	32476	25858	13521	110	3662	16	-6619	-20
ALL-INDIA	21262	29858	41271	41732	20470	96	11874	40	461	1
Jowar										
Andhra Pradesh	17269	24074	37354	40008	22739	132	15934	66	2654	7
Karnataka	12375	15592	22063	22417	10042	81	6825	44	354	2
Madhya Pradesh	14397	18648	23876	17779	3381	23	-869	-5	-6097	-26
Maharashtra	22777	28090	38630	31803	9025	40	3713	13	-6828	-18
Rajasthan	10207	17855	25353	33619	23412	229	15764	88	8266	33
Tamil Nadu	14080	18623	27458	34899	20819	148	16277	87	7441	27
ALL-INDIA	18818	23685	32947	29474	10656	57	5790	24	-3473	-11

(Continued)

Annex Table 5.1: State-wise Gross and Net Returns of Kharif Crops, TE2014-15

Crop/State	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				Rs/ha (Col.5-Col.2)	Percent (Col.6/Col.2)*100	Rs/ha (Col.5-Col.3)	Percent (Col.8/Col.3)*100	Rs/ha (Col.5-Col.4)	Percent (Col.10/Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Bajra										
Gujarat	22930	29615	39524	51282	28352	124	21667	73	11758	30
Haryana	12450	23699	34452	28191	15740	126	4491	19	-6261	-18
Karnataka	10645	12970	16598	13732	3087	29	762	6	-2866	-17
Maharashtra	24486	31336	39898	28891	4405	18	-2445	-8	-11006	-28
Rajasthan	7236	15675	21026	20309	13073	181	4634	30	-716	-3
Tamil Nadu	19850	24588	35517	49325	29475	148	24737	101	13808	39
Uttar Pradesh	12504	19434	29389	29815	17312	138	10381	53	426	1
ALL-INDIA	11627	19589	26587	25657	14031	121	6068	31	-930	-3
Ragi										
Andhra Pradesh	16044	34560	46672	39275	23231	145	4715	14	-7397	-16
Karnataka	25647	33914	43439	33030	7383	29	-884	-3	-10409	-24
Maharashtra	20432	31620	38534	24178	3746	18	-7443	-24	-14356	-37
Tamil Nadu	20357	31137	41149	64824	44467	218	33686	108	23674	58
Uttrakhand	9176	22158	27018	31139	21963	239	8981	41	4121	15
ALL-INDIA	23189	32690	41602	33914	10724	46	1223	4	-7688	-18
Arhar (Tur)										
Andhra Pradesh	20015	25930	36815	31041	11027	55	5112	20	-5774	-16
Bihar	8469	9093	17785	32650	24181	286	23557	259	14865	84
Gujarat	18774	24737	32509	36983	18209	97	12246	50	4474	14
Karnataka	17497	21010	31465	42653	25157	144	21643	103	11188	36
Madhya Pradesh	12797	18309	30717	39197	26400	206	20888	114	8480	28
Maharashtra	33778	42921	60423	71181	37403	111	28260	66	10758	18
Odisha	6004	12450	18588	19138	13133	219	6687	54	550	3
Uttar Pradesh	12741	23224	41719	41263	28522	224	18039	78	-456	-1
ALL-INDIA	21723	28546	42002	48586	26864	124	20041	70	6585	16

(Continued)

Annex Table 5.1: State-wise Gross and Net Returns of Kharif Crops, TE2014-15

Crop/State	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				Rs/ha (Col.5-Col.2)	Percent (Col.6/Col.2)*100	Rs/ha (Col.5-Col.3)	Percent (Col.8/Col.3)*100	Rs/ha (Col.5-Col.4)	Percent (Col.10/Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Moong										
Andhra Pradesh	11720	14733	24244	28485	16766	143	13753	93	4242	17
Gujarat	17060	20824	23778	18114	1055	6	-2709	-13	-5664	-24
Karnataka	12147	14729	20668	25606	13460	111	10878	74	4938	24
Maharashtra	20720	25863	32716	26327	5607	27	464	2	-6389	-20
Odisha	5993	11937	16980	16952	10960	183	5015	42	-28	-0.2
Rajasthan	7604	14262	18921	21979	14375	189	7718	54	3059	16
Tamil Nadu	14374	17651	23064	28467	14093	98	10816	61	5403	23
ALL-INDIA	11295	16505	22321	23612	12316	109	7106	43	1290	6
Urad										
Andhra Pradesh	15387	17099	32441	49388	34000	221	32289	189	16946	52
Chattisgarh	6979	17022	24335	25971	18992	272	8949	53	1637	7
Madhya Pradesh	10966	14860	22044	25559	14593	133	10699	72	3515	16
Maharashtra	17145	22394	27867	22096	4950	29	-298	-1	-5772	-21
Odisha	5647	12275	17217	15993	10346	183	3718	30	-1224	-7
Rajasthan	8675	18083	22716	20019	11344	131	1936	11	-2696	-12
Tamil Nadu	15897	19194	26665	29251	13354	84	10058	52	2587	10
Uttar Pradesh	8163	12938	18686	16536	8373	103	3597	28	-2151	-12
ALL-INDIA	12048	16562	24372	26863	14815	123	10301	62	2491	10

(Continued)

Annex Table 5.1: State-wise Gross and Net Returns of Kharif Crops, TE2014-15

Crop/State	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				Rs/ha (Col.5-Col.2)	Percent (Col.6/Col.2)*100	Rs/ha (Col.5-Col.3)	Percent (Col.8/Col.3)*100	Rs/ha (Col.5-Col.4)	Percent (Col.10/Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Groundnut										
Andhra Pradesh	38454	45681	69193	71267	32813	85	25586	56	2074	3
Gujarat	37318	46131	59563	69493	32176	86	23363	51	9930	17
Karnataka	27403	32596	43240	41871	14468	53	9275	28	-1369	-3
Maharashtra	33763	44737	59197	66940	33177	98	22203	50	7743	13
Odisha	22211	36911	52530	55817	33607	151	18906	51	3288	6
Rajasthan	26198	36109	57455	101642	75443	288	65533	181	44187	77
Tamil Nadu	42393	55212	69917	68863	26469	62	13651	25	-1055	-2
ALL-INDIA	35751	44157	60758	66851	31099	87	22693	51	6092	10
Soybean										
Andhra Pradesh	23975	28024	40321	33816	9842	41	5792	21	-6505	-16
Chattisgarh	13113	15519	21853	22441	9328	71	6922	45	587	3
Madhya Pradesh	16971	20875	31176	36898	19927	117	16023	77	5722	18
Maharashtra	28572	32308	42142	43550	14978	52	11241	35	1408	3
Rajasthan	15012	19698	26608	30622	15610	104	10924	55	4013	15
ALL-INDIA	20408	24319	34112	38147	17739	87	13827	57	4035	12
Sunflower										
Andhra Pradesh	19104	25470	34534	25847	6743	35	377	1	-8687	-25
Karnataka	13894	16170	22357	22145	8250	59	5974	37	-212	-1
Maharashtra	19378	22069	28449	29195	9816	51	7125	32	746	3
ALL-INDIA	15777	19024	26027	24359	8582	54	5336	28	-1668	-6
Sesamum										
Andhra Pradesh	12687	16706	25458	25979	13292	105	9273	56	521	2
Gujarat	16613	22488	31119	46881	30268	182	24394	108	15762	51
Madhya Pradesh	8969	15004	27244	46274	37305	416	31270	208	19029	70
Odisha	6430	11869	17813	19575	13145	204	7705	65	1761	10
Rajasthan	4935	10609	15073	19450	14515	294	8841	83	4377	29
Tamil Nadu	16216	22846	31554	40111	23894	147	17264	76	8556	27
Uttar Pradesh	8328	13848	26347	30573	22246	267	16725	121	4227	16
West Bengal	19084	25459	34865	34233	15149	79	8773	34	-633	-2
ALL-INDIA	10522	16270	24655	33002	22480	214	16732	103	8347	34

(Continued)

Annex Table 5.1: State-wise Gross and Net Returns of Kharif Crops, TE2014-15

Crop/State	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				Rs/ha (Col.5-Col.2)	Percent (Col.6/ Col.2)*100	Rs/ha (Col.5-Col.3)	Percent (Col.8/ Col.3)*100	Rs/ha (Col.5-Col.4)	Percent (Col.10/ Col.4)*100
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Nigerseed										
Madhya Pradesh	8869	13824	17978	10464	1595	18	-3360	-24	-7514	-42
Odisha	5420	11885	16506	14622	9202	170	2737	23	-1884	-11
ALL-INDIA	5944	12129	16827	14670	8726	147	2541	21	-2157	-13
Cotton										
Andhra Pradesh	46392	54844	77980	70536	24144	52	15692	29	-7444	-10
Gujarat	39084	49870	66238	80936	41852	107	31065	62	14697	22
Haryana	27769	45478	67262	68359	40591	146	22882	50	1098	2
Karnataka	30511	36359	52813	64224	33712	110	27865	77	11410	22
Madhya Pradesh	26378	37018	54027	57250	30872	117	20232	55	3224	6
Maharashtra	46315	54720	72234	71491	25176	54	16771	31	-743	-1
Odisha	24261	35545	47478	40853	16592	68	5308	15	-6625	-14
Punjab	41317	48924	74887	85135	43818	106	36211	74	10248	14
Rajasthan	25309	47443	66401	97284	71975	284	49841	105	30883	47
Tamil Nadu	38957	61406	78816	78655	39698	102	17250	28	-161	-0
ALL-INDIA	40802	50837	69664	73618	32817	80	22782	45	3954	6

Source: CACP calculations based on CS data

Annex Table 5.2: Month-wise and State-wise Average Daily Wage Rates for Agricultural Labour (Man)

(Rs./Day)

Year/Month	AP	Asm	Bih	Guj	Har	HP	Kar	Ker	MP	MH	Odi	Pun	Raj	TN	UP	WB	All-India
2011																	
January	171	117	101	92	197	195	116	335	86	124	126	172	140	175	115	122	129
February	171	118	100	94	202	207	118	335	87	127	133	165	141	181	118	126	131
March	174	123	101	93	202	207	119	341	89	131	128	169	149	184	116	126	133
April	174	122	101	94	203	217	120	341	89	131	133	170	163	186	116	126	136
May	171	122	102	95	203	211	125	341	90	135	135	211	179	178	117	129	139
June	174	123	103	96	203	218	127	350	90	140	133	189	172	199	119	130	140
July	174	127	108	112	205	219	128	360	94	156	133	215	208	200	123	133	151
August	171	128	110	112	206	232	133	372	98	155	134	211	191	208	122	139	150
September	176	115	113	113	206	232	136	376	98	152	137	189	154	206	123	141	145
October	177	127	113	113	205	230	137	392	99	153	135	219	162	209	126	142	148
November	191	131	119	113	214	232	138	454	99	155	138	223	203	213	130	143	157
December	176	127	113	113	206	232	136	376	98	152	137	189	154	206	123	141	145
2012																	
January	177	127	113	113	205	237	137	392	99	153	135	219	162	209	126	142	148
February	203	131	124	115	212	241	145	420	100	153	140	235	172	231	136	151	157
March	195	132	126	116	213	241	147	413	106	156	140	233	198	226	135	152	161
April	207	132	127	117	210	241	146	417	110	156	145	256	194	231	136	159	164
May	198	134	129	118	210	241	148	417	108	154	148	243	202	232	138	161	164
June	185	134	134	118	215	246	156	420	113	165	137	223	204	238	138	160	165
July	191	138	138	125	219	270	163	453	116	171	140	246	223	244	146	169	174
August	193	138	143	126	229	246	168	453	119	170	152	241	213	253	149	167	175
September	205	140	144	126	229	246	170	455	121	173	143	240	214	252	153	165	177
October	199	145	147	126	238	246	173	461	119	174	135	278	216	251	156	165	179
November	210	148	148	126	233	251	178	461	120	173	137	274	217	246	158	171	180
December	224	145	151	127	228	260	177	461	120	182	138	273	221	247	160	173	184

(Continued)

Annex Table 5.2: Month-wise and State-wise Average Daily Wage Rates for Agricultural Labour (Man)

(Rs./Day)

