

# The Marketing Season 2018-19



सत्यमेव जयते

### Commission for Agricultural Costs and Prices

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

भारत सरकार

Government of India



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# Price Policy *for* Kharif Crops

The Marketing Season 2018-19



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New Delhi

मार्च, 2018

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Commission for Agricultural Costs and Prices  
Department of Agriculture, Cooperation  
and Farmers Welfare  
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## **Preface and Acknowledgements**

It is my great pleasure and privilege to present the report of **“Price Policy for Kharif Crops: The Marketing Season 2018-19”**. The report contains recommendations on Minimum Support Prices (MSP) for the mandated kharif crops and a set of non-price recommendations. I hope these recommendations will serve the interests of both producers and consumers, incentivise farmers to adopt new technologies and practices, lead to stability of prices, and improve 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 2013-14 to 2015-16 and cost projections for Kharif Marketing Season 2018-19 including issues like inter-crop price parity are analysed in Chapter 5. Non-price and price policy recommendations are given in the Chapter 6.

Preparation of this report required 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. I would also like to express my special appreciation and thanks to Government of Maharashtra, Chhattisgarh, Assam and Andhra Pradesh. 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 is due to the officers and staff of the commission, who contributed to this report. Sincere gratitude goes 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 active support of Mr. K. M. M. Alimalmigothi, (Adviser), Mr. D. K. Pandey (Adviser), Ms. Nutan Raj (Adviser), Mr. Raj Kumar, Mr. Nikhil Kumar Agarwal, Dr. S. K. Gupta, Dr. Harish Kumar Kallega, Mr. Amit Sahu, Ms. Reeta Yadav, Mr. Ayush Punia, Mr. Sube Singh, Mr. Byasadev Naik, Dr. Surendra Singh, Mrs. Shilpa Taneja, Dr. Bhavik Lukka, Mr. Mohd Shoeb, Mr. S. K. Srivastava, Md. Abdul Aleem, Mr. Chandra Kumar, Mr. Vedprakash Meena, Mr. Deepdyuti Sarkar, Mr. A. K. Pandey, Ms. Meenakshi Choudhary who worked tirelessly in preparation of this report. I would like to thank them all for their contribution and support.

31<sup>st</sup> March 2018

(Vijay Paul Sharma)





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## Acronyms

$A_2$	Actual paid out cost
$A_2 + FL$	Actual paid out cost plus imputed value of family labour
AGMARKNET	Agriculture Marketing Information System Network
APEDA	Agricultural and Processed Food Products Export Development Authority
APMC	Agricultural Produce Market Committee
ASP	Average Sale Price
BBY	Bhawantar Bhugtan Yojna
BG	Bollgard
BGREI	Bringing Green Revolution to Eastern India
BSP	Basic Constant Prices
<i>Bt</i>	<i>Bacillus thuringiensis</i>
$C_2$	Comprehensive cost including Imputed Rent on Owned Land and Interest on 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 Centres
CHSC	Custom Hiring Service Centres
CIP	Central Issue Price
CIPI	Composite Input Price Index
CLU	Change of Land Use
CoC	Cost of Cultivation
CoP	Cost of Production
CPI	Consumer Price Index



# Price Policy for Kharif Crops

## Acronyms

CS	Comprehensive Scheme of Studying Cost of Cultivation of Principal Crops in India
CSO	Central Statistics Office
CT	Conventional Tillage
CWC	Central Warehousing Corporation
DBT	Direct Benefit Transfer
DCP	Decentralised Procurement
DES	Directorate of Economics and Statistics
DFFPD	Department of Food and Public Distribution
DGCIS	Directorate General of Commerce Intelligence & Statistics
DTA	Domestic Tariff Area
ECA	Essential Commodities Act
EDI	Electronic Data Interchange
e-NAM	Electronic National Agriculture Market
EU	European Union
FAI	Fertilizer Association of India
FAO	Food and Agriculture Organization
FAQ	Fair Average Quality
FCI	Food Corporation of India
FLD	Front Line Demonstration
FPO	Farmer Producer Organisation
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GIA	Gross Irrigated Area
Gobar Dhan	Galvanizing Organic Bio-Agro Resources Dhan
GSVA	Gross State Value Added
GVA	Gross Value Added
GVO	Gross Value of output
HSD	High Speed Diesel
ICAC	International Cotton Advisory Committee
ICAR	Indian Council of Agricultural Research



# Price Policy for Kharif Crops



ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IIMR	Indian Institute of Maize Research
KCC	Kisan Credit Card
KMS	Kharif Marketing Season
KVKs	Krishi Vigyan Kendras
LCS	Land Custom Stations
LPA	Long Period Average
LTIF	Long Term Irrigation Fund
MAS	Market Assurance Scheme
MDM	Mid-Day Meal
MEP	Minimum Export Price
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MIS	Market Intervention Scheme
MMTC	Metals and Minerals Trading Corporation
MSP	Minimum Support Price
MSR	Marketed Surplus Ratio
N, P, K	Nitrogen, Phosphorus, Potassium
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.
NCT	National Capital Territory
NMOOP	National Mission on Oil Seeds and Oil Palm
NSSO	National Sample Survey Office
OGI	Open General License
OTR	Out Turn Ratio
OWS	Other Welfare Schemes
PACS	Primary Agricultural Co-operative Society
PB	Permanent Bed
PDPS	Price Deficiency Payment Scheme

## Acronyms



## Price Policy for **Kharif Crops**

### Acronyms

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
SAMPADA	Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters
SEZs	Special Economic Zones
SFAC	Small Farmers Agribusiness Consortium
SHC	Soil Health Card
SOPA	Soybean Processors Association of India
STL	Soil Testing Labs
STR	Stock-to-Use Ratio
TE	Triennium Ending
TPDS	Targeted Public Distribution System
UN	United Nations
USDA	United States Department of Agriculture
VPO	Village Producer Organization
WPI	Wholesale Price Index
WSP	Wholesale Price
ZBNF	Zero Budget Natural Farming
ZT	Zero-Tillage



# Summary of Recommendations

## Price Policy Recommendations

S.1 While recommending minimum support price (MSP) for crops, the Commission used to consider 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 rest of the economy. However, Union Budget for 2018-19 has announced the pre-determined principle of offering to farmers a threshold MSP of atleast one and half times the cost of production (CoP) for all mandated kharif crops. Accordingly, the Commission recommends MSPs for 14 mandated kharif crops for KMS, 2018-19 as given below in Table S.1.

**Table S.1: MSPs Recommended for KMS, 2018-19**

(₹/qtl)

Crops	Projected Costs $A_2+FL$ , KMS, 2018-19	MSP, KMS, 2017-18	Recommended MSP (at least 1.5 times $A_2+FL$ ) for KMS, 2018-19	MSP as percent of $A_2+FL$
Paddy Common	1166	1550	1745 (12.58)	150
Paddy Grade A	-	1590	1770 (11.32)	152
Jowar- Hybrid	1619	1700	2430 (42.94)	150
Jowar- Maldandi	-	1725	2450 (42.03)	151
Bajra	990	1425	1950 (36.84)	197
Ragi	1931	1900	2895 (52.37)	150
Maize	1131	1425	1700 (19.30)	150
Tur	3432	5450*	5675 (4.13)	165
Moong	4650	5575*	6975 (25.11)	150
Urad	3438	5400*	5600 (3.70)	163
Groundnut	3260	4450*	4890 (9.89)	150



## Price Policy for Kharif Crops

Crops	Projected Costs $A_2+FL$ , KMS, 2018-19	MSP, KMS, 2017-18	Recommended MSP (at least 1.5 times $A_2+FL$ ) for KMS, 2018-19	MSP as percent of $A_2+FL$
Sunflower Seed	3592	4100 <sup>@</sup>	5385 (31.34)	150
Soyabean (Yellow)	2266	3050 <sup>*</sup>	3390 (11.15)	150
Sesamum	4166	5300 <sup>@</sup>	6230 (17.55)	150
Nigerseed	3918	4050 <sup>@</sup>	5860 (44.69)	150
Cotton (Medium Staple)	3433	4020	5150 (28.11)	150
Cotton (Long Staple)	-	4320	5450 (26.16)	159

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

\* Including bonus of ₹200 per quintal

<sup>@</sup>Including bonus of ₹100 per quintal

S.2 Food Corporation of India (FCI) apprised that 85.90 percent of paddy procured is Grade A and rest is common variety. Since, CACP traditionally has been recommending MSP of common paddy and some differential over and above for Grade A paddy, MSP recommended for Grade A paddy is 152 percent over  $A_2+FL$  cost. MSP of bajra has been recommended at 197 percent of  $A_2+FL$  to maintain parity with other two kharif coarse cereals, i.e., jowar and ragi. On the same lines, MSPs of tur and urad have been recommended at 165 percent and 163 percent respectively of  $A_2+FL$  to maintain parity with moong. For tur, though market prices were lower (25-30 percent) than the MSP during KMS 2017-18 but due to weak supply outlook driven by reduction in area, production and imports during 2017-18, increase in wholesale prices of tur dal in recent months and lower profitability compared with other competing crops, the Commission has recommended this increase of ₹225 per quintal, from ₹5450 to ₹5675 for KMS 2018-19.

S.3 However, considering other factors like demand-supply situation, market prices, inter-crop price parity, etc. the Commission is of the view that recommended MSPs for many crops particularly water-intensive crop like paddy are higher. The main challenge would be to ensure that farmers receive at least the announced MSP and India is able to retain its competitiveness in world markets. Therefore, efforts are needed to create effective procurement system or alternative models like Bhavantar Bhugtan Yojana (BBY) in Madhya Pradesh and proposed Market Assurance Scheme. The role and participation of state governments and private sector is extremely important to make these interventions effective as well as ensure remunerative prices to farmers.

# Price Policy for Kharif Crops



## Non-Price Recommendations

### Increasing Production and Productivity of Oilseeds

- S.4 India is heavily import dependent to meet the domestic demand of edible oils where 70 percent of demand is met through imports. Over dependence on imports due to lower international prices combined with lack of assured marketing has resulted in farmers losing their interest in oilseeds which can be seen in fall in acreage and production. Therefore, in long run, Government should push towards increasing domestic production through increasing productivity of oilseeds as the option of area expansion is very limited. This will reduce dependence on imports.
- S.5 In this regard, National Mission on Oil Seeds and Oil Palm (NMOOP) should play a pivotal role in increasing the productivity and production of oilseeds. It should closely work with organisations like Soybean Processors Association of India (SOPA) for quality research & development in soybean sector for distribution of quality seeds and making India competitive in global market. Also, oil industry should push for better returns to farmers by organising farmers in FPOs and procuring from FPOs. Recently, Government has increased the import duty both for crude and refined oils which will reduce imports edible oils and will safeguard the interest of Indian farmers. To sustain the competitiveness of domestic produce, effective price monitoring mechanism has to be put in place and Government should step in to procure oilseeds whenever the market prices fall below MSP. The import duty needs to be changed as and when the domestic prices show fluctuation trends so as to make the domestic produce competitive in terms of price.

### Price Deficiency Payment Scheme

- S.6 To ensure MSPs to farmers, a system should be brought in place wherein difference between MSP and market price should be paid directly to farmer's bank account. This will minimise Government intervention in procurement of crops and will also result in curbing loss of foodgrains incurred in terms of non-availability of storage as farmers will be able to sell their produce directly to traders and get the difference from the Government. This system has been successfully introduced in Madhya Pradesh named as Bhawantar Bhugtan Yojna (BBY) for pulses (Urad, Moong, Tur), oilseeds (Soybean, Groundnut, Sesamum, Nigerseed) and maize. Under the Scheme, direct payment of the difference between MSP and average sale price (ASP) to farmers selling his produce in APMC yards is done directly to



## Price Policy for Kharif Crops

their bank accounts. It has been observed by the Commission that under BBY, the cost incurred by the Government of Madhya Pradesh is significantly lower (17.85 percent of what was incurred on procurement at MSP last year) and therefore, Commission is of the view that the Government should explore the possibility of implementing the Scheme on pan India basis.

### Farm Mechanisation

- S.7 Declining agricultural workforce has resulted in higher wage rate of agricultural labour and in turn increase in cost of cultivation. Therefore, mechanisation of agricultural activities is necessary to take care of higher wage rate and bringing down the input costs. However, the mechanisation of agricultural activities has to be primarily driven by the state governments as some farmers, small and marginal in particular, may not find owning high valued farm implements economically viable. Custom Hiring Centres (CHCs) should be established through Public Private Partnership (PPP), private entrepreneurs, co-operative basis, farmer's organizations and charitable trusts.

### Agricultural Land Leasing Policy

- S.8 Majority of agricultural land holdings in the country are held by small and marginal farmers. With ever increasing pressure of population on limited land size resulting in further fragmentation of land holdings, policymakers should keep special focus on small and marginal farmers who are often devoid of policy benefits. For this, legislation should be brought wherein leasing of agricultural land is legalized. This will result in improved access to land on lease by landless and marginal farmers which will help improve their economic condition.

### Pradhan Mantri Fasal Bima Yojana (PMFBY)

- S.9 Farmers often do not get receipts of the premium deducted towards the crop insurance and copy of policy documents. This results in farmers not getting due benefit of the Scheme in case of any unforeseen incidents. Also, farmers are provided loans based on the crop value due to which some farmers, contrary to the actual crop grown by them, tend to declare high value crops for availing higher loans. As a result, farmers find it difficult to claim insurance and repay their loans in case of crop failure since crop in bank records differs from the actual crop. The Commission is of the considered opinion that loan should be provided to farmers on land value and not on crop value to prevent them falling



## Price Policy for Kharif Crops



into debt trap. Apart from this, issue of crop losses due to wild animals also need to be addressed.

### Local Level Storage

S.10 Small and marginal farmers owing to small land sizes do not have large outputs and as a result have minimal surplus. Moreover, they are compelled to sell their produce owing to lack of storage facilities combined with immediate fund requirement. This leads to distress sale by small and marginal farmers. In this regard, a major push is required to build local storage system at gram panchayat level on cost sharing basis between farmers and state governments. The farmers can then deposit their produce in a local godown and obtain a receipt and can avail loan to an extent of 75 percent of the value of the crop deposited in the local godown against the receipt. This will allow farmers to take care of their immediate need of fund and also allows them to sell their produce at a later date when the market has recovered. This system will help in empowering small and marginal farmers in particular with the support of rural banks, cooperative banks and Primary Agricultural Co-operative Societies (PACS).

### Publicity Campaign on MSP and FAQ

S.11 Farmers living in far flung/remote areas are generally unaware of FAQ norms and, therefore, their produce often gets rejected in the mandis on the basis of quality. Hence, there is a need to launch large scale publicity campaigns to create awareness about MSP and FAQ among farmers and post-harvest handling of commodities so as to minimize post-harvest losses and better prices to farmers. For this, gram panchayats may be empowered with sufficient financial powers to educate farmers about the same.

### Creating Markets for Assured Returns to Farmers

S.12 It has been observed that often farmers of remote areas do not have sufficient access to APMCs and their potential market is local haats where their produce is sold below MSP. Therefore, for such farmers, if procurement centres need be opened in remote areas at gram panchayat level. Furthermore, to instil confidence among farmers for procurement of their produce, a legislation conferring on farmers 'The Right to Sell at MSP' may be brought out.

### Skewed Procurement

S.13 The Commission had sought data on procurement of paddy from states, disaggregated categories of farmers (i.e. marginal, small, semi-medium, medium



## Price Policy for Kharif Crops

and large farmers). Government of Odisha has provided information on break up of paddy procurement by different category of farmers for kharif 2016-17. It was observed that more than 80 percent of total procurement of paddy in 2016-17 was made from large, medium and semi-medium farmers which shows that benefits of MSP are not reaching small and marginal farmers. The Commission is of the considered view that procurement data on category-wise (small, marginal, semi-medium, medium and large) farmers needs to be monitored for analysing the inclusiveness of procurement procedure as regards small and marginal farmers. All state governments should make efforts to computerize their procurement processes so as to maintain an exhaustive database on procurement.

### Promoting Agro-Processing Units

S.14 Like dairy industry, a big leap should be taken to promote agro-processing units for agricultural produce to enhance farmer's income. Crops having multiple uses apart from food consumption may be identified. For example, maize, apart from the uses of direct consumption can also be used for industrial purpose. For this, small and marginal farmers may be allowed to establish units for processing and value addition on his farm or catchment area with minimal formalities. The possibility of considering agricultural land as security for grant of loans should be explored by the banks. It should also be ensured that the rate of interest on small agro-processing units should be lower than big agro-processing units.

### Issues in North-Eastern States

S.15 North-Eastern states have high humidity in atmosphere which results in higher moisture content in paddy than the FAQ norms prescribed by FCI thus leading to lower procurement. In this regard, state governments should create facilities at gram panchayat level for drying farmer's produce so that it meets FAQ norms. In addition, state governments may also coordinate with the Ministry of Consumer Affairs, Food and Public Distribution for relaxation of FAQ norms for the region. Apart from this, local procurement infrastructure may be strengthened so as to minimise imports from other states, this will help in increasing income of local formers and will also save transportation costs.

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# Chapter 1

## Overview

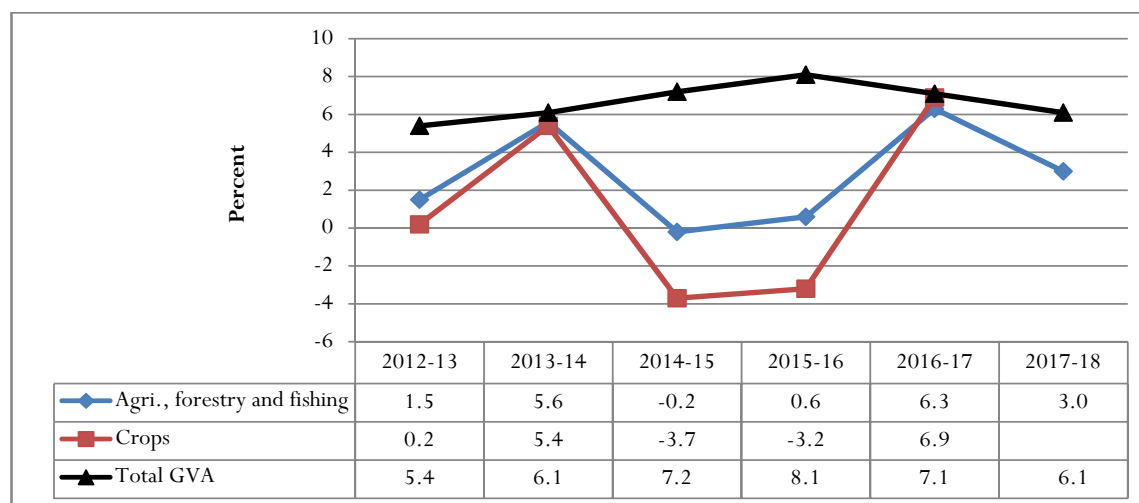
### Performance of Crop Sector

- 1.1 After achieving the record foodgrain production of 275.11 million tonnes in 2016-17, the total foodgrain production is estimated to further increase by 2.38 million tonnes to 277.49 million tonnes in 2017-18. The estimated foodgrain production in 2017-18 has exceeded the target which was pegged below the actual production of 2016-17 because of the near normal monsoon witnessed in 2017. In 2017-18, total production of kharif rice is estimated at 96.48 million tonnes and of kharif coarse cereals at 33.15 million tonnes as compared to 32.44 million tonnes during 2016-17. Production of pulses and cotton is also expected to increase in 2017-18 while the production of oilseeds is expected to decline further.

### Growth in Agriculture and Allied Sectors

- 1.2 As per Central Statistics Office (CSO's) Second Advance Estimates, Agriculture, Forestry and Fishing Sector's growth rate in Gross Value Added (GVA) at Basic Constant Prices (2011-12) during 2017-18 is expected to be 3.0 percent, a decrease of more than 50 percent of what the sector achieved in 2016-17 (6.3 percent) (Chart 1.1).

**Chart 1.1: Growth in GVA at Basic Constant Prices**



Source: CSO



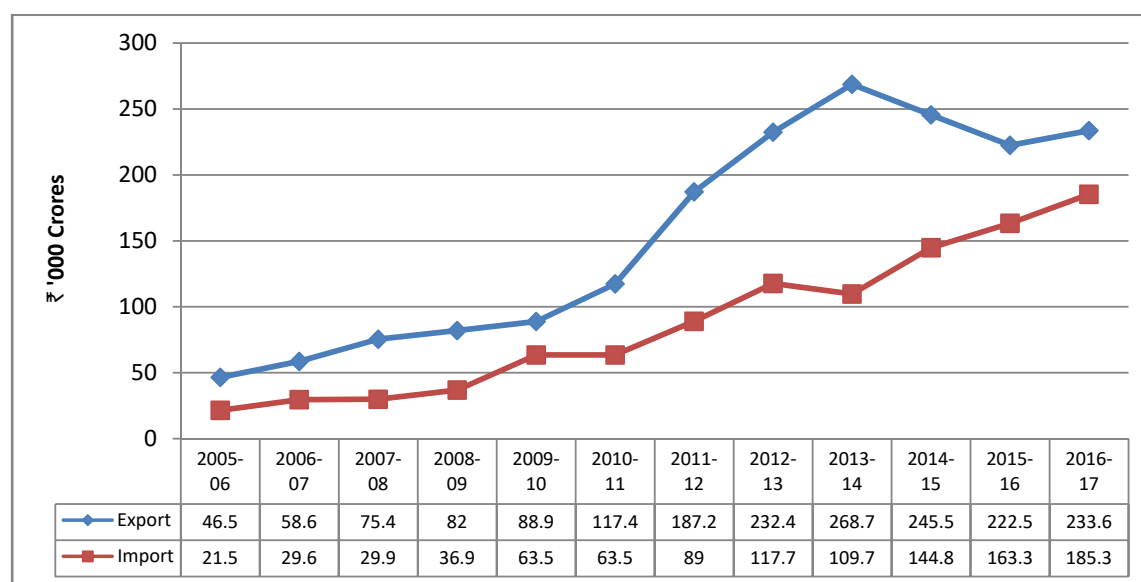


# Price Policy for Kharif Crops

## India's Agriculture Trade Scenario

- 1.3 After witnessing continuous decline in export of agri-commodities during 2013-14 to 2015-16, it increased marginally by 5 percent in 2016-17. However, this marginal increase in export is attributed mainly to the increase in export of non-kharif crops while the export of kharif crops continue to decline. Recent relaxation provided by the Government in export of pulses is expected to increase the acreage in pulses and further may improve the exports of kharif crops. The growth of imports (13 percent) of agricultural commodities outpaced the growth of exports which resulted in further decline of trade surplus which is an area of concern (Chart 1.2). The reason behind the increase in imports is because of higher import of vegetable oils (6.4 percent) and pulses (11.3 percent) both of which account for more than 50 percent of total imports in terms of value.

**Chart 1.2: India's Exports and Imports of Agri-Commodities (2005-06 to 2016-17)**



Source: DGCIS

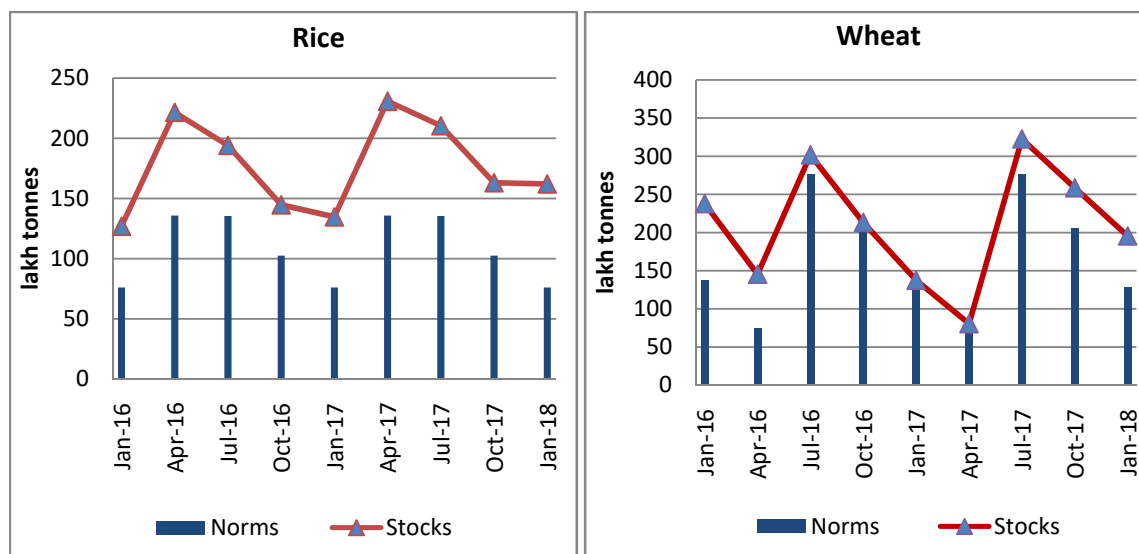
## Central Pool Stocks

- 1.4 Stock of rice with FCI for last decade has been at par or significantly higher against the established norm compared to wheat. There has been increase in procurement both for rice and wheat in 2017-18 compared to 2016-17 due to the higher procurement target fixed for 2017-18. The procurement of rice and wheat increased by more than 20 percent and 40 percent respectively in January, 2018 compared to same month last year (Chart 1.3).

# Price Policy for Kharif Crops



**Chart 1.3: Central Pool Stocks with FCI, January 2016 to January 2018**



Source: Department of Food and Public Distribution

## Pulses

- 1.5 Pulses are generally grown in rainfed and relatively dryland areas. Standing crop of pulses mostly get affected/damaged at field level due to pest attack and are susceptible to insects as well as adverse weather conditions which ultimately decreases production and give losses to the growers. Productivity is lower than other crops with no assured market unlike wheat and paddy, prompting the farmers/ growers to shift to crops like wheat/paddy and other high value crops. A long term solution to increase production of pulses lies in increasing productivity through good quality seeds, balanced use of fertilizers, protective irrigation and better extension services. Also, the prices and assured marketing to pulses will go a long way in ensuring better productivity and production.
- 1.6 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. Effective procurement of pulses during harvest period to ensure remunerative prices for the produce
  - ii. Promoting appropriate post-harvest processing and value addition in pulses at village level
  - iii. Continuous monitoring of trade policy



## Price Policy for Kharif Crops

### Oilseeds

- 1.7 Oilseeds are grown in very small land holdings in the country under rainfed conditions and farmers are generally small and marginal. In 2017-18, the production of kharif oilseeds is estimated at 20.36 million tonnes, 5.4 percent lower than the production at 21.51 million tonnes in 2016-17. This is mainly due to fall in production of soybean by 13.4 percent, which is the major kharif oilseed accounting for almost 55 percent of production in 2017-18. The lower production of soybean is mainly due to fall in wholesale prices during sowing season in 2017. Government increased the duty structure of crude oils and refined oils wherein import duty on crude soybean oil increased by 12.5 percent (from 17.5 percent to 30 percent) while refined soybean oil increased by 15 percent (from 20 percent to 35 percent). This is a welcome move by the Government as this will curb overseas purchases of edible oils and reduce the dependence of the country on imported edible oils and will also safeguard the interest of Indian farmers. India imports about two-thirds of its edible oil demand and there is an urgent need to devise a policy to increase oilseed productivity as the option of area expansion is very limited. It may be noted that the productivity of oilseeds in India is half that of world average and there is an urgent need to address this issue collectively by Government and private sector. To increase productivity and reduce dependence on imported edible oils, special focus should be given in distribution of quality seeds to farmers before the sowing season. Also, National Mission on Oil Seeds and Oil Palm (NMOOP) should closely associate and work with Soybean Processors Association of India (SOPA) for quality research & development in the soybean sector for making India competitive in global market. Also, food use of soybean is very limited and Government should encourage soybean as a protein food to public so as to create market for the crop.
- 1.8 The Commission is of the view that the oil industry should consolidate farmers in groups as Farmers Producer Organisations (FPOs) and then process their produce. A provision has been made in Budget 2018-19 for exemption of FPOs from income tax which will go a long way for increasing the oilseed productivity and enhancing the income of farmers.