Year/Month	AP	Asm	Bih	Guj	Har	HP	Kar	Ker	MP	MH	Odi	Pun	Raj	TN	UP	WB	All-India
2013																	
January	224	146	162	130	246	273	184	465	126	186	136	257	219	253	163	178	187
February	228	157	164	130	245	259	188	465	126	192	134	260	204	259	165	180	187
March	221	154	166	133	245	259	189	461	130	194	136	260	208	265	166	181	189
April	230	153	167	130	247	264	192	478	135	195	137	284	217	265	168	182	193
May	223	150	167	131	245	266	192	489	138	197	141	273	244	266	169	185	197
June	222	162	168	132	244	262	196	483	134	189	143	290	235	271	173	185	196
July	221	178	175	136	258	263	203	485	132	201	150	291	220	272	174	198	198
August	210	183	177	137	317	284	210	487	133	200	157	279	215	275	181	200	199
September	213	178	176	138	312	290	212	490	138	196	150		219	284	181	200	192
October	212	175	175	139	312	298	213	487	144	199	156	283	229	294	180	199	203
November	247	184	205	142	328	337	235	585	140	221	196		248	330	192	224	214
December	242	181	191	165	325	356	228	580	151	216	179	278	247	352	186	229	222
2014																	
January	229	182	194	172	320	336	237	580	155	215	178	276	262	355	191	229	225
February	226	188	200	172	329	336	240	629	158	214	180	275	251	362	191	230	226
March	222	189	202	175	333	341	243	594	161	219	164	279	270	356	195	223	229
April	222	199	204	179	335	352	240	594	163	223	160	306	291	361	201	226	235
May	225	203	206	179	346	335	242	594	165	223	173	307	283	364	202	225	235
June	217	204	207	179	347	341	241	594	164	230	191	304	280	362	199	227	235
July	230	208	218	185	345	345	241	599	173	225	201	302	320	372	200	226	244
August	226	220	220	190	348	343	241	599	173	226	208	304	305	371	202	230	243
September	239	225	220	190	350	343	242	586	180	222	204	310	296	417	198	234	246
October	241	226	222	198	354	339	242	586	171	222	202	310	297	412	201	237	246
November	247	238	220	198	357	330	244	597	170	223	200	312	305	421	199	236	248
December	236	234	220	192	344	349	252	604	176	222	194	307	307	417	199	237	247

(Continued)

Annex Table 5.2: Month-wise and State-wise Average Daily Wage Rates for Agricultural Labour (Man)

(Rs./Day)

Year/Month	AP	Asm	Bih	Guj	Har	HP	Kar	Ker	MP	MH	Odi	Pun	Raj	TN	UP	WB	All-India
2015																	
January	246	235	219	194	338	363	254	643	178	225	201	286	298	430	200	241	249
February	250	234	221	194	335	363	252	643	179	225	202	290	287	440	202	241	249
March	245	226	228	194	341	363	253	642	179	226	202	281	284	429	205	242	248
April	245	225	230	195	340	363	253	652	182	231	201	277	291	403	209	242	249
May	235	231	231	196	345	362	260	652	183	232	200	292	279	405	208	242	249
June	239	239	237	196	346	351	260	664	188	228	203	311	282	399	207	240	250
July	229	236	242	203	350	361	269	664	186	234	206	311	295	393	211	240	253
August	241	238	246	203	355	366	277	653	188	233	202	304	300	404	214	239	257
September	241	239	246	203	354	372	278	656	190	228	196	303	304	394	214	241	256
October	240	236	244	203	354	367	279	656	189	233	200	298	298	392	215	237	256
November	276	243	243	203	351	374	285	657	182	228	204	301	303	382	216	237	259
December	278	241	245	203	361	379	286	657	180	229	200	301	302	383	219	248	260
2016																	
January	276	235	248	206	354	371	285	664	183	231	199	288	276	381	218	251	256
February	254	233	248	206	359	371	281	666	182	229	195	300	270	383	217	252	253
March	250	234	246	213	359	371	280	670	186	231	206	292	277	406	217	254	256
April	272	240	246	214	362	395	278	670	188	232	198	310	260	406	223	254	257
May	256	241	248	214	368	369	283	665	186	247	199	312	266	400	223	256	258
June	254	255	249	214	368	370	288	665	190	249	210	321	265	396	222	259	260
July	257	255	251	219	368	373	295	665	189	238	207	313	289	408	225	259	264
August	262	253	252	219	368	379	293	665	188	246	213	296	283	411	225	258	264
September	263	254	247	219	368	379	293	665	192	248	209	288	284	412	221	254	263
October	263	254	247	219	368	391	290	665	199	249	203	306	284	409	221	257	265
November	271	254	247	219	368	387	297	665	199	255	207	307	281	406	227	260	267
December	284	259	247	219	368	387	298	665	201	255	217	305	279	406	225	263	269

Note: Daily Wage rate - Average of five operations i.e. Ploughing, Sowing, Weeding, Transplanting and Harvesting
Source: Labour Bureau, Ministry of Labour, Govt. of India

Annex Table 5.3: Farm Inputs - Wholesale Price Index (Base 2004-05=100)

Year/Month	Fertilisers	Electricity (Agricul-tural)	Pesticides	Non-Electrical Machinery	Tractors	Lubricants	High Speed Diesel (HSD)	Fodder	Cattle Feed
Annual Average (July - June)									
2012-13	151.1	170.9	122.2	123.0	142.7	248.3	192.7	237.8	220.0
2013-14	153.0	206.4	128.4	124.4	147.3	262.1	224.9	281.6	248.7
2014-15	155.6	214.1	136.6	127.5	152.3	275.2	216.6	297.9	261.5
2015-16	158.8	232.1	139.0	127.8	154.2	277.5	185.7	322.3	272.8
2012									
January	139.5	135.7	115.9	123.6	137.9	236.6	167.8	198.5	187.3
February	140.1	135.7	115.9	124.0	138.0	236.6	167.8	197.4	191.8
March	141.1	135.7	116.2	122.8	138.4	236.6	167.8	202.2	197.3
April	142.3	135.7	118.9	122.1	138.3	236.6	167.8	205.7	195.4
May	142.4	135.7	118.7	122.6	138.3	236.6	167.8	203.4	195.6
June	144.3	166.3	117.9	122.6	140.7	241.4	167.8	196.0	199.7
July	148.3	166.3	120.4	122.7	140.7	241.4	167.8	208.4	199.7
August	149.1	166.3	121.0	122.9	140.9	241.4	168.6	217.8	199.7
September	150.5	166.3	122.1	122.9	141.2	241.4	182.8	228.1	201.8
October	150.7	166.3	122.1	123.0	141.5	241.4	192.3	236.1	209.3
November	151.0	166.3	122.1	123.1	142.4	241.4	192.3	239.6	214.3
December	152.1	166.3	122.3	123.0	143.7	253.3	192.3	237.5	225.2
2013									
January	152.6	166.3	123.0	123.0	143.7	253.3	198.8	241.9	225.2
February	152.5	166.3	122.9	123.5	143.7	253.3	202.7	246.2	231.1
March	152.3	166.3	122.5	123.1	143.7	253.3	201.7	250.4	232.2
April	152.4	184.8	122.0	123.0	143.7	253.3	202.3	246.0	233.8
May	151.5	184.8	123.0	122.9	143.7	253.3	203.4	244.2	233.3
June	150.5	184.8	123.5	122.9	143.7	253.3	207.0	257.1	234.1
July	151.5	184.8	123.6	123.1	143.7	253.3	212.0	265.3	238.2
August	152.0	203.0	124.5	123.8	143.8	253.3	215.4	267.6	237.7
September	152.4	206.9	125.7	123.9	144.3	263.9	219.8	270.1	238.8
October	152.7	209.1	127.7	124.1	144.7	263.9	220.4	270.7	238.4
November	152.8	209.1	127.9	124.1	144.7	263.9	222.4	274.1	239.0
December	152.6	205.5	127.5	124.3	145.0	263.9	225.0	278.3	246.6

(Continued)

Annex Table 5.3: Farm Inputs - Wholesale Price Index (Base 2004-05=100)

Year/Month	Fertilisers	Electricity (Agricultural)	Pesticides	Non-Electrical Machinery	Tractors	Lubricants	High Speed Diesel (HSD)	Fodder	Cattle Feed
2014									
January	153.0	205.5	127.2	124.3	149	263.9	226.6	285.5	244.9
February	152.9	205.5	128.2	124.4	149.6	263.9	228.6	299.0	251.4
March	153.1	211.3	130.5	124.4	150.1	263.9	231.2	316.8	259.4
April	154.4	212.1	130.6	124.5	150.8	263.9	230.1	296.5	263.4
May	154.3	212.1	131.7	124.5	150.8	263.9	232.3	275.6	263.7
June	154.2	212.1	135.2	126.8	150.9	263.9	235.2	280.0	262.8
July	154.4	211.3	135.4	127.3	151.4	263.9	238.8	277.6	262.8
August	154.2	211.3	135.4	127.1	151.5	263.9	240.4	285.9	262.8
September	154.6	211.5	137.2	127.2	152.0	275.2	242.0	308.4	262.2
October	154.9	211.5	136.6	127.3	152.3	277.8	239.2	313.5	264.7
November	155.4	211.5	136.3	127.3	152.2	277.8	218.1	318.3	262.1
December	155.3	211.5	137.0	127.3	152.1	277.8	210.8	322.4	260.3
2015									
January	155.3	211.5	138.6	127.8	152.2	277.8	200.7	319.6	262.9
February	155.6	217.9	138.1	127.9	152.3	277.8	188.4	306.6	262.9
March	156.3	217.9	136.7	127.5	152.9	277.5	203.2	286.1	262.7
April	156.1	217.9	135.9	127.6	153.0	277.5	195.6	277.4	261.1
May	156.7	217.9	136.2	127.6	153.0	277.5	209.6	274.9	257.5
June	157.8	217.9	136.1	127.6	153.0	277.5	212.0	283.5	256.4
July	158.2	243.5	136.5	127.5	153.0	277.5	200.8	296.2	258.4
August	158.3	243.5	136.4	127.4	153.1	277.5	179.4	316.0	258.5
September	158.9	243.5	137.0	127.4	153.2	277.5	174.0	317.4	263.4
October	158.9	243.5	138.7	127.5	153.2	277.5	176.5	322.2	266.6
November	158.5	243.5	138.6	127.5	153.3	277.5	181.7	330.9	268.4
December	158.5	243.5	138.6	127.8	153.3	277.5	181.7	338.6	269.2

(Continued)

Annex Table 5.3: Farm Inputs - Wholesale Price Index (Base 2004-05=100)

Year/Month	Fertilisers	Electricity (Agricul-tural)	Pesticides	Non-Electrical Machinery	Tractors	Lubricants	High Speed Diesel (HSD)	Fodder	Cattle Feed
2016									
January	158.7	220.6	139.4	127.7	153.4	277.5	174.6	333.5	271.8
February	158.7	220.6	140.2	127.6	153.4	277.5	173.8	326.8	280.7
March	158.9	220.6	139.0	128.0	153.4	277.5	183.3	328.9	281.1
April	159.1	220.6	138.8	128.4	157.0	277.5	187.9	320.2	284.1
May	159.5	220.6	142.6	128.5	157.0	277.5	200.5	310.5	285.3
June	159.7	220.6	141.8	128.4	157.0	277.5	214.4	326.4	285.9
July	159.3	220.6	140.7	128.5	157.0	277.5	214.0	327.0	286.4
August	158.3	220.6	140.5	128.5	157.0	277.5	201.2	309.4	286.0
September	158.3	220.6	141.2	128.3	157.0	277.5	207.2	310.1	290.5
October	157.9	220.6	141.9	128.3	157.0	277.5	210.6	316.0	291.1
November	156.3	220.6	142.1	128.4	157.0	277.5	216.7	311.9	296.8
December	156.0	220.6	142.2	128.4	157.0	277.5	218.5	312.4	299.8
2017									
January	155.4	220.6	142.2	128.4	153.8	277.5	228.9	311.4	295.2
% change of Nov.,2016 to Jan.,2017 over Nov.,2015 to Jan.,2016	-1.7	-6.5	2.4	0.6	1.7	0.0	23.4	-6.7	10.2

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

Annex Table 5.4: Projected Cost of Production (A_2, A_2+FL & C_2) for Kharif 2017-18 and Production Shares