### Maize

- 1.9 Water requirement of maize is much lower than that of other competing cereals like rice and wheat and having wider industrial uses. Thus expansion of area under maize will have a significant impact on sustainability in agriculture. As per Indian Institute of Maize Research (IIMR), Zero-Tillage (ZT) and Permanent Bed (PB) practices reduced the irrigation water requirement by 40–65 ha-mm and 60–98 ha-mm, respectively.



## Price Policy for Kharif Crops



Net profit from the maize-based systems under ZT was up to 31 percent higher with 72\$/ha lower production cost compared to Conventional Tillage (CT). Thus, the study suggests that ZT/PB based crop management could be adopted for enhanced soil health and overall sustainability.

- 1.10 The adoption of the single cross maize hybrid seed production by farmers of West Bengal and Rajasthan in technical collaboration with ICAR and state departments of agriculture led to increased income and livelihood security of farmers. Adoption of cultivation of baby corn in Atterna and sweet corn in Manuli villages of Sonipat district of Haryana enhanced farm income enormously and led to establishment of processing plant. Such practices need to be emulated in other maize growing districts so as to increase the production and productivity.

### Cotton

- 1.11 India has world's largest area under cotton cultivation that is about 35 percent of the total world area under cotton. By improving the yield to match with the world yield of about 8 quintals per hectare, production of 9.9 million tonnes can be achieved under the present area coverage of 12.43 million hectares. With this abundance of availability of its own cotton, India has potential to increase local and global consumption of its cotton.
- 1.12 However, Indian cotton yield has been stagnant over last decade with a maximum yield reaching to 5.6 quintals per hectare. There have been no major improvements mainly because of the technology fatigue. It is well known that *BT* cotton seed, Bollgard-2, has developed resistance to pink bollworm which has led to stagnant growth despite 15 percent increase in area under cotton. Appearance of pink bollworm in Maharashtra, Telangana & Gujarat state and attack of white fly in the north zone (particularly Punjab and Haryana) in last couple of years, has affected the yield and quality of Indian cotton crop. Therefore, prices of BG-2 seeds have been reduced, so that the inputs costs of the farmers do not rise as they have to pay for pesticides to protect their crop.
- 1.13 Also, cotton farmers face huge risks since the cotton seed market is not regulated and poses higher risks to the farmers' produce in terms of quantity and quality. Therefore, to increase the yield and compete in global market, there is an urgent need to regulate the cotton seed market in light of growing cotton industry and to safeguard our farmers.

### Organic Farming

- 1.14 An increasing trend in indiscriminate use of fertilisers is of grave concern. It is noticed that lack of awareness among farmers and skewed subsidy policy towards



## Price Policy for Kharif Crops

### Overview

urea and higher cost of alternative fertilisers is the reason behind the imbalanced use of fertilisers. Based on the interaction of Commission with farmers of various associations, it was known that the use of new herbicides and pesticides that are being sold in the market suck the soil of all nutrients and it is not fit for growing any crop for some years thereafter. Therefore, it is necessary to steadily move towards organic farming. For instance, Andhra Pradesh has introduced **Zero Budget Natural Farming (ZBNF)** which is targeted at reducing the cost of cultivation. This was being done inter-alia by focussing on reduction in fertiliser consumption in farms. However, farmers following organic farming and not using chemical fertilizers are devoid of the subsidy benefit extended to farmers using chemical fertilisers. Use of livestock may also be integrated with farming activities as it will reduce the cost of cultivation. The animal wastes can be processed to be used as organic manure and herbs growing in the field can be used as a food source for the livestock. Moreover, the markets for organic produces are increasing day by day in domestic and international markets.

- 1.15 To boost the practice of Organic Farming, Government has launched Galvanizing Organic Bio-Agro Resources Dhan (Gobar Dhan) Scheme for farmers. This scheme will help in managing and reusing cattle dung as compost and fertilizer in agriculture. Thus, this agri-focused Scheme will improve the lives of farmers by focusing on managing cattle dung and use it as bio-fuel / bio-CNG which will assist in increasing farmer's income.

### Soil Health Management

- 1.16 In order to guide farmers on judicious and economic use of fertilizer nutrients, Government has implemented Soil Health Card (SHC) Scheme from February 2015. At all-India level, 253.49 lakh soil samples have been collected out of which 250.04 lakh samples have been tested (an increase of more than 250 percent from last year). A total of 1050.6 lakh SHCs have been distributed (an increase of about 470 percent from last year) as on 06.03.2018. This is a remarkable increase over the last year. The coverage of the Scheme in states like Andhra Pradesh, Gujarat, Maharashtra and Uttar Pradesh has been very encouraging whereas few northern states like Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab and Haryana are lagging far behind. The scheme lacks implementation in north-eastern region completely. Also, there is a wide gap in the number of samples collected vis-a-vis number of samples tested in some states, the difference being as large as 50 percent. Therefore, more number of Soil Testing Labs (STLs) needs to be opened

## Price Policy for Kharif Crops



to bridge this gap. Special efforts are needed to bring north-eastern region under the coverage of the Scheme.

### Water Availability

1.17 Water is becoming scarce with passage of time. The increased use of ground water in farms has further aggravated the issue of water scarcity with water table going down year by year. Therefore, the Commission re-iterates its earlier recommendation of economy in water use in agriculture by fixing quantitative ceilings on per hectare use of both water and electricity. If any farmer is able to use water or electricity less than the ceilings fixed, compensation in the form of cash incentives equivalent to unused units of water/power should be provided. This would encourage farmers to use drip irrigation and would enhance production per drop of water. Also, measures like rain water harvesting should be made a priority in all villages to address the issue of water scarcity. State governments should provide suitable incentives to farmers for building pits for harvesting rain water. For instance, Balram Tal Yojana launched by the Government of Madhya Pradesh provides 50 percent subsidy to certain categories of farmers for adopting rain water harvesting model. Apart from the active role of state governments, there is also a need to make farmers aware of benefits of rain water harvesting. The village of Kadavanchi in Jalna district of Maharashtra is a classic example on how the village has made itself drought proof by adopted rain water harvesting system. Another example is of Jaisalmer, Rajasthan where the rain water harvesting system has worked wonders for the farmers. This system is less expensive compared to other water management policies of the Government. Therefore, the solution to water problem lies in the traditional way of conserving water along with focussing on advanced technological interventions. The role of state governments is important in propagating and replicating such water conservation measures in order to provide assured irrigation to farmers.

### Input Subsidy Directly to Farmers

1.18 The Commission is of the opinion that input subsidies instead of providing to the companies, they may be given directly to farmers under Direct Benefit Transfer (DBT). It is known that farmers often take loans from money lenders to buy inputs for cultivation which leads to their exploitation in the hands of money lenders.





## Price Policy for Kharif Crops

For successful implementation of this Scheme, proper computerisation of land records is essential, post which estimated input subsidy amount may be transferred directly to farmer's bank account. Farmers can then use this subsidy to buy inputs as per their requirements. To extend the benefits to tenant farmers who do not have land records in their name, a loan eligibility card/ certificate of cultivation be provided.

### Agricultural Land Leasing Policy

- 1.19 Legalisation and liberalisation of land leasing is needed as it would help promote agricultural efficiency, equity, occupational diversification, easy farm mechanisation and rapid rural transformation. Legalization of land leasing will result in availability of more land which the rural poor can lease in. Improved access to land on lease by the landless and marginal farmers will help improve their economic condition.
- 1.20 NITI Aayog has prepared a model land leasing law, which has been adopted by Government of Madhya Pradesh and Uttar Pradesh so far. According to NITI Aayog (2017), there is a need to ensure that by end March 2020, at least two thirds of the states would have liberal land-leasing laws that will protect the rights of both the owner and the tenant and allow them to conclude written, mutually agreeable lease agreements. The Commission is of the view that this needs to be monitored for early completion.

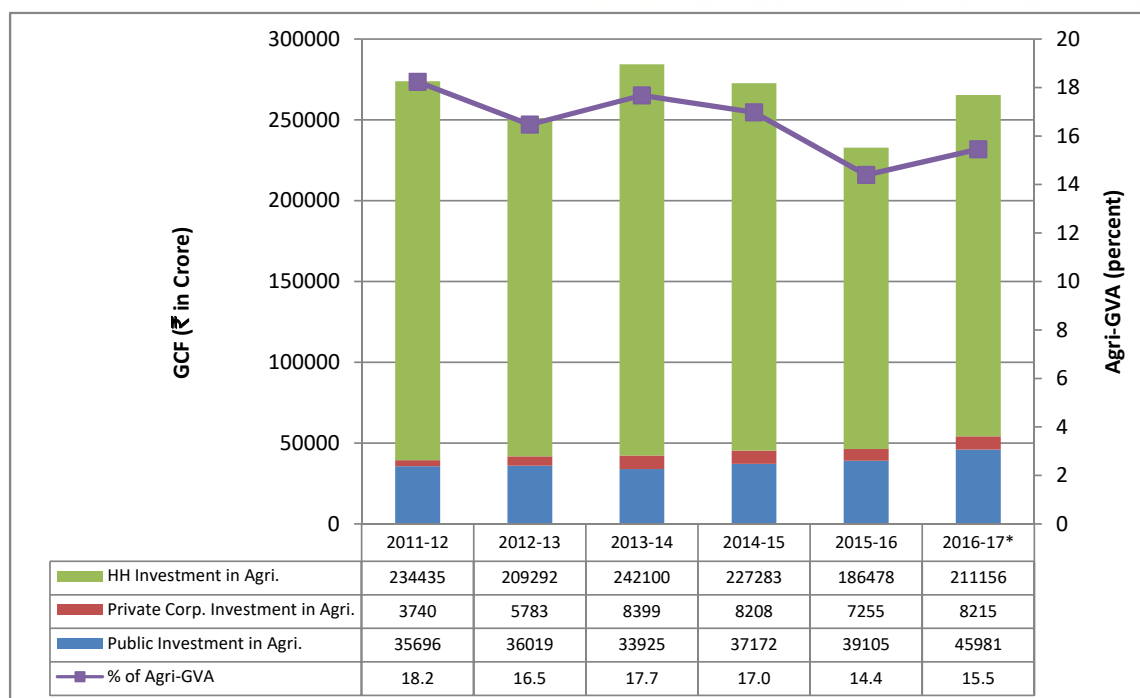
### Investment in Agricultural Sector

- 1.21 Capital formation in agriculture is crucial for the development of agriculture and sustaining it in the long run considering the fact that labour shortage is a huge problem in agricultural activities. It is, therefore, of paramount importance to work towards bringing more investment in agriculture sector. After witnessing continuous decline in capital formation in agriculture for last three years, it saw a marginal increase from 6.3 percent of total capital formation in 2015-16 to 6.8 percent of total capital formation in 2016-17 (Chart 1.4). The private sector can play a significant role in enhancing investment in agriculture sector. In a few cases where corporates are taking innovation to farmers with inputs, wonderful results have been achieved. One such case is the banana revolution in Jalgaon district of Maharashtra where farmers are using tissue-cultured banana saplings supplied by a private tissue culture lab for disease-free banana cultivation and getting much higher yield and better quality fruit. The lab is now expanding the same technology to other states and fruits. If such practices are replicated in foodgrains, India can become a global hub for agricultural production.

# Price Policy for Kharif Crops



**Chart 1.4: GCF in Agriculture: Aggregate and Percent of Agri-GVA**



*Note: \* The HH Investment in Agri. and Private Corp. Investment in Agri. for 2016-17 has been estimated based on the ratio for the year 2015-16 as the actual bifurcated data was not available*

*Source: CSO (2017)*

Overview

## Agricultural Marketing

1.22 Agriculture sector needs structured and functional markets, preferably in the vicinity of farmers, to drive growth, employment, remunerative prices and economic prosperity in rural areas of the country. Enabling mechanism are also required to be put in place for procurement of agricultural commodities directly from farmers' field and to establish effective linkage between the farm production, the retail chain and food processing industries. Keeping in view the progressive reforms being advocated, Department of Agriculture, Cooperation & Farmers Welfare has formulated a new Model Agricultural Produce and Livestock Marketing (Promotion & Facilitation) Act, 2017 and released to States/UTs in April, 2017 for adoption. The new model Act provides the farmers options for markets beyond the existing APMC regulated market yards. The provisions include inter-alia private markets, direct marketing, farmer-consumer markets, special commodity market yards, declaring warehouses/silos/cold storages or such structures as market sub yards so as to reduce the number of intermediaries between producer and buyer and increase the share of the farmer in consumer's rupee. As per Budget announcement for 2018-19, Government will



## Price Policy for Kharif Crops

set up a fund of Rs 2,000 crore for developing agricultural markets. 470 APMCs have been connected to e-NAM network and rest will also be linked with e-NAM and will also develop 22,000 gramian agricultural markets. For developing gramian agricultural markets, it is necessary that certain works that qualify under MGNREGA should be used effectively for this work. Also, efforts should be made for free inter-state movement of commodities and harmonization of quality standards to make physical integration of all markets of the country. Provisions have also been made to expand the reach of all-weather road networks to connect rural habitations with agricultural and rural markets.