States	Cost of Production (Rs./qtl.)			Shares in Production (%)
	A_2	A_2+FL	C_2	
Paddy				
Andhra Pradesh	902	1062	1495	11
Assam	707	1230	1521	5
Bihar	799	1053	1338	6
Chhattisgarh	709	915	1272	6
Gujarat	923	1061	1360	2
Haryana	826	1049	1618	4
Jharkhand	1035	1359	1712	3
Karnataka	879	1062	1437	3
Kerala	1184	1252	1622	1
Madhya Pradesh	763	1027	1437	3
Maharashtra	1221	1569	1938	3
Odisha	845	1327	1656	7
Punjab	579	672	1119	11
Tamil Nadu	950	1146	1449	6
Uttar Pradesh	794	1073	1442	13
Uttarakhand	694	1009	1260	1
West Bengal	979	1409	1725	15
All India Wtd. Avg.	840	1117	1484	
Jowar				
Andhra Pradesh	1063	1486	2039	8
Karnataka	1537	1928	2503	24
Madhya Pradesh	1033	1311	1692	8
Maharashtra	1250	1529	2098	41
Rajasthan	639	1119	1542	9
Tamil Nadu	1048	1396	1881	10
All India Wtd. Avg.	1214	1556	2089	
Bajra				
Gujarat	769	981	1246	11
Haryana	570	1078	1512	9
Karnataka	1272	1549	1868	3

(Continued)

Annex Table 5.4: Projected Cost of Production (A_2, A_2+FL & C_2) for Kharif 2017-18 and Production Shares

States	Cost of Production (Rs./qtl.)			Shares in Production (%)
	A_2	A_2+FL	C_2	
Maharashtra	1246	1573	2005	7
Rajasthan	398	857	1156	47
Uttar Pradesh	524	809	1157	22
Tamil Nadu	784	967	1316	2
All India Wtd. Avg.	571	949	1278	
Maize				
Andhra Pradesh	668	800	1222	22
Bihar	639	813	1072	12
Gujarat	1024	1533	1851	3
Himachal Pradesh	610	1449	1851	3
Karnataka	856	1009	1339	20
Madhya Pradesh	766	1001	1334	11
Punjab	743	919	1212	2
Rajasthan	752	1610	1946	7
Tamil Nadu	912	1107	1405	11
Uttar Pradesh	710	1278	1804	7
All India Wtd. Avg.	761	1044	1396	
Ragi				
Karnataka	1505	1950	2493	73
Maharashtra	1349	2088	2408	7
Tamil Nadu	944	1447	1799	20
All India Wtd. Avg.	1384	1861	2351	
Arhar (Tur)				
Andhra Pradesh	3204	4142	5683	9
Gujarat	2707	3509	4486	9
Karnataka	2588	3096	4212	17
Madhya Pradesh	1770	2531	3899	20
Maharashtra	2866	3642	4779	31
Odisha	1840	3810	5525	5
Uttar Pradesh	1652	3042	4970	8
All India Wtd. Avg.	2463	3318	4612	

(Continued)

Annex Table 5.4: Projected Cost of Production (A_2, A_2+FL & C_2) for Kharif 2017-18 and Production Shares

States	Cost of Production (Rs./qtl.)			Shares in Production (%)
	A_2	A_2+FL	C_2	
Moong				
Andhra Pradesh	2449	3065	4822	17
Karnataka	3790	4589	5927	5
Maharashtra	4758	5955	7367	11
Odisha	2176	4320	5858	9
Rajasthan	2352	4407	5787	44
Tamil Nadu	3158	3910	4974	14
All India Wtd. Avg.	2809	4286	5700	
Urad				
Andhra Pradesh	1594	1762	3277	21
Madhya Pradesh	1699	2276	3348	26
Maharashtra	4086	5355	6389	8
Odisha	2017	4327	5745	2
Rajasthan	2324	4889	5760	6
Tamil Nadu	3439	4140	5428	20
Uttar Pradesh	2491	3927	5304	17
All India Wtd. Avg.	2393	3265	4517	
Groundnut				
Andhra Pradesh	2195	2598	3962	14
Gujarat	2731	3341	4166	48
Karnataka	3834	4543	5675	7
Maharashtra	2421	3213	4246	5
Rajasthan	1112	1534	2368	14
Tamil Nadu	3157	4093	4893	13
All India Wtd. Avg.	2546	3159	4089	
Soybean				
Madhya Pradesh	1413	1727	2565	58
Maharashtra	2450	2753	3495	32
Rajasthan	1811	2353	3119	10
All India Wtd. Avg.	1787	2121	2921	

(Continued)

Annex Table 5.4: Projected Cost of Production (A_2, A_2+FL & C_2) for Kharif 2017-18 and Production Shares

States	Cost of Production (Rs./qtl.)			Shares in Production (%)
	A_2	A_2+FL	C_2	
Sunflower				
Andhra Pradesh	2538	3392	4806	21
Karnataka	3135	3616	4585	69
Maharashtra	2374	2727	3509	10
All India Wtd. Avg.	2933	3481	4526	
Sesamum				
Andhra Pradesh	4108	5384	7872	4
Gujarat	4390	5790	7515	15
Madhya Pradesh	2123	3523	5786	26
Rajasthan	2375	5112	7119	16
Tamil Nadu	3846	5410	7122	6
West Bengal	2120	2821	3623	33
All India Wtd. Avg.	2685	4067	5706	
Nigerseed				
Odisha	1788	3912	5108	100
All India Wtd. Avg.	1788	3912	5108	
Cotton				
Andhra Pradesh	2828	3344	4625	19
Gujarat	2364	2998	3925	30
Haryana	1665	2729	4179	6
Karnataka	2762	3253	4432	6
Madhya Pradesh	1891	2625	3801	5
Maharashtra	3369	3982	5015	23
Punjab	2584	3050	4405	4
Rajasthan	1316	2457	3440	4
Tamil Nadu	2721	4282	5287	1
All India Wtd. Avg.	2622	3276	4376	

Annex Table 5.5a : Paddy - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Assam		Bihar		Chhattisgarh		Gujarat		Haryana		Himachal Pradesh		Jharkhand		Karnataka	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	51820.70	46317.74	36000.00	29433.09	26307.57	25236.49	30848.13	26138.25	41447.35	33602.36	45716.71	38041.85	26323.44	21519.76	23875.23	20585.21	48419.32	43772.11
Human Labour																		
Casual	16200.16	17038.96	4808.76	4473.18	8606.71	8169.16	6060.27	4372.53	14101.57	13001.62	11800.25	10758.23	1594.00	1275.35	6655.86	8366.60	13354.49	11218.32
Attached	301.84	578.69	128.80	404.20	32.03	29.51	10.47	0.74	114.09	180.08	492.07	1160.98	13.02	11.45	0.00	0.00	0.00	0.00
Family	9277.85	6475.15	15639.74	13333.38	6642.78	6155.13	7111.22	6532.29	5291.64	4786.53	10850.03	7412.68	17441.64	14355.66	6686.78	4261.78	10630.35	7798.47
Total	25779.85	24092.80	20577.30	18210.76	15281.52	14353.80	13181.96	10905.56	19507.30	17968.23	23142.35	19331.89	19048.66	15642.46	13342.64	12628.38	23984.84	19016.79
Bullock Labour																		
Hired	160.20	189.38	130.04	69.69	19.35	209.35	335.70	615.66	37.13	163.57	0.00	0.00	538.00	230.28	69.50	61.22	468.80	833.01
Owned	397.36	473.70	7975.67	6181.47	222.63	473.99	2197.32	1893.24	216.25	260.14	34.39	116.44	1415.54	439.98	2285.07	1966.95	1216.44	1168.71
Total	557.56	663.08	8105.71	6251.16	241.98	683.34	2533.02	2508.90	253.38	423.71	34.39	116.44	1953.54	670.26	2354.57	2028.17	1685.24	2001.72
Machine Labour																		
Hired	9301.06	8068.32	2660.56	1953.04	3537.57	3086.96	5949.43	4831.33	4338.03	3101.23	4341.94	3275.34	1781.37	2296.17	2442.26	2367.69	5190.75	7687.67
Owned	101.17	181.24	797.47	372.58	52.04	36.02	111.32	40.71	1166.11	682.21	1424.47	1267.11	38.66	55.40	67.01	0.77	478.98	399.03
Total	9402.23	8249.56	3458.03	2325.62	3589.61	3122.98	6060.75	4872.04	5504.14	3783.44	5766.41	4542.45	1820.03	2351.57	2509.27	2368.46	5669.73	8086.70
Seed	2265.17	1748.09	1086.88	867.78	1783.69	1346.13	1800.08	2121.41	5403.88	3209.45	1208.09	880.14	1682.03	1830.57	1992.20	1323.85	2235.64	2228.92
Fertilisers and Manure																		
Fertilisers	7399.47	6487.54	807.99	533.97	2892.82	2669.55	3451.55	3006.86	4902.04	3865.28	4583.37	4590.86	411.75	253.06	2458.09	1290.94	8992.44	7738.22
Manure	970.44	773.26	670.75	557.63	200.54	0.00	1255.25	1013.48	881.99	933.93	0.00	3.37	488.74	265.66	692.14	394.62	1759.92	1139.86
Total	8369.91	7260.80	1478.74	1091.60	3093.36	2669.55	4706.80	4020.34	5784.03	4799.21	4583.37	4594.23	900.49	518.72	3150.23	1685.56	10752.36	8878.08
Other Inputs																		
Insecticides	2708.08	2068.39	25.26	20.36	18.93	0.00	1031.30	927.77	803.87	1115.62	2420.21	2689.47	522.29	278.67	0.00	0.00	1736.24	2080.45
Irrigation charges	1432.22	964.14	651.09	177.94	1702.58	2482.47	485.82	169.78	3082.63	1429.49	7505.32	4959.07	127.25	10.41	5.46	56.14	1210.15	389.34
Interest on working capital	1289.18	1207.35	616.99	487.87	595.90	578.22	719.30	594.12	1095.63	873.21	1056.57	928.16	269.15	217.10	520.86	494.65	1145.12	1090.11
Miscellaneous	16.50	63.53	0.00	0.00	0.00	0.00	329.10	18.33	12.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost	27147.63	25769.19	13886.91	11236.25	13789.16	8120.05	14926.94	12895.89	14350.71	14875.36	33230.87	28966.31	10747.07	9235.81	14972.30	7513.25	19895.88	20510.94
Rental value of owned land	25118.45	24063.27	8539.58	7667.84	10994.13	6619.90	11325.79	10816.86	10493.10	11390.88	28844.76	26042.54	8201.90	7205.94	12016.61	5849.25	17400.96	18763.71
Rent paid for leased-in land	59.36	282.00	462.91	757.05	0.00	0.00	0.00	0.00	1679.08	908.53	0.00	0.00	98.41	153.78	97.86	0.00	0.00	0.00
Land revenue,cesses & taxes	1.00	2.37	49.91	47.62	48.02	29.84	3.75	3.35	8.23	9.85	0.00	0.00	6.57	8.46	54.90	41.15	13.29	14.03
Depreciation on implements & Farm buildings	211.39	178.94	901.89	746.35	506.75	326.72	829.10	768.36	168.86	154.48	316.25	242.83	465.01	313.89	969.58	568.47	271.59	245.08
Interest on fixed capital	1757.43	1242.61	3932.62	2017.39	2240.26	1143.59	2768.30	1307.32	2001.44	2411.62	4069.86	2680.94	1975.18	1553.74	1833.35	1054.38	2210.04	1488.12
Total Cost	78968.33	72086.93	49886.91	40669.34	40096.73	33356.54	45775.07	39034.14	55798.06	48477.72	78947.58	67008.16	37070.51	30755.57	38847.53	28098.46	68315.20	64283.05

Source: DES

(Continued)

Annex Table 5.5a : Paddy - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Kerala		Madhya Pradesh		Maharashtra		Odisha		Punjab		Tamil Nadu		Uttar Pradesh		Uttarakhand		West Bengal	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	52904.87	49093.76	28415.16	24144.22	54417.34	42555.30	42301.82	34729.93	34041.18	32382.45	55251.95	54577.55	39481.03	29915.39	30396.29	31823.86	54259.48	44645.75
Human Labour																		
Casual	25851.33	22208.97	4079.49	4502.22	18348.30	13929.71	11346.29	9630.19	7127.39	7553.32	14450.53	14750.56	8861.94	5813.30	3574.40	6623.19	17570.95	14804.30
Attached	0.00	0.00	51.54	113.48	266.72	137.78	107.94	219.69	1728.01	1321.56	264.02	355.14	24.71	53.07	30.58	11.46	1.10	27.08
Family	3480.49	3194.70	8318.51	5997.66	11840.64	10324.06	16891.75	12968.33	5863.17	5346.40	9374.48	10600.58	11243.62	7807.02	10670.28	10157.87	17842.29	13956.81
Total	29331.82	25403.67	12449.54	10613.36	30455.66	24391.55	28345.98	22818.21	14718.57	14221.28	24089.03	25706.28	20130.27	13673.39	14275.26	16792.52	35414.34	28788.19
Bullock Labour																		
Hired	163.49	82.81	385.95	55.07	3813.73	1272.09	352.88	210.36	0.23	4.27	99.95	173.96	63.31	22.01	104.92	2566.08	355.02	580.60
Owned	0.00	0.00	3637.56	2792.57	5016.37	4980.98	2855.26	4132.75	40.64	41.38	96.28	104.57	296.80	1606.16	3110.07	644.00	1285.82	2019.99
Total	163.49	82.81	4023.51	2847.64	8830.10	6253.07	3208.14	4343.11	40.87	45.65	196.23	278.53	360.11	1628.17	3214.99	3210.08	1640.84	2600.59
Machine Labour																		
Hired	10331.22	9751.35	3510.15	3117.69	3278.99	2732.57	3539.59	1649.23	4081.26	3170.47	9700.23	9230.80	4307.33	4054.62	3128.82	1473.34	3878.39	2704.60
Owned	39.79	20.75	267.53	485.86	176.14	1152.05	128.25	31.09	2290.18	2405.59	456.02	294.39	300.03	463.72	774.04	671.15	25.17	17.88
Total	10371.01	9772.10	3777.68	3603.55	3455.13	3884.62	3667.84	1680.32	6371.44	5576.06	10156.25	9525.19	4607.36	4518.34	3902.86	2144.49	3903.56	2722.48
Seed	3118.49	2790.72	2014.48	1919.84	2270.70	1617.26	1144.50	1108.18	1771.16	1562.58	6751.07	5925.22	3592.87	3014.07	3290.56	3457.68	1810.01	1813.24
Fertilisers and Manure																		
Fertilisers	5612.53	5717.33	2566.84	2713.55	2431.78	3404.33	3258.63	2451.86	3349.03	3842.70	6319.99	6549.88	4265.80	3851.44	2906.56	3068.42	4963.39	4044.39
Manure	1590.02	2272.40	1636.91	870.06	3235.15	1573.48	1509.03	1546.55	355.77	397.68	2645.20	2228.51	59.52	41.18	726.31	973.95	1070.26	1201.56
Total	7202.55	7989.73	4203.75	3583.61	5666.93	4977.81	4767.66	3998.41	3704.80	4240.38	8965.19	8778.39	4325.32	3892.62	3632.87	4042.37	6033.65	5245.95
Other Inputs																		
Insecticides	1214.90	1518.63	917.22	845.71	312.33	258.36	268.86	54.37	3928.25	3716.37	1490.79	1491.20	183.79	242.93	896.70	517.25	1385.89	688.82
Irrigation charges	4.90	145.22	329.97	172.25	1706.63	195.91	128.84	67.89	2623.08	2164.29	2181.09	1505.71	5424.35	2274.31	585.29	980.35	2912.35	1822.28
Interest on working capital	1497.71	1390.88	608.99	549.90	1290.20	976.72	770.00	659.44	853.88	819.27	1390.23	1332.64	855.68	669.95	597.76	656.55	1103.55	929.97
Miscellaneous	0.00	0.00	90.02	8.36	429.66	0.00	0.00	0.00	29.13	36.57	32.07	34.39	1.28	1.61	0.00	22.57	55.29	34.23
Fixed Cost	19066.73	19457.09	12965.61	15553.57	13845.11	13801.90	14612.17	11807.59	39213.30	36000.41	18824.96	16934.53	19501.30	15441.98	15238.10	12430.94	17580.94	16278.44
Rental value of owned land	17985.39	18565.14	9372.98	13531.33	8127.94	10134.72	11669.66	9050.48	30200.60	25585.63	13646.75	11346.84	12742.73	11959.35	13569.56	8443.06	14130.98	13848.82
Rent paid for leased-in land	0.00	233.35	0.00	0.00	0.00	0.00	138.50	186.35	5283.62	7041.62	191.63	411.67	595.92	291.40	0.00	2416.77	582.76	407.91
Land revenue,cesses & taxes	162.63	132.57	4.10	3.16	24.23	18.00	23.96	27.74	0.00	0.00	7.15	7.38	3.34	4.58	3.04	1.40	59.83	49.95
Depreciation on implements & Farm buildings	324.49	205.32	861.81	478.51	820.57	675.39	687.66	625.84	306.23	262.74	327.83	482.68	897.09	771.48	335.78	445.9	844.64	680.33
Interest on fixed capital	594.22	320.71	2726.72	1540.57	4872.37	2973.79	2092.39	1917.18	3422.85	3110.42	4651.60	4685.96	5262.22	2415.17	1329.72	1123.81	1962.73	1291.43
Total Cost	71971.60	68550.85	41380.77	39697.79	68262.45	56357.20	56913.99	46537.52	73254.48	68382.86	74076.91	71512.08	58982.33	45357.37	45634.39	44254.80	71840.42	60924.19

Source: DES

Annex Table 5.5b : Jowar - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Karnataka		Madhya Pradesh		Maharashtra		Rajasthan	Tamil Nadu	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2014-15	2013-14
Operational Cost	22887.68	26872.37	17330.51	15572.00	22821.53	17508.73	31848.53	24965.72	17545.17	20482.59	20141.05
Human Labour											
Casual	5633.38	7534.10	6223.83	4430.23	2911.29	3850.31	9847.93	7686.35	3699.55	8014.36	7164.75
Attached	414.64	0.00	20.81	0.00	0.00	12.63	268.63	677.12	0.40	983.91	25.10
Family	8184.94	6801.92	3427.36	3202.17	5839.47	3995.87	6926.94	4638.46	7647.78	3910.77	5788.96
Total	14232.96	14336.02	9672.00	7632.40	8750.76	7858.81	17043.50	13001.93	11347.73	12909.04	12978.81
Bullock Labour											
Hired	609.05	859.33	775.81	930.60	1071.26	0.00	762.62	1051.51	142.61	28.14	51.60
Owned	1525.71	2981.06	1202.60	1570.37	0.00	1414.29	2690.63	3732.95	22.67	9.10	0.00
Total	2134.76	3840.39	1978.41	2500.97	1071.26	1414.29	3453.25	4784.46	165.28	37.24	51.60
Machine Labour											
Hired	2762.00	2093.33	2286.40	1978.87	5027.76	2888.72	5178.53	2505.56	3217.55	2072.90	3128.37
Owned	50.95	31.20	125.41	144.72	30.21	0.00	389.21	220.11	197.96	713.67	1.69
Total	2812.95	2124.53	2411.81	2123.59	5057.97	2888.72	5567.74	2725.67	3415.51	2786.57	3130.06
Seed	783.10	1496.79	459.68	485.77	1466.75	1159.03	711.55	510.37	1454.12	1554.61	1066.09
Fertilisers and Manure											
Fertilisers	2161.46	3000.73	2324.68	2110.37	1950.79	2515.55	2077.61	2086.25	791.97	1163.36	552.51
Manure	0.00	259.74	0.00	134.91	3556.92	940.10	646.38	20.78	29.20	1198.57	1730.43
Total	2161.46	3260.47	2324.68	2245.28	5507.71	3455.65	2723.99	2107.03	821.17	2361.93	2282.94
Other Inputs											
Insecticides	9.05	581.95	22.87	14.20	439.49	322.75	41.40	8.51	0.00	102.99	1.50
Irrigation charges	307.86	624.02	39.75	194.95	0.00	0.00	1551.90	1196.66	41.44	228.03	195.14
Interest on working capital	445.54	608.20	421.31	374.84	514.61	409.48	755.20	615.98	299.92	502.18	434.91
Miscellaneous	0.00	0.00	0.00	0.00	12.98	0.00	0.00	15.11	0.00	0.00	0.00
Fixed Cost	14289.62	15829.77	7481.37	7374.62	5719.72	5435.44	12916.26	10422.98	7807.51	10122.17	9732.49
Rental value of owned land	11987.08	14733.82	6062.75	6065.28	3843.01	4633.92	6060.58	5475.06	5604.27	8101.88	7951.30
Rent paid for leased-in land	177.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Land revenue,cesses & taxes	2.33	0.93	6.32	6.64	0.71	2.14	26.37	16.16	13.13	8.23	6.32
Depreciation on implements & Farm buildings	242.59	142.52	178.25	191.25	978.00	206.75	859.65	467.09	296.52	272.67	305.19
Interest on fixed capital	1880.45	952.50	1234.05	1111.45	898.00	592.63	5969.66	4464.67	1893.59	1739.39	1469.68
Total Cost	37177.30	42702.14	24811.88	22946.62	28541.25	22944.17	44764.79	35388.70	25352.68	30604.76	29873.54

Source: DES

Annex Table 5.5c : Bajra - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Gujarat		Haryana		Maharashtra		Rajasthan		Uttar Pradesh	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	35545.20	27444.86	25832.25	23819.88	34892.16	36104.19	17234.77	15095.99	20900.29	17263.40
Human Labour										
Casual	9515.64	7419.82	3951.59	4054.19	6668.23	9352.53	2292.34	1750.58	5542.68	1985.76
Attached	33.36	90.49	18.61	63.83	156.56	153.90	12.62	30.53	5.41	0.00
Family	7951.94	6514.08	12264.65	10594.86	11007.56	5919.20	9678.78	8295.63	7098.96	8552.66
Total	17500.94	14024.39	16234.85	14712.88	17832.35	15425.63	11983.74	10076.74	12647.05	10538.42
Bullock Labour										
Hired	351.90	487.61	1.53	9.96	908.42	534.99	0.64	17.04	0.59	0.00
Owned	450.73	666.09	36.03	220.37	3332.92	1158.39	60.72	72.38	101.11	88.08
Total	802.63	1153.70	37.56	230.33	4241.34	1693.38	61.36	89.42	101.70	88.08
Machine Labour										
Hired	4031.81	3581.72	5211.02	4625.66	5398.00	6153.55	2674.20	2691.73	4628.08	3834.09
Owned	768.65	253.57	668.99	651.45	294.15	1187.50	647.10	154.42	161.09	22.02
Total	4800.46	3835.29	5880.01	5277.11	5692.15	7341.05	3321.30	2846.15	4789.17	3856.11
Seed	1897.91	1521.22	798.49	873.88	965.65	740.92	682.09	844.94	1059.60	885.38
Fertilisers and Manure										
Fertilisers	3673.48	2650.69	1207.43	1529.52	1795.04	1746.17	376.94	434.52	983.98	1342.28
Manure	638.56	716.54	0.00	0.00	2640.46	7684.42	333.86	467.87	0.00	0.00
Total	4312.04	3367.23	1207.43	1529.52	4435.50	9430.59	710.80	902.39	983.98	1342.28
Other Inputs										
Insecticides	23.32	54.31	72.86	15.60	0.00	0.00	4.43	2.05	3.54	7.07
Irrigation charges	5371.73	2854.45	1189.91	779.80	1001.39	481.56	242.08	128.23	897.03	282.10
Interest on working capital	836.17	634.27	411.14	400.76	723.78	914.70	228.97	206.07	418.22	263.96
Miscellaneous	0.00	0.00	0.00	0.00	0.00	76.36	0.00	0.00	0.00	0.00
Fixed Cost	11267.50	9926.03	11783.30	11468.85	8481.10	9428.72	7313.38	5495.42	12792.73	11702.76
Rental value of owned land	9065.58	7783.89	8644.73	8769.02	4157.40	5493.46	3674.47	3651.38	9631.85	7586.70
Rent paid for leased-in land	261.24	151.19	0.00	335.81	0.00	0.00	9.69	35.10	252.21	2290.34
Land revenue,cesses & taxes	3.64	5.35	0.00	0.00	18.61	14.36	8.67	3.88	9.30	3.58
Depreciation on implements & Farm buildings	110.55	116.75	375.93	368.64	712.17	287.63	635.30	279.49	662.58	678.06
Interest on fixed capital	1826.49	1868.85	2762.64	1995.38	3592.92	3633.27	2985.25	1525.57	2236.79	1144.08
Total Cost	46812.70	37370.89	37615.55	35288.73	43373.26	45532.91	24548.15	20591.41	33693.02	28966.16