- 1.23 There is a need to improve the standardization of product grading norms according to the quality differences, as it is well known that there is a certain level of subjectivity in deciding the quality of foodgrains. Once the product is declared of sub-standard quality, it leads to distress sale by farmers. Therefore, CACP reiterates its earlier recommendation of sensitising the farmers on FAQ norms and post-harvest handling of agriculture produce so as to minimise losses. Efforts are also to be made towards motivating farmers to sell their produce by pooling as it will solve the problem of marketing for farmers.

### Price Deficiency Payment Scheme

- 1.24 Government agencies like NAFED or FCI have to intervene in the market for certain crops like oilseeds, pulses, maize, etc. under Price Support Scheme (PSS) or Market Intervention Scheme (MIS) through state governments or on their own, whenever market prices of produce drop below MSP. Since, these crops are procured by Government and their disposal does not take place through PDS unlike wheat and paddy, it leads to high expenses because of costs involved in storage, handling, interest on capital and losses in disposal of the procured stock. To address this issue, the difference between MSP and market price should be paid directly to farmer's bank account. This will minimise Government intervention in procurement of crops and also result in curbing loss of foodgrains incurred in terms of non-availability of storage as farmers will be able to sell their produce directly to traders and get the difference from the Government. For this, a system introduced by Government of Madhya Pradesh, **Bhawantar Bhugtan Yojna (BBY)** can be emulated. Under the Scheme, direct payment of the difference between MSP and average sale price (ASP) to farmers selling his produce in APMC yards for these crops is done directly to their bank accounts. It has been observed by the Commission that under BBY, the cost incurred by the Government of Madhya Pradesh is significantly lower compared to the present system of procurement of produce under MSP and therefore,



## Price Policy for Kharif Crops



Commission is of the view that the Government should explore the possibility of implementing the Scheme on pan India basis.

### Bhawantar Bhugtan Yojna – a PDP scheme

**Bhavantar Bhugtan Yojana** was launched by Government of Madhya Pradesh during kharif 2017 season on pilot basis to safeguard the farmers from the fluctuations in the market prices of pulses (Urad, Moong, Tur), oilseeds (Soybean, Groundnut, Sesamum, Nigerseed) and maize. Under the Scheme, difference between the MSP and the Average Sale Price (ASP) of a produce in the APMC yard is paid directly to their bank accounts. With the advent of the Scheme, a total of 21.89 lakh farmers with around 50 percent of total cultivable area have been registered. Arrivals of all registered crops in mandis during October 2017 to December 2017 have increased by significant quantity compared to last procurement season. The major increase of 480 percent increase in tur, 228 percent in moong & urad and 129 percent increase in groundnut has been observed. The total cost incurred by the Government of Madhya Pradesh has also significantly reduced to 17.85 percent of what was incurred on procurement at MSP last year. Sentiment regarding the Scheme among farmers is also very good and they are of the opinion that the Scheme has provided them assured returns on their produce.

Commission is of the view that this Scheme should cover few more selected crops and all major producing states with production share of more than 80 percent. Farmers should be encouraged and incentivized to bring produce adhering to FAQ norms to the market for better price discovery by putting a ceiling on minimum average modal price (say not below 25-30 percent of MSP) as during the Commission's visit to a Karond Mandi in MP, it was observed that quality of Urad brought to the market was much below FAQ and even not fit for human consumption. Farmers should be encouraged and incentivized to store their produce in accredited warehouses to avoid distress sale and allow farmers to sell when prices are most favourable. However, when farmers join the programme, they should receive a loan against their produce and be entitled to receive the benefit of Bhavantar Scheme if market prices in later months are below MSP. If market prices are higher, they can choose to sell in the open market and take advantage of high prices. Apart from these, transparent and efficient price discovery is essential for the success of PDPS. Therefore, there is a need to make e-NAM in these markets operational and create national market for the selected commodities on priority basis.

### Overview

### Market Assurance Scheme (MAS)

- 1.25 Under this Scheme, states would be free to procure any quantity of crops from farmers for which MSP is announced except rice and wheat as these are already being procured by the centre for public distribution system. Centre will compensate



## Price Policy for Kharif Crops

states for any losses due to procurement, capped at 30 percent of the procurement cost. For hill states and those in the north-east, the ratio of compensation will be 40 percent. It will be the concerned states' responsibility to dispose-off the procured crops. The proposed Scheme comes against the backdrop of a record harvest of cereals and pulses in 2016-17, which led to wholesale prices plunging below MSPs. The Scheme will thus strengthen procurement and ensure farmers do not suffer from marketing inefficiencies. However, there are few concerns for smooth implementation of MAS which need to be looked at:

- a. Markets - Poorly functioning agriculture markets with lack of competition, cartelization and opaque price discovery is prevalent which causes price distortions and stand unaddressed.
- b. Infrastructure - The scheme will require the deployment of huge manpower and creation of massive infrastructure for purchasing, transporting and storing.

### Crop Residue Management

- 1.26 Crop residue management programme, if executed effectively with some modifications, can lead to enhanced farmer's income in addition to it being used for many additional purposes, viz., input for power generation where the generated power can be used for rural electrification, feed for livestock, making of cardboard/packing material, mulch cover, etc. At present, under the crop residue management, farmers supplying the crop residues to biomass generation units get a meagre amount with labour and transportation charges to be borne by farmers. Therefore, farmers, small and marginal in particular, do not find it economically viable and thus resort to burning of residues which is a serious health hazard. Moreover, small time gap between harvesting of paddy and sowing of wheat, particularly in Punjab and Haryana, is another major reason behind burning of crop residues. Also, burning of crop residues robs the soil of micro-nutrients and bacteria that are useful to maintain soil health and fertility
- 1.27 To address this problem, a new Central Sector Scheme (100 percent central share), to address air pollution and to subsidize machinery required for in-situ management of crop residue, has been announced in the states of Punjab, Haryana, Uttar Pradesh and NCT of Delhi for the period 2018-19 to 2019-20 with a total outlay of ₹1151.80 crore. Under the Scheme, Farm Machinery Banks would be established for custom hiring of in-situ crop residue management machinery. Farmers would also be provided financial assistance of 50 percent for procurement of agriculture

## Price Policy for Kharif Crops



machinery and equipment for in-situ crop residue management. Along with this, a large scale awareness campaign will be undertaken through various print and visual media. The Commission feels that along with the financial support extended to farmers for custom hiring of machineries, farmers, small and marginal in particular, may also be provided lucrative cash incentives for transporting crop residues to biomass production units which can possibly open up a new market for rural entrepreneurship. The Scheme though announced for few selected states may be popularised in remaining parts of the country with a view to empowering small and marginal farmers. Also, cost of harvesting of stubble should be included in cost of cultivation for paddy.

### Promoting Agro-Industries for Processing and Value Addition

- 1.28 Government of India is promoting Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters (SAMPADA) with the objective of supplementing agriculture, modernizing processing and reducing agri-waste. However, there are certain road blocks which need to be removed so that the benefit reaches the farmers. The Commission was apprised that for setting up any agro-processing unit on farm in Haryana, there is a requirement of seeking Change of Land Use (CLU) certificate, which is not approved in areas close to Delhi. He can setup the processing unit only in industrial area which defeats the very purpose of linking the processing unit with the farm gate and saving on transportation and time.
- 1.29 To address this issue, small and marginal farmers may be allowed to establish units for processing and value addition on his farm without any CLU (where seeking of CLU is a problem). In addition, to promote agro industry and facilitate bank loans for them, the rate of interest on small agro-industries should be lower than large agro-industries. The possibility of considering agricultural land as security for grant of loans should be explored by the banks.

### Pradhan Mantri Fasal Bima Yojana (PMFBY)

- 1.30 PMFBY envisaged addressing the increasing distress in farming due to crop losses. However, during discussions which the Commission had with the farmers during field visits, it was known that there are certain issues that need to be addressed for proper functioning of this very important Scheme, viz., i) farmers do not get receipts of the premium deducted towards the crop insurance and copy of policy documents. ii) loans are provided based on the crop value. Due to this, some farmers, contrary to the actual crop grown by them, tend to declare high value crops for availing higher





## Price Policy for Kharif Crops

loans. This result in farmers not getting due benefit of the Scheme in case of any unforeseen incidents and farmers find it difficult to repay their loans and also claim insurance in case of crop failure since crop in bank records differs from the actual crop. The Commission discussed this issue with state representatives and many of them were of the view that loans under the Scheme should be provided on basis of land holding size and not on crop value.

### Storage Facility for Crops

- 1.31 Small and marginal farmers have minimal surpluses and since they don't have storage facilities at local level, they sell their produce at low prices soon after harvesting. Farmers can be provided financial incentives to build their own storage system at gram panchayat level on cost sharing basis. The farmer should be eligible for loan against godown receipt of the produce. In this system, the farmer with a valid receipt obtained after depositing his produce in a local godown should be allowed to avail loan to an extent of 75 percent of the value of produce deposited in the local godown. This system will help farmer to take care of his immediate need of fund and also to sell the produce at a later date when market prices are profitable enough. This system will help in empowering small and marginal farmers in particular with the support of rural banks, cooperative banks and primary agricultural co-operative society (PACS).

### MGNREGA and Farming

- 1.32 Labour shortage is a huge problem in farming activities resulting in high labour costs and increased cost of cultivation. During meetings, state governments and other stakeholders suggested that MGNREGA may be integrated with the agricultural operations wherein agricultural labour partly to the extent permissible may be paid by MGNREGA funds and the rest by the farmers themselves. This dovetailing of MGNREGA and farm activities will help farmers to save on labour costs.

### Institutional Agricultural Credit

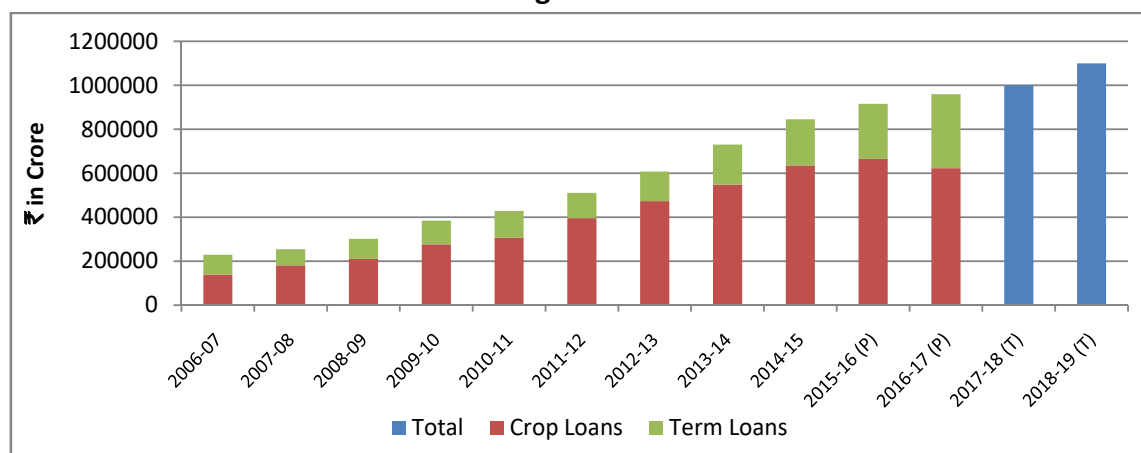
- 1.33 Total agricultural credit has seen good growth from ₹2.29 lakh crores to ₹9.6 lakh crores during last decade (from 2006-07 to 2016-17). During the recent budget announcement, the target for total agricultural credit for the year 2018-19 has been fixed at ₹11 lakh crores (Chart 1.5). To enable farmers create more opportunities for enhancing their incomes, emphasis should be on increasing the volume of term loans. Although, term loans have started picking from 2015-16 but are still lower than the share of crop loans. Moreover, the share of cooperatives in total agricultural credit have been continuously declining since 2010-11 which is a matter of concern as the

# Price Policy for Kharif Crops



cooperatives particularly Primary Agricultural Credit Societies (PACS) are important source of short-term and medium-term agricultural credit, particularly for small and marginal farmers. The share of total refinance for eastern and north-eastern region has been continuously declining year after year with north-eastern region's share falling below one percent. Therefore, special efforts are needed to extend institutional credit facilities to small and marginal farmers for these regions. Also, with the introduction of Kisan Credit Card (KCC) Scheme, banks have almost stopped financing other farm requirements such as dairy animals and farm machinery. This trend needs to be monitored and checked.

**Chart 1.5: Trend in Institutional Credit to Agricultural Sector and Share of Term Loans in Total Agricultural Credit**



Note: P-Provisional, T-Target (Inclusive of crop and term loans)

Source: Annual Reports of NABARD (2015-16 and 2016-17)

- 1.34 Extension of credit facility is a big problem especially for tenant farmers. Since, they do not have ownership of land, they are often deprived of availing loans from the financial institutions as banks seek land as collateral. Moreover, fragmented land holdings are also a problem for availing loans as the small plot size may not fetch proper price to bank in case farmers are not in a position to repay their loans and hence banks do not accept small plot size as collateral. Efforts are, therefore, needed to step up loan facilities especially to these sections of farmers.

## Farm Mechanisation

- 1.35 Higher share of labour with lesser contribution to GDP makes farming in India less remunerative and incidence of farmers' poverty. With the projection of inverse trend in population and agricultural workforce growth, it will have an adverse effect on production. Agricultural mechanisation is one of the solutions to address



## Price Policy for Kharif Crops

the issue of rising demand of foodgrains. However, inability of farmers to own high valued farm implements and unwillingness of commercial banks to finance farm equipment is one of the biggest impediments to the increase in mechanisation level in India which results in rise in input costs on account of labour charges. Therefore, developing low cost technologies along with the state support for small and marginal farmers has to be looked at and promoted at village level, particularly in close vicinity to where small and marginal farmers reside. **Custom Hiring Centres (CHCs)** should be established through Public Private Partnership (PPP), private entrepreneurs, co-operative basis, farmer's organizations and charitable trusts which the Commission had recommended in its earlier reports also. 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.