Source: DES

Annex Table 5.5d : Maize - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Bihar		Gujarat		Himachal Pradesh		Jharkhand	Karnataka	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2014-15	2013-14
Operational Cost	41175.25	38710.30	29537.69	23623.75	35581.64	30553.94	21913.20	20298.21	31273.60	30495.37	31384.01
Human Labour											
Casual	9564.02	11041.31	5139.23	5839.81	7719.13	5427.01	357.10	584.81	6694.40	8888.42	8196.99
Attached	443.91	956.27	44.30	31.85	0.00	70.20	196.88	7.68	0.00	0.00	41.54
Family	9254.81	5199.50	7900.35	5063.35	12510.57	10569.99	12998.47	12702.22	10938.15	5059.19	4836.99
Total	19262.74	17197.08	13083.88	10935.01	20229.70	16067.20	13552.45	13294.71	17632.55	13947.61	13075.52
Bullock Labour											
Hired	648.30	632.56	0.00	0.00	1335.57	381.08	154.05	217.95	0.00	1505.99	1581.04
Owned	1606.45	2255.53	0.00	0.00	2123.70	2245.02	1207.22	752.14	3804.60	1293.90	1494.37
Total	2254.75	2888.09	0.00	0.00	3459.27	2626.10	1361.27	970.09	3804.60	2799.89	3075.41
Machine Labour											
Hired	5368.37	4666.64	3975.40	2724.63	3223.48	2349.95	1885.89	1433.02	434.75	4606.55	4748.78
Owned	52.00	166.24	14.89	85.93	364.21	1234.39	96.23	51.80	0.00	324.94	319.69
Total	5420.37	4832.88	3990.29	2810.56	3587.69	3584.34	1982.12	1484.82	434.75	4931.49	5068.47
Seed	5099.21	3671.51	3100.02	2249.29	1646.43	2897.82	1016.99	956.43	5582.58	2529.12	2201.94
Fertilisers and Manure											
Fertilisers	6321.77	5697.97	4715.14	4142.65	2816.41	2857.40	577.60	657.31	1775.57	4881.65	5958.53
Manure	561.75	2098.09	426.52	525.9	1096.83	850.94	3020.84	2556.60	0.00	197.92	829.03
Total	6883.52	7796.06	5141.66	4668.55	3913.24	3708.34	3598.44	3213.91	1775.57	5079.57	6787.56
Other Inputs											
Insecticides	700.07	837.33	0.00	97.5	97.68	46.56	131.79	148.07	0.00	49.22	130.22
Irrigation charges	587.30	419.01	3566.16	2300.40	1948.51	1018.01	0.00	0.00	1427.32	387.68	240.43
Interest on working capital	967.29	1015.48	655.68	562.44	699.12	605.57	270.14	230.18	616.23	770.79	804.46
Miscellaneous	0.00	52.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost	24741.07	23262.32	13940.60	8040.93	7708.17	6716.04	8544.63	7306.33	8613.32	10906.94	12157.85
Rental value of owned land	22498.79	19624.84	10640.04	6812.27	6058.64	4462.66	5328.84	4923.12	4934.43	8477.41	10196.11
Rent paid for leased-in land	14.86	1380.49	0.00	0.00	0.00	149.24	35.60	56.82	0.00	0.00	0.00
Land revenue,cesses & taxes	5.92	0.14	52.40	24.03	10.93	12.37	6.00	5.18	24.79	11.24	10.23
Depreciation on implements & Farm buildings	313.57	196.44	823.71	291.16	267.39	212.05	470.68	446.57	1303.72	254.07	289.25
Interest on fixed capital	1907.93	2060.41	2424.45	913.47	1371.21	1879.72	2703.51	1874.64	2350.38	2164.22	1662.26
Total Cost	65916.32	61972.62	43478.29	31664.68	43289.81	37269.98	30457.83	27604.54	39886.92	41402.31	43541.86

Source: DES

Annex Table 5.5d : Maize - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Madhya Pradesh		Maharash-tra	Odisha	Punjab	Rajasthan		Tamil Nadu		Uttar Pradesh	
	2014-15	2013-14	2014-15	2014-15	2014-15	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	24518.82	21000.27	58654.32	39245.63	35225.18	33067.76	34662.99	59864.15	52036.19	19648.12	23549.88
Human Labour											
Casual	4834.10	2923.76	11571.75	7933.81	6211.70	1798.86	1994.75	17557.60	14049.52	2034.18	4828.81
Attached	470.48	206.64	96.14	19.06	2108.14	7.55	90.93	253.55	113.63	0.00	0.00
Family	6100.56	5567.22	15260.30	15201.58	7358.77	17378.48	19017.59	11508.19	9179.26	9329.92	10978.88
Total	11405.14	8697.62	26928.19	23154.45	15678.61	19184.89	21103.27	29319.34	23342.41	11364.10	15807.69
Bullock Labour											
Hired	342.34	297.05	890.71	334.42	156.33	365.67	639.96	0.00	1.57	32.97	17.17
Owned	1731.79	3166.71	3651.68	2486.34	33.01	1277.47	2340.28	119.07	0.24	549.63	682.84
Total	2074.13	3463.76	4542.39	2820.76	189.34	1643.14	2980.24	119.07	1.81	582.60	700.01
Machine Labour											
Hired	3933.52	2740.26	9155.70	3368.65	5783.11	4257.34	2951.70	7557.85	6930.10	3323.50	2974.29
Owned	453.09	42.53	1372.35	0.00	1318.37	211.51	260.50	58.30	212.29	79.08	421.72
Total	4386.61	2782.79	10528.05	3368.65	7101.48	4468.85	3212.20	7616.15	7142.39	3402.58	3396.01
Seed	2571.43	2897.02	4557.66	2691.41	3232.58	3437.55	1542.18	4495.96	3604.77	1430.86	997.70
Fertilisers and Manure											
Fertilisers	2155.17	2079.55	5990.41	3691.47	4612.73	2832.80	2316.20	7868.26	6328.31	1909.10	1820.49
Manure	943.50	321.14	231.74	1879.41	1555.18	286.69	2609.18	4569.85	5856.40	0.00	0.00
Total	3098.67	2400.69	6222.15	5570.88	6167.91	3119.49	4925.38	12438.11	12184.71	1909.10	1820.49
Other Inputs											
Insecticides	187.90	290.12	547.27	421.22	1178.88	123.18	1.22	802.88	873.20	67.79	0.00
Irrigation charges	154.85	0.00	4013.64	489.65	787.18	615.23	424.40	3579.80	3588.21	578.42	447.04
Interest on working capital	558.13	467.67	1314.97	728.61	844.44	475.43	474.10	1465.33	1298.69	312.67	380.94
Miscellaneous	81.96	0.00	0.00	0.00	44.76	0.00	0.00	27.51	0.00	0.00	0.00
Fixed Cost	10272.95	7949.44	15502.36	12056.87	16524.02	11953.20	8199.29	20146.37	15506.61	9122.34	13120.88
Rental value of owned land	8716.74	6878.94	9704.71	9640.94	10623.25	7947.00	4642.80	14574.89	12006.75	6213.37	9130.88
Rent paid for leased-in land	0.00	0.00	0.00	0.00	2722.90	0.00	725.74	306.58	149.21	0.00	0.00
Land revenue,cesses & taxes	3.04	2.50	11.49	25.56	0.00	10.40	10.60	7.27	5.84	4.20	9.04
Depreciation on implements & Farm buildings	281.37	344.39	565.14	521.07	478.67	632.80	309.70	270.08	504.95	830.09	795.23
Interest on fixed capital	1271.80	723.61	5221.02	1869.30	2699.20	3363.00	2510.45	4987.55	2839.86	2074.68	3185.73
Total Cost	34791.77	28949.71	74156.68	51302.50	51749.20	45020.96	42862.28	80010.52	67542.80	28770.46	36670.76

Source: DES

Annex Table 5.5e : Ragi - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Karnataka		Uttarakhand	
	2014-15	2013-14	2014-15	2013-14
Operational Cost	43143.34	30736.17	14844.65	16503.10
Human Labour				
Casual	14438.58	11496.38	216.37	1466.82
Attached	0.00	182.49	0.00	0.00
Family	8927.50	8200.84	10508.97	11005.04
Total	23366.08	19879.71	10725.34	12471.86
Bullock Labour				
Hired	2310.59	1060.46	0.00	2174.17
Owned	2088.32	2189.26	2682.36	0.00
Total	4398.91	3249.72	2682.36	2174.17
Machine Labour				
Hired	3390.47	3158.38	0.00	0.00
Owned	24.49	181.13	0.00	0.00
Total	3414.96	3339.51	0.00	0.00
Seed	490.24	380.22	311.40	273.40
Fertilisers and Manure				
Fertilisers	4600.51	2957.25	0.00	0.00
Manure	5104.35	105.17	994.16	1417.06
Total	9704.86	3062.42	994.16	1417.06
Other Inputs				
Insecticides	0.00	0.00	0.00	0.00
Irrigation charges	731.45	141.70	0.00	0.00
Interest on working capital	1036.84	682.89	131.39	166.61
Miscellaneous	0.00	0.00	0.00	0.00
Fixed Cost	11174.15	9325.26	4982.35	5297.66
Rental value of owned land	8114.48	7585.84	4481.10	4768.72
Rent paid for leased-in land	0.00	0.00	0.00	0.00
Land revenue,cesses & taxes	21.12	14.00	0.57	0.40
Depreciation on implements & Farm buildings	256.94	323.20	103.70	433.59
Interest on fixed capital	2781.61	1402.22	396.98	94.95
Total Cost	54317.49	40061.43	19827.00	21800.76

Source: DES

Annex Table 5.5f : Arhar (Tur) - Break- up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Gujarat		Karnataka		Madhya Pradesh		Maharashtra		Odisha		Uttar Pradesh	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	25152.44	27713.57	31328.89	21392.05	22324.65	20754.80	18896.55	18456.27	40912.80	43491.16	12422.55	11074.60	20942.88	19793.04
Human Labour														
Casual	5075.21	7657.62	7016.10	3924.67	5936.31	4981.73	2393.89	2782.72	8205.30	10591.71	1437.76	972.26	4918.67	2979.99
Attached	524.12	296.25	0.00	145.75	46.90	0.00	387.08	0.00	536.56	831.17	0.00	147.45	26.82	0.00
Family	4860.85	7259.11	8422.89	5562.47	3561.06	3472.37	7401.38	5816.20	8972.08	9818.93	7151.87	6110.84	10905.96	11543.56
Total	10460.18	15212.98	15438.99	9632.89	9544.27	8454.10	10182.35	8598.92	17713.94	21241.81	8589.63	7230.55	15851.45	14523.55
Bullock Labour														
Hired	780.24	1822.22	125.78	1011.71	956.62	870.22	78.95	84.57	1326.05	1371.73	0.00	185.92	0.00	25.68
Owned	2875.99	3494.34	2005.89	1107.63	1943.78	1564.87	2734.62	1245.17	3679.67	4204.63	1904.75	2173.21	338.98	1219.22
Total	3656.23	5316.56	2131.67	2119.34	2900.40	2435.09	2813.57	1329.74	5005.72	5576.36	1904.75	2359.13	338.98	1244.90
Machine Labour														
Hired	3241.70	2002.89	4468.28	3555.81	2900.26	2952.23	1682.90	2597.84	6266.42	6277.63	578.91	234.56	2340.71	1835.17
Owned	197.66	101.75	656.87	126.52	58.45	86.47	503.66	152.78	249.59	120.90	0.00	0.00	55.48	80.81
Total	3439.36	2104.64	5125.15	3682.33	2958.71	3038.70	2186.56	2750.62	6516.01	6398.53	578.91	234.56	2396.19	1915.98
Seed	1125.08	1597.52	594.94	895.48	851.04	763.14	1694.65	2292.51	1171.24	1360.11	1189.54	977.21	1543.37	1390.21
Fertilisers and Manure														
Fertilisers	3134.02	1887.19	2502.25	2158.64	2603.57	2492.25	773.46	1248.28	4175.35	2988.20	0.00	60.69	184.11	112.11
Manure	1080.85	70.41	1589.75	677.99	39.45	265.62	134.39	654.03	505.62	1281.01	0.00	58.46	0.00	26.13
Total	4214.87	1957.60	4092.00	2836.63	2643.02	2757.87	907.85	1902.31	4680.97	4269.21	0.00	119.15	184.11	138.24
Other Inputs														
Insecticides	1622.05	904.44	1704.88	776.10	2779.08	2769.74	727.34	1169.62	3887.62	3472.68	0.00	3.58	0.84	4.61
Irrigation charges	3.70	0.00	1547.14	969.61	79.54	12.45	35.50	0.00	733.64	140.89	0.00	0.00	323.79	325.57
Interest on working capital	614.90	619.83	694.12	479.67	568.59	523.71	348.34	383.03	967.90	1020.37	159.72	150.42	304.15	249.98
Miscellaneous	16.07	0.00	0.00	0.00	0.00	0.00	0.39	29.52	235.76	11.20	0.00	0.00	0.00	0.00
Fixed Cost	11306.11	11733.18	10562.63	8810.65	11261.08	11929.94	14536.90	13247.95	18488.70	19580.60	8475.40	6976.65	19769.71	22150.75
Rental value of owned land	9297.14	10039.08	7029.66	6525.24	9609.38	10503.55	9057.68	11338.15	9380.44	14090.56	5692.83	4068.61	14504.57	10867.52
Rent paid for leased-in land	0.00	0.00	772.22	332.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	749.55	0.00	1115.25
Land revenue,cesses & taxes	0.49	0.05	52.66	21.98	11.33	8.06	7.80	7.33	42.70	44.72	16.84	13.03	9.97	18.94
Depreciation on imple-ments & Farm buildings	386.10	364.70	353.95	433.28	189.80	247.65	1398.47	597.27	1357.64	945.03	569.43	630.14	997.77	1470.42
Interest on fixed capital	1622.38	1329.35	2354.14	1497.70	1450.57	1170.68	4072.95	1305.20	7707.92	4500.29	2196.30	1515.32	4257.40	8678.62
Total Cost	36458.55	39446.75	41891.52	30202.70	33585.73	32684.74	33433.45	31704.22	59401.50	63071.76	20897.95	18051.25	40712.59	41943.79