### Cluster-Based Model of Development

- 1.36 Since, majority of the farmers in the country are small and marginal, cluster-based model of development should be implemented in agricultural sector and farmers should be motivated to form Farmer Producer Organisations (FPOs) and Village Producer Organizations (VPOs) for their own betterment. To facilitate this, FPOs have been exempted from payment of income tax. This will also help in better marketing of the produce and enhanced incomes to them.

### North-Eastern (NE) States – Issues and Concerns

- 1.37 North-Eastern states have immense potential for the production of paddy. However, small percentage of this potential has been utilised and NE states are still importing rice from other states for their domestic consumption. The Commission visited Guwahati to discuss the issues pertaining to kharif crops in NE states with all the stakeholders. Some of the problems which they brought to the notice of the Commission are (i) There are no market yards and other infrastructure in Guwahati for selling of produce. As a result, the presence of FCI in the state is very limited. There is hardly any procurement of paddy in Assam, the same being 13248 tonnes which is negligible as compared to the production of 5.16 million tonnes in 2017-18 (ii) Due to humid weather conditions prevailing in this region, the moisture content in paddy is higher than the FAQ norms prescribed by FCI. The moisture content is often as high as 17 percent. This leads to the rejection of farmers produce by the procurement centres and as a result farmers have to resort to distress selling (iii) The Out Turn Ratio (OTR) of paddy is as low as 61 percent to 62 percent against 67 percent in other states (iv) low rate of mechanization in the



## Price Policy for Kharif Crops



cultivation of crops in north-east states have also resulted in lower productivity.

- 1.38 To address these problems, various stakeholders suggested that for north-eastern states which are having high humidity, relaxation be made by the Government of India from 14 percent to at least 16 percent moisture content for procurement of paddy along with some mechanisation at gram mukhyalaya level for reducing the moisture content. Since the procurement in NE states is very low, state is importing rice from other states for their various food security programmes, incurring a lot of costs on transporting this rice. If the local procurement infrastructure is strengthened in NE states, farmers will get better price and cost of transportation will also be saved. This will incentivise farmers for increasing the productivity and production.

### Structure of the Report

- 1.39 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.

\*\*\*\*\*



## Chapter 2

# Demand-Supply Scenario and Procurement Operations

- 2.1 As per FAO estimates, world rice production in 2017-18 is anticipated to reach 501.9 million tonnes, marginally up from 500.7 million tonnes in 2016-17. As per USDA projections for 2017-18, global production of coarse grains, oilseeds and cotton are around, 1321.96 million tonnes, 574.5 million tonnes and 121.94 million bales, respectively. These estimates show increase in production over 2016-17. Domestic production of cotton has increased from 325.27 lakh bales in 2016-17 to 339.15 lakh bales in 2017-18. World projection shows increase in production from 106.8 million bales in 2016-17 to 121.94 million bales in 2017-18. Increase in global production of cotton is mainly due to China's increase in production.

### Wholesale Prices and MSP

- 2.2 Wholesale price of a commodity is one of the main indicators to study the dynamics of demand-supply situation in the country. Wholesale price data compiled by AGMARKNET is more appropriate for gauging the prices realized by farmers at different agricultural markets in the country. Hence, analysis of trends in domestic and international wholesale prices play crucial role in deciding the MSPs of crops. In this chapter, we analyze trends in weighted average monthly wholesale prices (production shares as weights) and corresponding MSPs of kharif crops. Charts 2.1 to 2.7 present the movement of wholesale prices vis-à-vis MSPs of paddy, maize, arhar, moong, urad, groundnut, soybean and cotton, respectively.

### Paddy

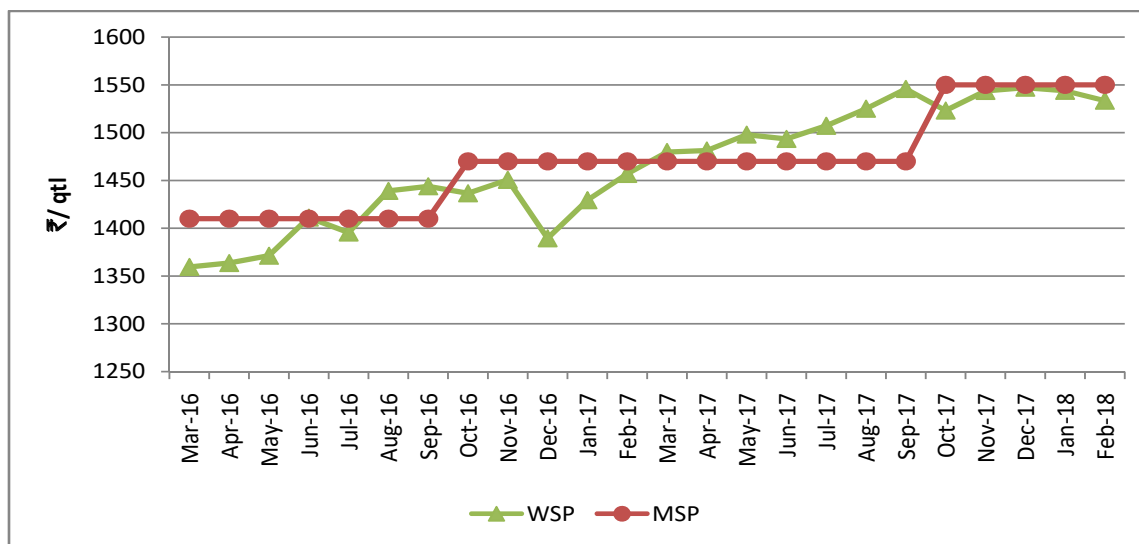
- 2.3 Chart 2.1 depicts wholesale prices of paddy in India from March 2016 to February 2018. States of Uttar Pradesh and Assam together contribute around 17 percent to paddy production. However, prices in these two states ruled below MSP during peak market arrival period of October to December 2017 (Charts 2.2 and 2.3). This trend to some extent is responsible for lower all-India weighted average prices. On the other hand, during the same period, prices in West Bengal, Punjab and Haryana were above the MSP, mainly due to good procurement system that is in place in these states. Therefore, to arrest falling prices, particularly in north-eastern states, procurement machinery needs to be strengthened and made more robust. For this,

# Price Policy for Kharif Crops



procurement centers should be established on temporary basis (e.g. West Bengal) in places where larger arrivals during peak harvesting season is expected.

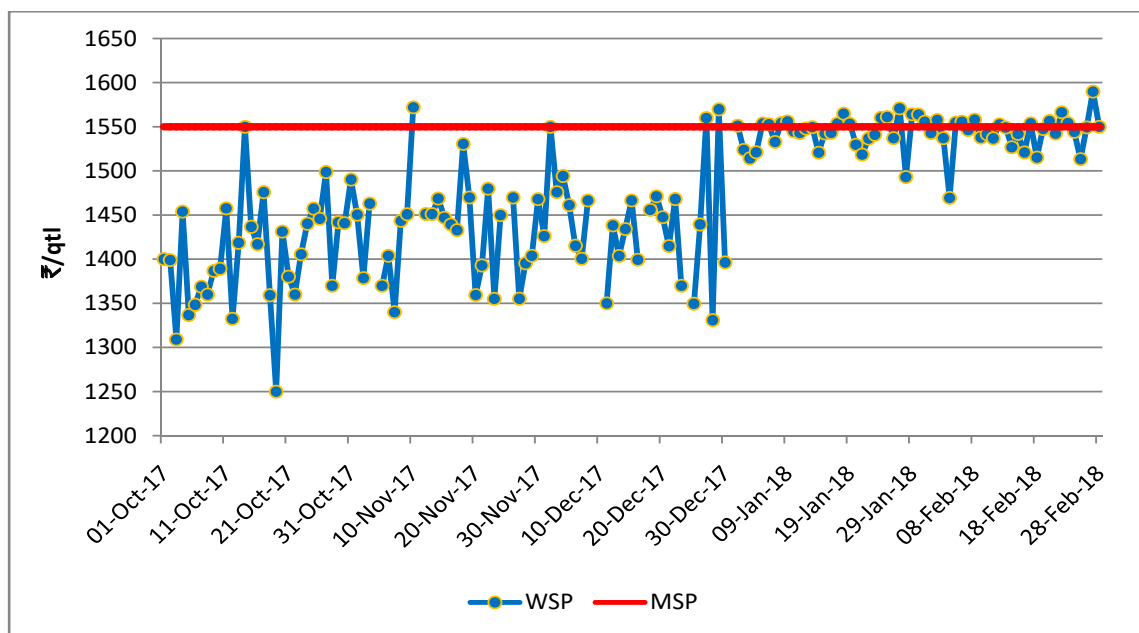
**Chart 2.1: Wholesale Modal Prices vis-à-vis MSP of Paddy**



Note: Weighted wholesale modal price of AP, Telangana, WB, TN, UP, Punjab, Haryana, Chhattisgarh and MP; MSPs are inclusive of bonus (covers 72 percent of production)

Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)

**Chart 2.2: Wholesale Modal Daily Prices vis-à-vis MSP of Paddy in Assam**

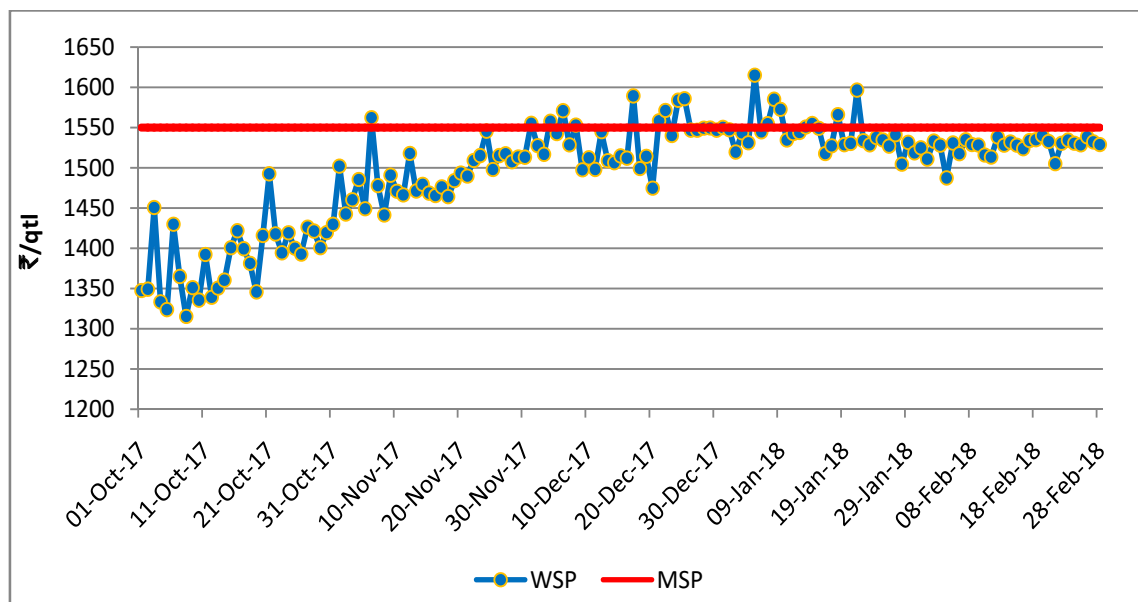


Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)



## Price Policy for Kharif Crops

Chart 2.3: Wholesale Modal Daily Prices vis-à-vis MSP of Paddy in Uttar Pradesh



Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)

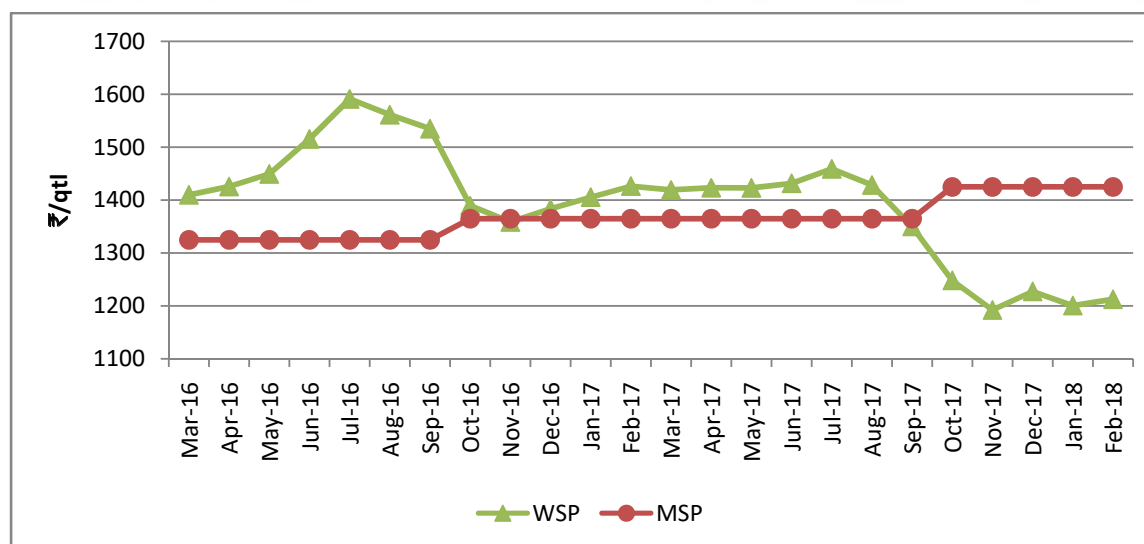
### Maize

- 2.4 Maize farmers have been getting remunerative prices for last 18 months as the wholesale prices of maize have been ruling above MSP during March 2016 to August 2017. However, later it decreased continuously during the peak market arrival period, i.e. from September 2017 till February 2018, a fall of approximately 12-13 percent below MSP. Prices declined due to increase in production from 25.90 million tonnes in 2016-17 to 27.14 million tonnes in 2017-18. Hence, there is a need to create demand for maize diversified products in food processing industries. Indian Institute of Maize Research (IIMR) along with maize based industries should estimate the required consumption demand so that production can be efficiently utilized thus helping farmers in getting remunerative prices for their produce.