Source: DES

Annex Table 5.5g : Moong - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Gujarat	Karnataka		Maharashtra		Odisha		Rajasthan	
	2014-15	2013-14	2014-15	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	14999.74	15212.24	17451.68	15907.91	14902.82	23988.22	25735.16	12849.41	11277.40	14474.44	13337.50
Human Labour											
Casual	3142.79	5636.67	4199.19	4336.21	3897.89	5708.99	5473.40	1732.11	1393.78	1441.73	2635.81
Attached	937.67	21.23	0.00	26.35	0.00	567.22	302.61	18.95	113.54	0.00	19.07
Family	3033.39	2890.98	3763.88	2665.25	2743.60	5585.38	4917.75	6912.14	5723.68	8207.94	6133.95
Total	7113.85	8548.88	7963.07	7027.81	6641.49	11861.59	10693.76	8663.20	7231.00	9649.67	8788.83
Bullock Labour											
Hired	254.82	185.19	170.10	889.90	621.69	672.86	960.59	137.54	16.18	3.87	5.79
Owned	515.88	481.56	382.43	1071.19	1688.50	3940.40	3252.81	1007.22	1631.57	36.76	40.74
Total	770.70	666.75	552.53	1961.09	2310.19	4613.26	4213.40	1144.76	1647.75	40.63	46.53
Machine Labour											
Hired	2147.04	1904.16	2845.41	2989.83	1921.08	2044.79	2710.50	1322.51	617.27	2196.64	2207.94
Owned	32.05	252.50	1100.61	458.55	188.38	125.52	420.09	9.91	2.36	652.24	64.20
Total	2179.09	2156.66	3946.02	3448.38	2109.46	2170.31	3130.59	1332.42	619.63	2848.88	2272.14
Seed	1982.28	1620.98	1602.48	1083.15	1100.42	1381.52	1477.53	1504.44	1572.38	1270.76	1280.37
Fertilisers and Manure											
Fertilisers	1782.89	656.14	1012.96	1387.19	1924.25	1993.91	2260.27	3.87	31.01	86.02	458.41
Manure	471.76	82.80	11.18	23.07	73.22	1149.58	2430.83	3.83	7.33	359.67	1.08
Total	2254.65	738.94	1024.14	1410.26	1997.47	3143.49	4691.10	7.70	38.34	445.69	459.49
Other Inputs											
Insecticides	90.06	923.48	416.68	539.49	371.62	185.37	652.10	0.00	0.00	19.32	149.43
Irrigation charges	246.49	45.14	1531.98	36.44	3.71	75.02	193.07	16.97	0.00	9.60	122.42
Interest on working capital	362.62	373.37	414.78	401.29	368.46	557.66	630.83	179.92	168.30	189.89	218.29
Miscellaneous	0.00	138.04	0.00	0.00	0.00	0.00	52.78	0.00	0.00	0.00	0.00
Fixed Cost	10132.83	11495.37	6326.50	7266.48	7240.34	8013.65	5207.00	6407.66	5128.22	6149.94	4546.76
Rental value of owned land	9135.38	10094.50	1803.27	6234.00	6415.75	4056.45	3383.14	4997.43	4087.20	4306.17	3453.41
Rent paid for leased-in land	0.00	0.00	3194.07	0.00	0.00	0.00	0.00	75.77	44.89	0.00	200.13
Land revenue,cesses & taxes	39.85	2.80	6.02	4.09	4.70	18.67	12.22	12.76	15.66	4.33	1.44
Depreciation on implements & Farm buildings	145.54	102.81	171.96	75.70	199.41	594.50	249.85	336.47	231.60	328.21	140.34
Interest on fixed capital	812.06	1295.26	1151.18	952.69	620.48	3344.03	1561.79	985.23	748.87	1511.23	751.44
Total Cost	25132.57	26707.61	23778.18	23174.39	22143.16	32001.87	30942.16	19257.07	16405.62	20624.38	17884.26

Source: DES

Annex Table 5.5h : Urad - Break- up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Chhattisgarh		Madhya Pradesh		Maharashtra		Odisha		Tamil Nadu		Uttar Pradesh	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	14383.28	18087.95	23109.49	14862.46	16898.17	14489.96	20715.66	22096.06	14468.57	11378.96	17835.66	21594.00	14122.06	11736.15
Human Labour														
Casual	6830.13	8723.73	55.88	749.71	2689.44	3281.07	2813.84	5206.24	1227.84	602.15	7069.98	8712.63	1614.30	2617.78
Attached	368.64	16.67	0.00	0.00	85.58	364.38	98.62	1266.67	291.04	3.55	17.06	173.44	0.00	15.88
Family	1534.68	1876.93	13312.98	9149.89	4938.59	3611.49	7216.78	3477.18	8366.88	6420.43	3721.59	3351.40	6024.72	3769.03
Total	8733.45	10617.33	13368.86	9899.60	7713.61	7256.94	10129.24	9950.09	9885.76	7026.13	10808.63	12237.47	7639.02	6402.69
Bullock Labour														
Hired	29.16	41.05	0.00	0.00	27.04	10.17	427.20	792.23	261.90	77.90	0.00	3.12	1.88	7.87
Owned	255.08	26.57	7787.92	3736.66	583.42	503.65	3504.73	3566.34	1698.35	2084.58	0.00	15.00	7.63	189.98
Total	284.24	67.62	7787.92	3736.66	610.46	513.82	3931.93	4358.57	1960.25	2162.48	0.00	18.12	9.51	197.85
Machine Labour														
Hired	826.46	1893.73	0.00	0.00	3970.16	2598.91	2236.38	2480.29	716.39	540.07	2259.36	2362.75	3520.72	3039.34
Owned	44.24	6.29	0.00	0.00	174.58	265.64	1124.68	251.27	0.00	1.34	458.15	310.52	176.99	299.57
Total	870.70	1900.02	0.00	0.00	4144.74	2864.55	3361.06	2731.56	716.39	541.41	2717.51	2673.27	3697.71	3338.91
Seed	2880.01	2903.71	1061.47	1053.09	1633.10	1490.36	1394.16	1210.89	1721.27	1453.65	1949.43	1802.96	1299.14	1093.93
Fertilisers and Manure														
Fertilisers	252.59	93.14	594.38	0.00	1443.33	1414.23	1194.82	2075.11	0.00	29.09	779.11	1366.08	18.90	192.21
Manure	15.35	9.98	0.00	0.00	301.79	411.12	0.00	298.24	0.00	14.63	215.65	1621.04	0.00	0.00
Total	267.94	103.12	594.38	0.00	1745.12	1825.35	1194.82	2373.35	0.00	43.72	994.76	2987.12	18.90	192.21
Other Inputs														
Insecticides	904.99	2000.90	0.00	0.00	681.97	204.27	295.40	907.40	0.00	1.31	745.99	1049.54	361.99	78.87
Irrigation charges	52.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	185.51	272.71	850.42	190.26
Interest on working capital	389.35	491.24	296.86	173.11	362.41	329.65	409.05	564.20	184.90	150.26	427.70	552.81	245.37	241.43
Miscellaneous	0.00	4.01	0.00	0.00	6.76	5.02	0.00	0.00	0.00	0.00	6.13	0.00	0.00	0.00
Fixed Cost	19143.83	13863.61	8540.94	6908.56	8740.58	5846.18	7408.00	5186.52	7489.04	4398.02	10151.65	7691.06	8619.92	5239.82
Rental value of owned land	17747.31	13607.09	6588.92	5742.20	7427.27	5009.09	3692.12	3872.90	5792.00	3400.90	8181.64	5758.16	6619.29	3923.71
Rent paid for leased-in land	137.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.98	0.00	0.00
Land revenue,cesses & taxes	1.54	1.62	9.26	5.26	2.81	4.15	20.97	10.66	14.30	11.92	4.66	4.71	2.61	4.05
Depreciation on implements & Farm buildings	86.68	106.60	536.68	445.67	284.28	146.28	455.93	157.88	374.43	239.11	167.07	313.17	314.05	277.20
Interest on fixed capital	1171.15	148.30	1406.08	715.43	1026.22	686.66	3238.98	1145.08	1308.31	746.09	1798.28	1565.04	1683.97	1034.86
Total Cost	33527.11	31951.56	31650.43	21771.02	25638.75	20336.14	28123.66	27282.58	21957.61	15776.98	27987.31	29285.06	22741.98	16975.97

Source: DES

Annex Table 5.5i : Groundnut - Break- up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Gujarat		Karnataka		Maharashtra		Odisha		Rajasthan	Tamil Nadu	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2014-15	2013-14
Operational Cost	36803.49	50831.70	54324.72	44904.21	37072.16	29286.87	43744.28	43744.09	41485.11	33885.30	35467.53	56989.19	58533.50
Human Labour													
Casual	10552.75	16199.62	11195.76	6471.65	11699.35	8277.74	8884.58	9040.23	8539.73	7489.68	1258.29	16695.42	15505.79
Attached	536.57	294.73	0.00	94.37	0.00	10.61	419.38	358.52	435.61	365.54	819.42	84.12	216.41
Family	5191.21	8848.12	10223.45	9511.78	5638.83	3810.69	9438.29	13370.07	16899.06	13868.08	9910.89	11460.29	15487.96
Total	16280.53	25342.47	21419.21	16077.80	17338.18	12099.04	18742.25	22768.82	25874.40	21723.30	11988.60	28239.83	31210.16
Bullock Labour													
Hired	1050.59	1155.71	806.39	625.83	1852.96	771.40	603.33	574.31	789.48	29.26	21.35	455.03	831.27
Owned	675.37	729.16	3009.80	3181.15	1629.10	1699.17	4268.71	2704.50	1394.52	1545.51	374.00	338.97	29.69
Total	1725.96	1884.87	3816.19	3806.98	3482.06	2470.57	4872.04	3278.81	2184.00	1574.77	395.35	794.00	860.96
Machine Labour													
Hired	2249.72	3581.57	4761.60	4307.81	2684.53	2425.66	2820.74	3345.52	1787.16	1431.37	4650.56	4906.28	4502.56
Owned	20.90	10.38	1537.26	599.92	423.19	72.19	1114.98	143.08	82.43	65.10	974.63	317.45	52.12
Total	2270.62	3591.95	6298.86	4907.73	3107.72	2497.85	3935.72	3488.60	1869.59	1496.47	5625.19	5223.73	4554.68
Seed	8601.85	11037.81	9277.02	11215.10	8042.27	7685.56	8175.83	8723.68	7765.27	5096.35	8614.34	9414.86	9094.26
Fertilisers and Manure													
Fertilisers	2918.96	3726.10	2821.08	2775.53	2877.30	2741.19	2447.33	3060.47	2754.94	2982.81	1688.76	3918.09	3625.39
Manure	3096.30	1893.00	4151.50	2166.44	839.31	340.44	1844.94	454.63	156.71	245.21	935.17	4539.09	5201.97
Total	6015.26	5619.10	6972.58	4941.97	3716.61	3081.63	4292.27	3515.10	2911.65	3228.02	2623.93	8457.18	8827.36
Other Inputs													
Insecticides	387.83	698.94	2825.87	1870.78	198.05	230.27	309.66	158.61	0.00	0.00	719.98	673.35	567.08
Irrigation charges	561.13	1384.33	2378.60	1002.09	234.74	449.94	2376.93	890.06	135.17	159.81	4725.70	2806.58	2114.59
Interest on working capital	957.95	1272.23	1336.39	1072.50	952.53	772.01	1039.58	920.41	745.03	606.58	774.44	1379.66	1304.41
Miscellaneous	2.36	0.00	0.00	9.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost	16950.39	21297.60	16503.02	14942.56	12877.84	9399.33	13335.13	13156.30	17770.40	13489.58	21987.07	18460.49	14818.54
Rental value of owned land	15191.32	18789.64	13144.35	12560.10	10562.98	8381.88	7721.05	10324.40	15067.88	11530.98	16929.06	13603.81	11030.98
Rent paid for leased-in land	0.00	0.00	298.75	368.60	0.00	0.00	0.00	0.00	0.00	86.14	18.40	0.00	250.12
Land revenue,cesses & taxes	2.88	0.12	6.27	4.72	16.80	4.37	21.17	20.78	14.94	11.67	9.03	9.46	5.30
Depreciation on implements & Farm buildings	133.21	267.18	212.12	132.90	278.86	186.22	704.68	362.36	489.51	289.29	614.10	325.57	313.38
Interest on fixed capital	1622.98	2240.66	2841.53	1876.24	2019.20	826.86	4888.23	2448.76	2198.07	1571.50	4416.48	4521.65	3218.76
Total Cost	53753.88	72129.30	70827.74	59846.77	49950.00	38686.20	57079.41	56900.39	59255.51	47374.88	57454.60	75449.68	73352.04

Source: DES

Annex Table 5.5j : Soybean - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh	Chhattisgarh		Madhya Pradesh		Maharashtra		Rajasthan	
	2014-15	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	27650.92	15593.14	15996.83	23545.09	19398.80	35324.19	30964.62	22603.95	18622.45
Human Labour									
Casual	3779.12	2530.87	1114.06	2850.95	2697.12	6999.31	6735.80	2741.23	2529.16
Attached	1241.67	0.00	0.00	90.93	132.09	345.66	312.75	251.93	65.29
Family	4049.74	3524.68	1969.33	4407.28	3586.94	4333.31	3516.32	5666.76	4569.09
Total	9070.53	6055.55	3083.39	7349.16	6416.15	11678.28	10564.87	8659.92	7163.54
Bullock Labour									
Hired	118.59	0.00	637.49	78.54	137.26	1183.84	710.78	17.29	60.92
Owned	1750.66	200.67	702.43	614.56	607.29	2970.56	2477.07	250.09	133.31
Total	1869.25	200.67	1339.92	693.10	744.55	4154.40	3187.85	267.38	194.23
Machine Labour									
Hired	4257.14	3964.46	3587.23	4321.91	3495.32	5652.01	5995.28	2653.79	2863.18
Owned	81.72	308.70	0.00	486.06	291.55	277.37	294.52	1042.05	541.97
Total	4338.86	4273.16	3587.23	4807.97	3786.87	5929.38	6289.80	3695.84	3405.15
Seed	3550.80	4247.38	3481.95	4991.50	3842.59	6230.86	3924.96	7021.31	4890.62
Fertilisers and Manure									
Fertilisers	3560.92	315.94	2428.82	1745.97	1705.46	2943.42	2901.32	672.12	784.36
Manure	2546.51	0.00	219.49	1213.10	606.35	1976.32	1634.39	0.00	339.73
Total	6107.43	315.94	2648.31	2959.07	2311.81	4919.74	4535.71	672.12	1124.09
Other Inputs									
Insecticides	1956.10	134.73	1422.06	1741.18	1802.56	1265.73	1490.65	1733.63	1393.65
Irrigation charges	41.26	0.00	0.00	0.22	0.00	202.78	134.75	40.50	25.31
Interest on working capital	715.19	365.71	425.08	579.93	479.15	939.12	831.77	513.25	425.86
Miscellaneous	1.50	0.00	8.89	422.96	15.12	3.90	4.26	0.00	0.00
Fixed Cost	12670.36	8353.27	5177.05	11440.29	8202.81	9836.04	9674.78	6798.41	5627.93
Rental value of owned land	10144.82	6854.53	4390.43	9548.75	7141.56	5356.65	7198.31	4254.22	3788.44
Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Land revenue,cesses & taxes	0.06	2.12	4.90	3.50	3.61	21.91	21.56	9.14	6.25
Depreciation on implements & Farm buildings	373.30	345.04	261.34	423.05	229.34	708.73	404.32	404.57	173.98
Interest on fixed capital	2152.18	1151.58	520.38	1464.99	828.30	3748.75	2050.59	2130.48	1659.26
Total Cost	40321.28	23946.41	21173.88	34985.38	27601.61	45160.23	40639.40	29402.36	24250.38

Source: DES

Annex Table 5.5k : Sunflower - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Karnataka	
	2014-15	2013-14	2014-15	2013-14
Operational Cost	23462.97	23961.75	19786.19	14256.49
Human Labour				
Casual	5345.92	2950.00	4198.92	2881.22
Attached	0.00	0.00	0.00	0.00
Family	2215.35	11316.95	3025.85	1784.53
Total	7561.27	14266.95	7224.77	4665.75
Bullock Labour				
Hired	784.50	625.00	1368.31	901.45
Owned	1862.20	0.00	1057.05	1127.88
Total	2646.70	625.00	2425.36	2029.33
Machine Labour				
Hired	4120.15	750.00	3102.70	2391.77
Owned	131.77	0.00	669.00	400.95
Total	4251.92	750.00	3771.70	2792.72
Seed	2572.80	2250.00	2010.37	1973.07
Fertilisers and Manure				
Fertilisers	3907.29	4600.00	3122.57	2054.57
Manure	1142.99	0.00	112.68	102.83
Total	5050.28	4600.00	3235.25	2157.40
Other Inputs				
Insecticides	624.40	268.75	461.40	96.35
Irrigation charges	0.00	817.87	149.45	163.93
Interest on working capital	643.87	383.18	507.89	377.94
Miscellaneous	111.73	0.00	0.00	0.00
Fixed Cost	8907.98	8204.13	8553.99	4998.96
Rental value of owned land	6188.79	7087.50	6603.22	3910.90
Rent paid for leased-in land	0.00	0.00	0.00	0.00
Land revenue,cesses & taxes	0.00	0.00	11.46	4.89
Depreciation on implements & Farm buildings	384.44	218.75	115.45	116.55
Interest on fixed capital	2334.75	897.88	1823.86	966.62
Total Cost	32370.95	32165.88	28340.18	19255.45

Source: DES

Annex Table 5.5l : Sesamum - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Gujarat		Madhya Pradesh		Odisha		Rajasthan		Uttar Pradesh	West Bengal	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2014-15	2013-14
Operational Cost	19146.40	17685.63	28683.54	22181.89	16594.54	15272.00	16221.96	9643.02	10154.92	9727.90	13290.56	28704.69	25023.70
Human Labour													
Casual	5124.67	5628.90	8884.53	5772.28	3308.06	2437.95	2567.03	2029.65	773.80	1737.03	3904.13	10618.11	9436.33
Attached	10.48	109.40	0.00	0.00	0.00	0.00	0.00	1025.16	23.60	0.00	44.50	0.00	15.17
Family	4210.73	4992.01	6567.32	6712.25	6989.98	6609.83	9144.57	3628.18	6219.73	5580.22	5520.89	7854.25	6010.05
Total	9345.88	10730.31	15451.85	12484.53	10298.04	9047.78	11711.60	6682.99	7017.13	7317.25	9469.52	18472.36	15461.55
Bullock Labour													
Hired	782.20	806.68	169.62	161.87	16.02	14.82	13.23	12.71	37.57	0.00	0.00	611.08	502.63
Owned	1218.55	1288.48	294.64	643.34	54.08	15.77	946.64	1498.37	63.73	0.00	76.73	873.20	2370.94
Total	2000.75	2095.16	464.26	805.21	70.10	30.59	959.87	1511.08	101.30	0.00	76.73	1484.28	2873.57
Machine Labour													
Hired	3271.12	1814.02	2037.60	1927.62	3018.20	3136.82	1747.71	310.13	1314.22	1723.39	2695.30	1958.03	1420.60
Owned	95.93	83.88	979.58	278.24	164.55	6.15	0.00	128.73	531.16	33.46	157.13	106.38	13.93
Total	3367.05	1897.90	3017.18	2205.86	3182.75	3142.97	1747.71	438.86	1845.38	1756.85	2852.43	2064.41	1434.53
Seed	1019.81	685.84	1179.29	1411.25	1041.68	989.30	789.92	713.06	911.97	411.33	488.79	499.18	650.18
Fertilisers and Manure													
Fertilisers	1386.24	709.36	2949.30	2277.96	1431.52	1342.65	213.38	23.14	73.89	116.78	74.39	3786.56	2336.84
Manure	428.69	591.05	834.03	216.00	0.00	313.15	0.00	0.00	44.42	0.00	0.00	37.50	208.51
Total	1814.93	1300.41	3783.33	2493.96	1431.52	1655.80	213.38	23.14	118.31	116.78	74.39	3824.06	2545.35
Other Inputs													
Insecticides	1011.70	318.00	1613.42	962.26	0.00	143.07	0.00	0.00	0.00	0.00	73.53	234.93	206.79
Irrigation charges	133.68	265.03	2504.03	1350.04	0.00	0.00	585.02	91.62	41.58	0.00	19.73	1493.64	1275.56
Interest on working capital	452.60	384.66	670.18	468.78	291.05	262.49	214.46	182.27	119.25	125.69	235.44	631.83	576.17
Miscellaneous	0.00	8.32	0.00	0.00	279.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Cost	10492.55	9672.90	10675.72	10093.73	12547.03	13529.53	8472.33	6243.06	5936.01	4681.00	13056.41	12796.41	9685.81
Rental value of owned land	9884.50	7843.95	8765.05	8991.74	11816.12	12753.65	6802.44	4699.83	4062.42	2894.79	9239.25	10750.61	8795.93
Rent paid for leased-in land	0.00	0.00	250.55	66.57	0.00	0.00	0.00	0.00	0.00	647.62	0.00	0.00	0.00
Land revenue,cesses & taxes	0.00	0.74	3.96	4.84	3.84	3.43	13.10	16.33	10.03	3.67	4.47	55.87	31.95
Depreciation on implements & Farm buildings	135.60	108.79	117.85	96.22	127.30	132.74	325.35	253.70	296.52	272.63	553.42	508.63	258.62
Interest on fixed capital	472.45	1719.42	1538.31	934.36	599.77	639.71	1331.44	1273.20	1567.04	862.29	3259.27	1481.30	599.31
Total Cost	29638.95	27358.53	39359.26	32275.62	29141.57	28801.53	24694.29	15886.08	16090.93	14408.90	26346.97	41501.10	34709.51

Source: DES

Annex Table 5.5m : Nigerseed - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Madhya Pradesh	Odisha	
	2014-15	2014-15	2013-14
Operational Cost	13129.13	11662.53	11418.02
Human Labour			
Casual	1164.00	0.00	884.36
Attached	0.00	0.00	0.00
Family	4955.14	6661.54	6703.26
Total	6119.14	6661.54	7587.62
Bullock Labour			
Hired	768.00	0.00	19.01
Owned	3936.69	4349.44	3138.31
Total	4704.69	4349.44	3157.32
Machine Labour			
Hired	400.00	0.00	146.47
Owned	0.00	0.00	0.00
Total	400.00	0.00	146.47
Seed	268.80	500.00	383.73
Fertilisers and Manure			
Fertilisers	268.80	0.00	0.00
Manure	1120.00	0.00	0.00
Total	1388.80	0.00	0.00
Other Inputs			
Insecticides	0.00	0.00	0.00
Irrigation charges	0.00	0.00	0.00
Interest on working capital	247.70	151.55	142.88
Miscellaneous	0.00	0.00	0.00
Fixed Cost	4849.02	4361.24	5344.17
Rental value of owned land	2616.00	2542.61	3886.75
Rent paid for leased-in land	0.00	0.00	0.00
Land revenue,cesses & taxes	1.54	10.00	9.56
Depreciation on implements & Farm buildings	693.64	669.30	490.83
Interest on fixed capital	1537.84	1139.33	957.03
Total Cost	17978.15	16023.77	16762.19