# Price Policy for Kharif Crops



**Chart 2.4: Wholesale Modal Prices vis-à-vis MSP of Maize**



*Note: Weighted wholesale modal price of AP, Karnataka, MP, MH, Rajasthan, Telangana, UP, Gujarat and TN, which cover 74.8 percent of production in 2016-17*

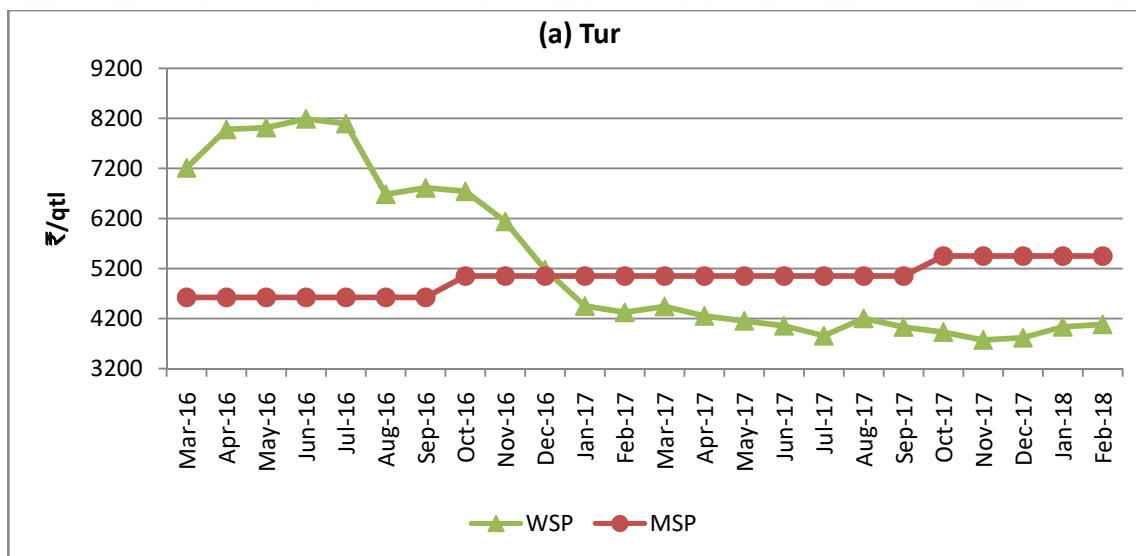
*Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)*

## Pulses

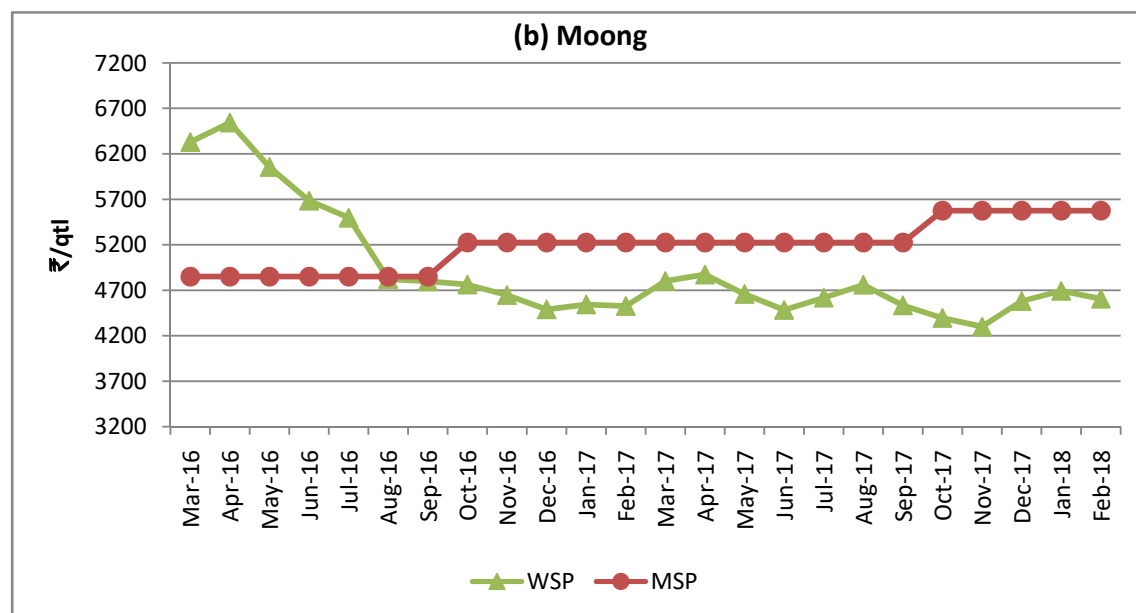
2.5 Demand for pulses in India has always been higher than the domestic production. During 2014 to 2016 due to a fall in production, the market prices of pulses scaled very high. To increase production of pulses, the Government increased MSPs of kharif pulses by a significant amount in KMS 2016-17. This resulted in record increase in production of pulses in 2016-17 (by 41.5 percent) and the production is expected to remain the same in 2017-18. Therefore, in 2017, prices of tur, moong and urad were mostly ruling below MSP, as shown in Charts 2.5(a), (b) & (c). The prices of pulses need to be monitored to sustain the level of production achieved in 2016-17 and likely to be achieved in 2017-18. Whenever market prices fall below MSP, timely and large scale intervention from NAFED, FCI and SFAC along with proper warehouse storage facilities to stabilize the market prices is required. State governments need to be roped in for effective procurement of pulses else farmers may opt out of pulses to other crops where there is assured marketing. Also, Government of India increased import duty on pulses (w.e.f. 21<sup>st</sup> December, 2017) so as to curb cheap imports of pulses.

# Price Policy for Kharif Crops

Chart 2.5: Wholesale Modal Prices vis-à-vis MSP of Pulses



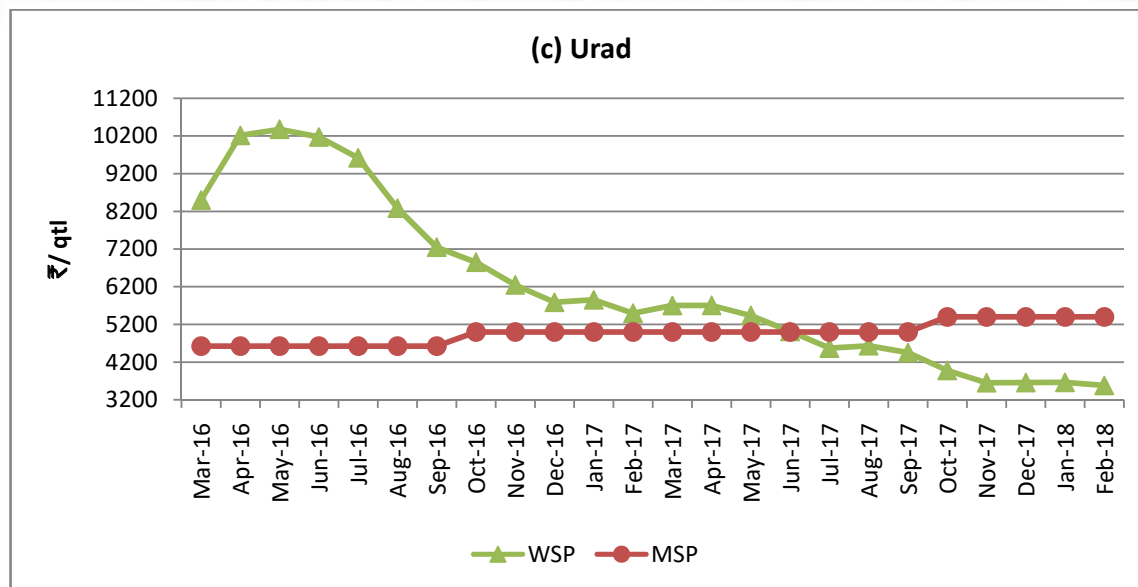
Note: Weighted wholesale modal price of AP, Gujarat, Karnataka, Maharashtra, UP, MP and Telangana, which cover 83.9 percent of production in 2016-17, MSPs are inclusive of Bonus  
Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)



Note: Weighted wholesale price of AP, MP, MH, Odisha, Rajasthan, Gujarat, Karnataka, TN and Telangana, which cover 83.8 percent of production in 2016-17, MSPs are inclusive of Bonus  
Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)



## Price Policy for Kharif Crops



Note: Weighted wholesale price of AP, MP, MH, Raj, UP, Gujarat and TN, which cover 85 percent of production in 2016-17, MSPs are inclusive of Bonus

Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)

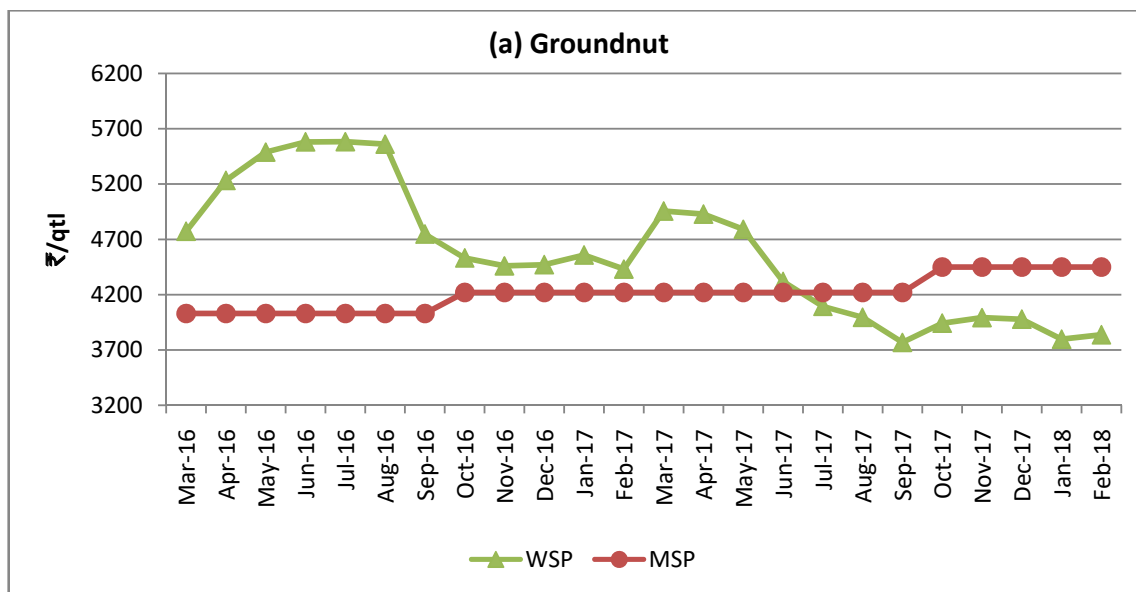
### Oilseeds

2.6 India has been heavily dependent on imports to meet its domestic demand of edible oils (around 70 percent) as the production of oilseeds has been low. In 2017-18, out of the total production of kharif oilseeds, soybean alone accounts for around 56 percent of production followed by groundnut (around 32 percent). Also, the production of total oilseeds for 2017-18 is likely to fall by 5.4 percent which will further raise country's dependence on imports. In the marketing season 2016-17, prices of groundnut showed a declining trend during peak market arrival time which picked up later. Same trend was observed during the marketing season 2017-18, however, this year the prices fell below MSP which was not the case during 2016-17 (Chart 2.6(a)). The continuous fall in prices necessitated procurement of groundnut by public agencies. For soybean, market prices followed closely in line with the MSP during 2016-17 but declined during the peak market arrival time of 2017-18 despite decline in the production of 13.4 percent (11.39 million tonnes in 2017-18 from 13.15 million tonnes in 2016-17). However, prices of soybean again picked up in January 2018 (Chart 2.6(b)) following rise in import duty in November, 2017 which made domestic produce more competitive.