Source: DES

Annex Table 5.5n : Cotton - Break-up of Cost of Cultivation

(Rs./ha)

Cost Items	Andhra Pradesh		Gujarat		Haryana		Karnataka		Madhya Pradesh		Maharashtra		Odisha		Punjab		Rajasthan		Tamil Nadu	
	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14	2014-15	2013-14
Operational Cost	56038.71	55887.33	55323.05	49472.73	44783.67	47321.80	42614.72	35791.64	58298.76	26497.92	53896.51	54663.07	34986.34	35819.18	45242.55	43488.26	48906.65	51839.00	69443.06	57540.05
Human Labour																				
Casual	19015.94	22521.81	15532.50	14393.03	8351.49	10746.96	15143.25	12057.72	8502.08	4568.65	13995.05	15224.20	5862.24	9011.49	12668.07	12591.99	4459.70	7556.72	24279.80	14839.25
Attached	372.71	1082.65	139.83	297.07	422.08	612.21	0.00	0.00	795.65	6.24	724.23	718.62	1129.35	1295.37	1760.15	2810.91	0.00	252.96	11.38	21.06
Family	11081.44	7222.36	11518.21	11395.06	15252.58	17313.01	6480.80	5963.76	16642.78	8417.54	8945.20	8390.19	13552.99	10776.84	8863.22	6585.76	26603.73	21702.29	21646.56	21654.75
Total	30470.09	30826.82	27190.54	26085.16	24026.15	28672.18	21624.05	18021.48	25940.51	12992.43	23664.48	24333.01	20544.58	21083.70	23291.44	21988.66	31063.43	29511.97	45937.74	36515.06
Bullock Labour																				
Hired	1625.89	1130.13	600.55	552.67	22.76	24.83	1451.79	601.54	449.90	147.96	1479.19	1209.12	82.47	0.68	1.84	0.00	231.69	227.29	104.60	273.21
Owned	2429.12	3468.91	1147.29	1687.29	491.51	569.59	1501.43	2491.67	6352.25	2781.59	5829.48	5974.76	2022.41	3210.16	197.29	220.57	698.74	1185.68	37.22	24.53
Total	4055.01	4599.04	1747.84	2239.96	514.27	594.42	2953.22	3093.21	6802.15	2929.55	7308.67	7183.88	2104.88	3210.84	199.13	220.57	930.43	1412.97	141.82	297.74
Machine Labour																				
Hired	4303.35	2942.84	4192.73	3249.62	2199.05	3159.52	3580.81	2707.02	2237.36	1582.17	3604.41	3192.39	1891.58	750.99	1640.30	895.89	1681.69	3387.78	4048.52	4106.31
Owned	442.07	291.61	1904.96	788.28	2581.26	1438.77	392.59	140.59	188.81	4.51	412.35	300.71	140.23	33.62	4103.10	4137.77	1068.52	310.96	93.19	172.10
Total	4745.42	3234.45	6097.69	4037.90	4780.31	4598.29	3973.40	2847.61	2426.17	1586.68	4016.76	3493.10	2031.81	784.61	5743.40	5033.66	2750.21	3698.74	4141.71	4278.41
Seed	4106.40	3639.78	3375.28	3003.51	4626.60	4604.17	4238.28	4046.36	2388.31	2421.10	3789.36	3326.11	2853.82	3221.73	5692.80	5338.84	5172.50	4595.84	3616.80	3348.23
Fertilisers and Manure																				
Fertilisers	6701.88	7572.56	5319.66	5307.41	3206.48	3402.93	5221.82	5130.53	4459.93	2861.75	6661.57	7882.99	5503.71	4826.02	3059.11	3998.61	2220.51	3498.39	7876.38	5988.19
Manure	643.05	783.52	3365.17	2439.07	0.00	22.50	802.41	337.61	6065.35	1212.38	2588.03	2800.60	1092.43	1523.79	31.29	0.00	2435.15	3971.19	2627.17	3126.20
Total	7344.93	8356.08	8684.83	7746.48	3206.48	3425.43	6024.23	5468.14	10525.28	4074.13	9249.60	10683.59	6596.14	6349.81	3090.40	3998.61	4655.66	7469.58	10503.55	9114.39
Other Inputs																				
Insecticides	3451.85	3732.65	3541.82	2285.61	2360.10	1877.10	2515.41	1046.19	4828.61	1233.44	2152.27	2889.51	205.61	409.63	5122.63	5566.01	1489.30	2392.61	2733.68	2019.15
Irrigation charges	501.03	22.84	3357.62	2920.24	4273.53	2640.85	191.16	364.77	1656.81	712.70	2318.86	1297.80	0.00	0.00	615.46	174.79	2134.64	1841.46	850.69	879.64
Interest on working capital	1362.34	1474.70	1327.43	1153.87	894.88	909.36	1094.97	903.88	1262.30	547.89	1362.16	1402.22	649.50	758.86	1102.40	1118.26	675.85	913.23	1448.38	1087.43
Miscellaneous	1.64	0.97	0.00	0.00	101.35	0.00	0.00	0.00	2468.62	0.00	34.35	53.85	0.00	0.00	384.89	48.86	34.63	2.60	68.69	0.00
Fixed Cost	23798.91	27604.20	17948.67	21200.76	20121.24	22428.83	16427.52	19170.71	18533.26	17318.18	18494.67	18569.00	9360.98	14374.04	31535.06	30918.54	19015.40	21786.20	19549.64	16993.91
Rental value of owned land	19513.84	23875.29	12008.96	15849.68	15358.71	19673.27	13815.78	17051.45	12733.59	14911.75	10238.60	13848.55	7122.60	12062.46	21124.76	24315.30	13890.78	17734.62	14354.03	13853.03
Rent paid for leased-in land	179.66	645.37	1464.28	896.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7452.86	3712.30	0.00	1241.52	0.00	37.37
Land revenue,cesses & taxes	0.31	0.42	12.66	12.01	0.00	0.00	8.21	10.46	2.79	1.90	31.67	28.07	17.02	9.47	0.00	0.00	12.13	7.64	8.86	6.50
Depreciation on implements & Farm buildings	512.29	320.45	270.15	285.89	311.68	217.00	268.74	365.00	973.11	502.55	959.39	551.54	651.42	484.18	227.66	284.52	401.27	306.83	460.71	438.73
Interest on fixed capital	3592.81	2762.67	4192.62	4156.66	4450.85	2538.56	2334.79	1743.80	4823.77	1901.98	7265.01	4140.84	1569.94	1817.93	2729.78	2606.42	4711.22	2495.59	4726.04	2658.28
Total Cost	79837.62	83491.53	73271.72	70673.49	64904.91	69750.63	59042.24	54962.35	76832.02	43816.10	72391.18	73232.07	44347.32	50193.22	76777.61	74406.80	67922.05	73625.20	88992.70	74533.96

Source: DES

Annex Table 5.6: Comparision of Cost Projections of Kharif Crops - 2017-18 KMS

Crop/State	State Projections		CACP Projections on the basis of CS data	
	Yield (qtl/ha)	Cost of Production (Rs./qtl)	Yield (qtl/ha)	Cost of Production (Rs./qtl)
Paddy				
Andhra Pradesh	60	1866	56	1495
Bihar	38	1570	26	1338
Odisha	35	2344	30	1656
Punjab	60	1541	64	1119
Telangana*	50	2158	56	1495
West Bengal	-	1432	39	1725
Jowar				
Andhra Pradesh	16	1934	17	2039
Telangana*	11	2559	17	2039
Bajra				
Andhra Pradesh	17	1708	NP	
Telangana*	12	2247	NP	
Maize				
Andhra Pradesh	49	1633	49	1222
Bihar	30	1552	32	1072
Telangana*	34	1949	49	1222
Ragi				
Andhra Pradesh	12	1980	20	1999
Telangana*	12	2325	20	1999
Tur				
Andhra Pradesh	6	5984	7	5683
Telangana*	5	7123	7	5683
Moong				
Andhra Pradesh	6	5419	5	4822
Telangana*	5	6164	5	4822
Urad				
Andhra Pradesh	7	5307	10	3277
Telangana*	6	5423	10	3277
Groundnut				
Andhra Pradesh	10	4981	18	3962
Telangana*	12	4971	18	3962

(Continued)

Annex Table 5.6: Comparision of Cost Projections of Kharif Crops, 2017-18 KMS

Crop/State	State Projections		CACP Projections on the basis of CS data	
	Yield (qtl/ha)	Cost of Production (Rs./qtl)	Yield (qtl/ha)	Cost of Production (Rs./qtl)
Soybean				
Andhra Pradesh	19	2920	10	4120
Telangana*	15	3239	10	4120
Sunflower				
Andhra Pradesh	8	5093	8	4806
Telangana*	6	5986	8	4806
Sesamum				
Andhra Pradesh	5	7182	3	7872
Telangana*	3	7080	3	7872
Cotton				
Andhra Pradesh	20	5042	17	4625
Punjab	19	4668	18	4405
Telangana*	20	5337	17	4625

NP: Not Projected due to non-availability of CS estimates.

** The CACP projections of Andhra Pradesh (AP & Telangana united) are considered for Telangana.*

Annex Table 5.7: All India Projected Costs of Production of Kharif Crops for 2017-18 over 2016-17 KMS

Crops	Cost of Production (Rs./qtl)				Percentage Change in Projected Cost (2017-18 over 2016-17)	
	2016-17		2017-18			
	A_2+FL	C_2	A_2+FL	C_2	A_2+FL	C_2
Paddy	1045	1378	1117	1484	6.9	7.8
Jowar	1501	1992	1556	2089	3.7	4.9
Bajra	925	1218	949	1278	2.7	4.9
Maize	966	1286	1044	1396	8.0	8.5
Ragi	1733	2150	1861	2351	7.4	9.3
Arhar (Tur)	3241	4314	3318	4612	2.4	6.9
Moong	4065	5191	4286	5700	5.4	9.8
Urad	3584	4661	3265	4517	-8.9	-3.1
Groundnut	3371	4300	3159	4089	-6.3	-4.9
Soybean	1852	2542	2121	2921	14.5	14.9
Sunflower	3479	4418	3481	4526	0.1	2.5
Sesamum	4188	5570	4067	5706	-2.9	2.4
Nigerseed	3366	4320	3912	5108	16.2	18.2
Cotton	2889	3920	3276	4376	13.4	11.6

Annex Table 6.1: MSP Suggested by State Goverments for the Kharif Crops of 2017-18

(Rs./qtl)

Sl.No.	State	Paddy (Common)	Paddy (Gr-A)/ (S. Fine)	Jowar	Bajra	Maize	Ragi	Tur	Moong	Urad	Ground-nut (in shell)	Sesa-mum	Soy-bean	Soy-bean (Yellow)	Sunflow-er-seed	Niger-seed	Cot-ton	Cotton (Medium Staple)	Cotton (Long Staple)
1	AP	2799	3437	2901	2562	2449	2970	8976	8128	7961	7472	10773	4380		7640			7564	7717
2	Bihar	2355				2328													
3	Chhattisgarh	2200	2250			1450		6500	7000	6500	5500	6000	3250		4600	5000			
4	Goa	2000									4000								
5	Gujarat	2200		2100	2050	2200		5600	6900	6500	6000	6500						5600	6000
6	Jharkhand	1883				1880		6189	5661										
7	Karnataka	2100		2750	3000	1600	3500	7000	6500	6500	6500		4800	4700	6000		6500		
8	Kerala	2350	2400																
9	MP	2700		2200	2200	2200		7000	5000	5000	5000	5500		4000		4550	5500		
10	Maharashtra	3251		2856	3252	1920		6008	9257	8439	8655		4749						7204
11	Odisha	2500				1500		5500	6000	6000	5000	6000				4200		4800	5000
12	Punjab	2000	2185			2000		6250	6500	6200	5600						6321		
13	TN	2300	2500	1750	1450	1650	1750	8400	7150	6400	5000	7850			3900			5650	5700
14	Telangana	3237	4136	3839	3370	2924	3487	10684	9246	8134	7456	10620	4858		8978			8005	8411
15	WB	1720																	

Source: State Replies

Commission for Agricultural Costs and Prices

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