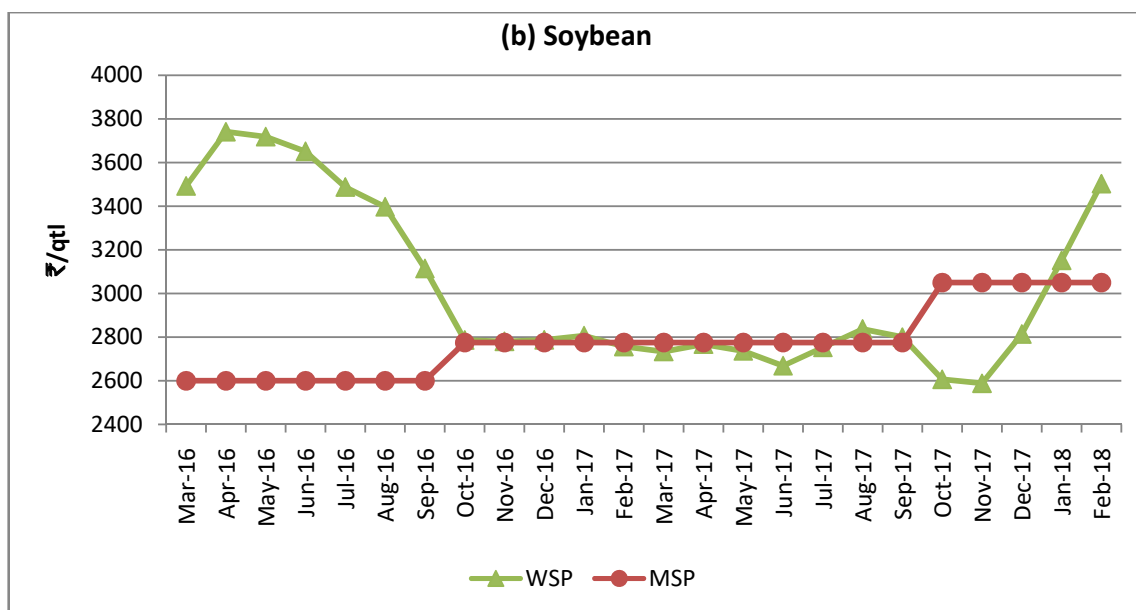
# Price Policy for Kharif Crops

Chart 2.6: Wholesale Modal Prices vis-à-vis MSP of Oilseeds



Note: Weighted wholesale price of Karnataka, MP, Rajasthan, Telangana, UP, Gujarat, MH, AP, Chhattisgarh, TN and Odisha, which cover 96 percent of production in 2016-17, MSPs are inclusive of bonus

Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)



Note: Weighted wholesale price of Gujarat, MP, MH, Rajasthan, Telangana, Chhattisgarh, Karnataka and UP, which cover 99.4 percent of production in 2016-17, MSPs are inclusive of Bonus

Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)

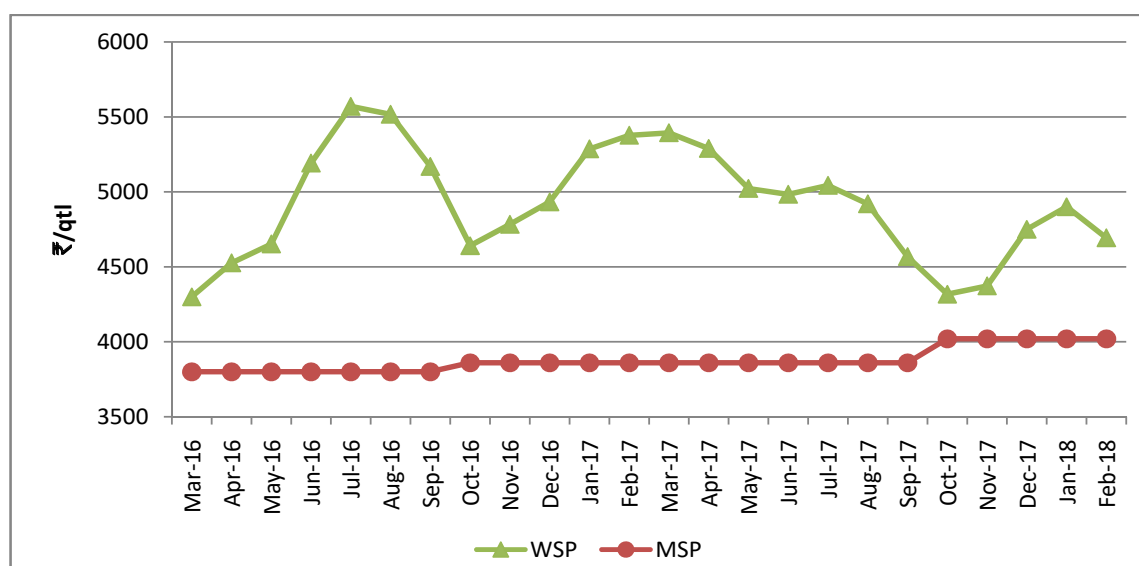
## Price Policy for Kharif Crops



### Cotton

- 2.7 Wholesale prices of cotton from March 2016 to February 2018 have been ruling above MSP (Chart 2.7). There is a marginal increase in estimated cotton production from 32.6 million bales in 2016-17 to 33.9 million bales in 2017-18. As per USDA report, World's cotton production has increased due to increase in China's production in 2017-18. According to International Cotton Advisory Committee (ICAC), China is the largest cotton producing country, projected to increase its consumption by 1.5 percent. Consumption is also expected to grow in Pakistan, Turkey, Bangladesh, Vietnam and Brazil. Also, import of cotton by China is expected to increase in 2017-18, whereas export by USA is projected to decrease slightly.

**Chart 2.7: Wholesale Modal Prices vis-à-vis MSP of Cotton**



Note: Weighted wholesale price of AP, Gujarat, MH and Telangana, which cover 71.7 percent of production in 2016-17

Source: AGMARKNET, Directorate of Marketing & Inspection (DMI)

- 2.8 The issue regarding MSP for Kala Cotton raised by the Government of Gujarat was discussed by the Commission with Cotton Corporation of India (CCI). Kala cotton is grown in some states with approximate production of 10 percent of total cotton production. Farmers bring Kala cotton with ball. However there is no guideline to purchase this variety under MSP. Some cotton growing states have declared MSP for Kala cotton except Gujarat due to which farmers of Gujarat are facing the problem of marketing of Kala cotton. The Commission is of the view that the state governments where Kala cotton is produced, in consultation with CCI should put a robust system in place for post-harvest operations and purchase of Kala cotton from farmers.



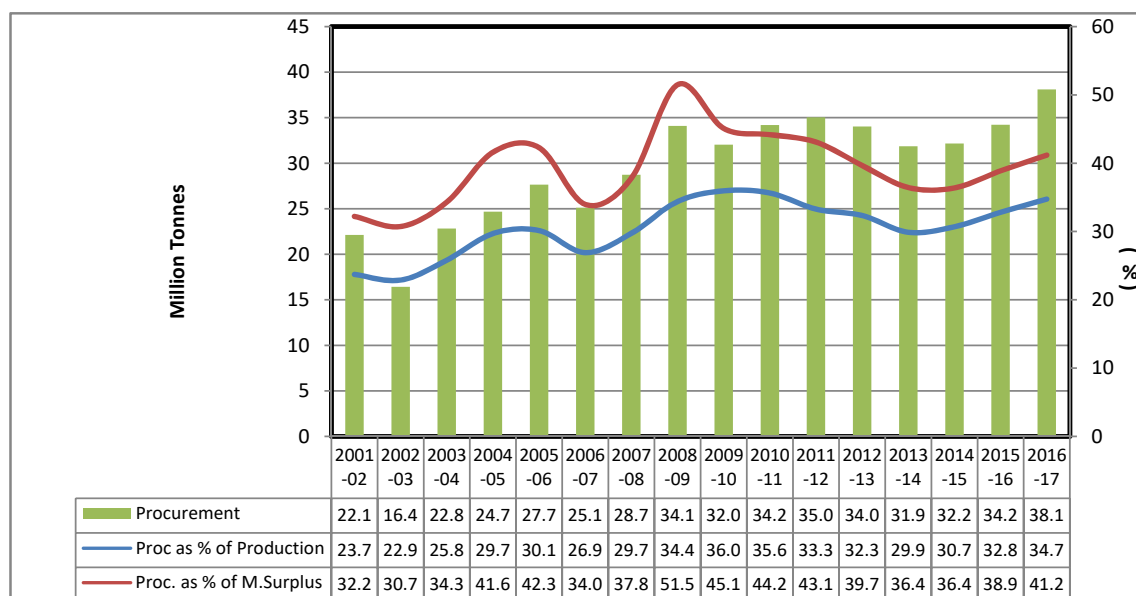
## Price Policy for Kharif Crops

### Procurement Policy and Operations

#### Rice

2.9 Procurement of rice has increased continuously during last three consecutive years. It has increased from 34.2 million tonnes in 2015-16 to 38.1 million tonnes in 2016-17. Similarly, procurement as percentage of production and marketed surplus has increased to 34.7 percent and 41.2 percent, respectively in 2016-17 from the corresponding figure of 32.7 percent and 38.8 percent, respectively in 2015-16. This year's procurement of rice as on 01.03.2018, has touched 30.12 million tonnes, which is almost same (30.5 million tonnes) as on date, last year. The overall position regarding rice procurement over the years in the country as percentage of the production and marketed surplus is presented in Chart 2.8.

**Chart 2.8: Rice Procurement as Percent of Production and Marketed Surplus, 2001-02 to 2016-17**



Source: DES, DAC&FW and DFPD

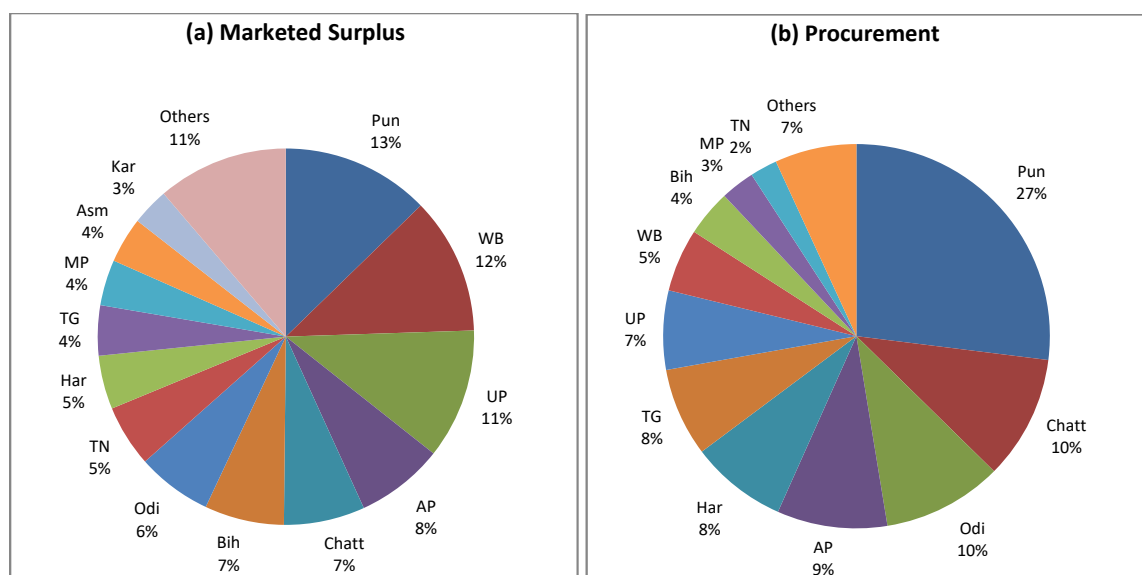
2.10 Punjab is the largest contributor to the central pool of rice procurement with an estimated share of about 27 percent (Chart 2.9) followed by Chhattisgarh (10 percent), Odisha (10 percent), Andhra Pradesh (9 percent) and Haryana (8 percent). It is interesting to note that rice procurement has become more diversified and share of DCP states has increased from 30.6 percent in KMS 2010-11 to 55 percent in KMS 2016-17. However, there are still some major rice producing states, where procurement operations are either absent or very limited. For example, there was

# Price Policy for Kharif Crops



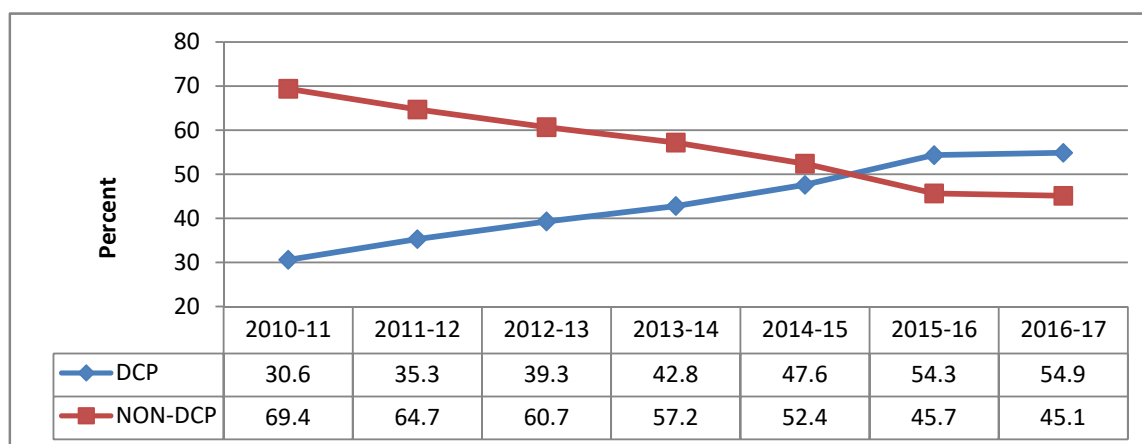
almost negligible procurement of rice in Assam during TE2016-17, even though rice is a major crop in the state and in the absence of effective procurement by the Government, prices remained below MSP in Assam.

**Chart 2.9: Shares of Major States in Marketed Surplus and Procurement of Rice, TE2016-17**



Source: DES, DAC&FW and FCI

**Chart 2.10: Procurement of Rice in DCP & Non-DCP States**



Source: FCI

2.11 The Commission had sought data on procurement of paddy from states, disaggregated categories of farmers (i.e. marginal, small, semi-medium, medium and large farmers). Government of Odisha has provided information on break up of paddy procurement

## Price Policy for Kharif Crops

by different category of farmers for kharif 2016-17 (Table 2.1). It is disappointing to note that procurement from marginal and small farmers is only 17.9 percent although the share of operational holdings held by this category of farmers is 72.9 percent. Medium and large farmers' hold only 8.7 percent of operational holdings and contribute to 64.8 percent of paddy procurement. This shows skewed paddy procurement, largely benefitting medium and large farmers. Subsistence farming, lack of access to market, higher transportation cost, lack of awareness on MSP, FAQ and non-availability of procurement centers near the village may have led to less procurement from marginal and small farmers.

**Table 2.1: Distribution of Paddy Procurement in Odisha-Farmers' Category-wise**

Category of Farmers	Procurement for KMS 2016-17 (%)	Operational Holding in 2010-11 (%)
Marginal Farmer (<1 ha)	5.0	42.1
Small Farmer (1-2 ha)	12.9	30.8
Semi medium Farmer (2-4 ha)	17.3	18.3
Medium Farmer (4-10 ha)	28.6	7.3
Large Farmer (>10 ha)	36.2	1.4

Source: Government of Odisha and Agriculture Census, 2010-11

### Coarse Grains

2.12 The procurement of coarse grains in KMS 2017-18 (as on 31.01.2018) was 0.78 lakh tonnes, the highest after KMS 2013-14 where the procurement was 1.23 lakh tonnes (Table 2.2). Among coarse grains, maize constitutes 52 percent of procurement followed by bajra and jowar. Among these, jowar, bajra and ragi are millets of nutritional value. In order to make procurement operations more effective in case of nutri-cereals, states should be encouraged to include nutri-cereals in PDS and MDM schemes and start procurement operations. India has sent a proposal to United Nations (UN) for declaring the year 2018 as 'International Year of Millets'. This will raise awareness about millets among consumers, policy makers, industry and R&D sector. Also, it will contribute substantially in the fight against targeted hunger and mitigate the effect of climate change in long run. The grain has multiple untapped uses such as food, feed, fodder, bio-fuels and brewing. In times of climate change, they are often the last crop standing and thus, are a good risk management strategy for resource-poor marginal farmers.



# Price Policy for Kharif Crops



**Table 2.2: Procurement of Coarse grains**

(MT)

Crops	KMS 2013-14	KMS 2014-15	KMS 2015-16	KMS 2016-17	KMS 2017-18
Maize	121607	31484	2297	62181	40428
Jowar	0.9	1435	2865	3733	2873
Bajra	0	0	505	6341	35136
Ragi	1479	13596	20377	0	0
Total	123086	46515	26044	72255	78437

Source: FCI

## Pulses

2.13 The country has achieved a record production of pulses during 2016-17, which has led to fall in its market prices. Hence, FCI in addition to NAFED and SFAC intervened in many markets where prices fell below MSP. Procurement of pulses increased from 0.5 lakh tonnes in KMS 2015-16 to 2.19 lakh tonnes in KMS 2016-17 (Table 2.3). There is an increase in procurement of pulses by NAFED, FCI and SFAC mainly due to record production of pulses in 2016-17. It is reported that in the absence of assurance of reimbursement of losses from Central Government, state government agencies do not come forward for procurement of pulses. Therefore, in order to sustain the production of pulses at current level, Government of India has doubled the credit limit for procurement from ₹9500 crore to ₹19000 crore. 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 shorter shelf life, there is also a need to evolve a suitable mechanism for disposal of these stocks and the disposal time should not coincide with the marketing season so as to maintain the balance in prices.

**Table 2.3: Procurement of Pulses by Different Agencies in KMS 2015-16 and 2016-17**

(MT)

Season	Commodity	FCI	NAFED	SFAC	TOTAL
KMS 2015-16	Tur	20257	20001	5258	45532
	Urad	5	1764	3123	4892
	Total	20262	21765	8381	50424
KMS 2016-17	Moong	64737	128886	26225	219848
	Urad	18235	59602	10746	88582
	Tur	175299	919667	71079	1166045
	Total	258271	1108155	108049	308430

Source: FCI

## Price Policy for Kharif Crops

### Oilseeds

2.14 In 2017-18 kharif oilseeds production is estimated at 20.36 million tonnes, a decline by 5.4 percent from 21.51 million tonnes during 2016-17. However, procurement of groundnut has decreased in 2017-18, while there is a marginal increase in sunflower procurement (Table 2.4). Despite prices of both groundnut and soybean ruling below MSP during peak arrival period of KMS 2017-18, procurement still remained very low.

**Table 2.4: Procurement of Kharif Oilseeds by NAFED**

(MT)

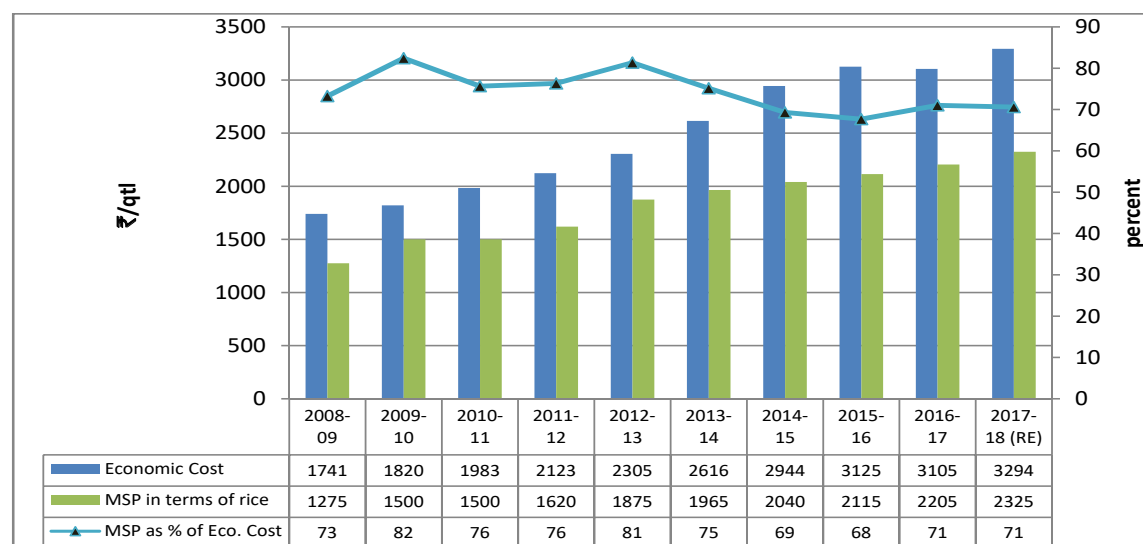
Commodity	2014-15	2015-16	2016-17	2017-18
Groundnut	6230	-	210731	948
Sunflower	4153	4242	4949	6539
Soybean	-		162	

Source: NAFED

### Economic Cost of Rice

2.15 Economic cost of rice has increased significantly over the years (Chart 2.11). This is mainly attributed to the rising trend of procurement incidentals and distribution costs. In 2009-10, share of MSP in total economic cost was 82 percent, which declined to 68 percent in 2016-17 and again increased to 71 percent in 2017-18.

**Chart 2.11: Economic Cost of Rice, 2008-09 to 2017-18**



Source: FCI

## Price Policy for Kharif Crops



### Awareness 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, 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. Commission is, therefore, of the view that there is a need to empower gram panchayats with sufficient financial powers to educate the farmers about the same. It has also been observed that often farmers of remote areas do not have sufficient access to APMC and their potential market is local haats and their produce is sold below MSP. Therefore, it will be beneficial for those farmers if procurement centers can be opened up in remote areas at gram panchayat level. 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 instil confidence among farmers for procurement of their produce, a legislation conferring on farmers 'The Right to Sell at MSP' may be brought out.

### Utilisation of Rainfed Rice Fallow Lands

- 2.17 It is a common practice for farmers in the 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 the 40 million hectare rice area during the kharif season, remains uncultivated in rabi season. 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 a 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 tur.





## Price Policy for Kharif Crops

### Bonus on MSP

- 2.18 Certain state governments have been 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 after taking cognizance of the market distortion have stopped giving bonus. During 2017-18, Kerala, Tamil Nadu, Chhattisgarh 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 the farmers to diversify to other crops in the surplus states like Chhattisgarh which lead to overproduction and increase in food subsidy bill. The Commission re-iterates its earlier recommendation that such bonuses/incentives should be discouraged, particularly in surplus states.

### Recapitulation

- 2.19 Wholesale prices of Paddy in Uttar Pradesh and Assam ruled below MSP during peak market arrival period of October to December 2017. On the other hand, prices in West Bengal, Punjab and Haryana were above the MSP, mainly due to good procurement system that is in place in these states. Therefore, to arrest falling prices, particularly in north-eastern states, procurement machinery needs to be strengthened and made more robust. For this, procurement centers should be established on temporary basis (e.g. West Bengal) in places where larger arrivals during peak harvesting season is expected.
- 2.20 In order to help maize farmers in getting remunerative prices, Indian Institute of Maize Research along with maize based industries should estimate the required consumption demand so that production can be efficiently utilized.
- 2.21 The prices of pulses need to be monitored to sustain the level of production achieved in 2016-17 and likely to be achieved in 2017-18. Whenever market prices fall below MSP, timely and large scale intervention from NAFED, FCI and SFAC along with proper warehouse storage facilities to stabilize the market price is required. State governments need to be roped in for effective procurement of pulses else farmers may opt out of pulses to other crops where there is assured marketing.
- 2.22 There is a need to empower gram panchayats with sufficient financial powers to educate the farmers to create awareness about MSP and FAQ norms. Farmers of remote areas do not have sufficient access to APMC yards and they sell their produce in local haats and their produce is sold below MSP due to the produce not meeting FAQ norms. Therefore, it will be beneficial for those farmers if procurement centers can be opened up in remote areas at gram panchayat level.

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## Chapter 3

# Crop Productivity

- 3.1 In order to ensure long term food security for citizens, it is important to improve productivity in Indian agriculture and bring it at par with the world average. Although productivity has increased over the years but there are still significant gaps to be covered. Some of the major reasons for low productivity in Indian agriculture are: lack of modern farm equipment, low penetration of irrigation facilities, poor nutrient management, short growing season, varied agro-climatic conditions, weather extremities and lack of a robust extension system. As India makes transition towards being a high middle income country it is important that in future, increases in food demand are met through higher productivity as scope for area expansion in agriculture is limited. Further, improvements in agricultural yields will play a key role in enhancing farmers' income. Judicious use of inputs, better management practices, remunerative prices and optimum use of natural resources are some of the key focus areas for increasing productivity. 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 (2011-12 to 2017-18) are analyzed and given in Table 3.1. The growth rates are based on the final estimates for 2016-17 and 2<sup>nd</sup> advanced estimates for 2017-18.
- 3.3 **Cereals:** CAGR of total cereals production slowed down in 2010s after a period of sustained acceleration in the previous two decades. This slowdown mainly resulted from a combination of slowdown in growth rate of area (0.02 percent) and yield (0.28 percent). A similar trend was observed in kharif cereals, growth rate in yields fell to 1.24 percent in 2010s compared to 1.81 percent in the previous decade. This led to a decline in growth of production to 0.66 percent. Further, an absolute fall in area under kharif cereals was observed in 2010s. CAGR for area under kharif cereals was -0.57 percent. Therefore, in view of the continued decline/ stagnation in acreage for cereals in general and kharif cereals in particular, it is important to enhance productivity levels in cereals to achieve sustainable increases in production. In addition, there has also been a reduction in area under paddy cultivation during 2010s (-0.11 percent).





## Price Policy for Kharif Crops

### Crop Productivity

Coupled with slowdown in growth of yield during 2010s (0.90 percent), it has resulted in a reduction in production growth rate to 0.79 percent. In case of maize, after an impressive increase in area, production and yields during 2000s, growth rates slowed down in 2010s. CAGR for production reduced from 6.0 percent in 2000s to 3.24 percent in 2010s. This was contributed by both reduction in CAGR for area (from 2.91 percent to 1.27 percent) and yield (3.01 percent to 1.94 percent). Production of jowar has been falling continuously since 1990s. However, decline in production has accelerated in 2010s (-4.56 percent). This has been contributed by a fall in both area and yields. In case of ragi, CAGR was negative for production (-1.04 percent) and yield (-0.35 percent) in 2010s. This trend is in sharp contrast to the positive growth rates in production (0.70 percent) and yields (3.5 percent) seen for ragi in 2000s. From the above, it can be concluded that overall performance of cereal production has not been satisfactory in 2010s. This is in line with the poor overall agricultural growth in the past few years mainly due to successive droughts in 2014-15 and 2015-16. In view of this, efforts are needed to step up R&D to develop drought resistant varieties for Indian agriculture to protect farmers from the vagaries of irregular rainfall.

- 3.4 **Pulses:** The growth rate of area, production and yield for pulses has shown a rapidly increasing trend during 2000s and 2010s. Growth in production for kharif pulses was particularly high in 2010s (7.47 percent). Growth rate of yields in kharif pulses was 2.09 percent in 2010s while growth rate in area was 5.27 percent. This shows that increase in area has contributed more to rise in production than increase in yields. It is important to ensure that future increases in production of pulses are driven more by increase in yields as compared to increase in area. Even for individual pulses, growth rates in production have improved in 2010s as compared to 2000s. Growth rates in production for tur, moong and urad were 7.36 percent, 5.04 percent and 10.1 percent, respectively which are in line with the overall growth trend for pulses.
- 3.5 **Oilseeds:** Performance of oilseeds has not been very encouraging during the present decade. After two consecutive decades of positive growth, production of oilseeds declined by 1.54 percent in 2010s. This decline was led by fall in growth rate of area (-0.46 percent) and yield (-1.08 percent). However, growth in productivity of groundnut has remained positive during all three decades. In addition, productivity growth rate has accelerated in each subsequent decade. In 2010s, growth in productivity has been 4.39 percent. This has led to a sustained increase in groundnut production despite continuous fall in area. In case of soybean, growth rate in production became negative (-2.65 percent) during 2010s after an impressive growth of 9.85 percent and 9.39 percent in 1990s and 2000s, respectively. Soybean yield registered negative growth rate (-3.17 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. However, yield of nigerseed has increased in



# Price Policy for Kharif Crops



2010s (1.90 percent). For sesamum, production has declined marginally in 2010s. This can mainly be attributed to a reduction in area by 1.84 percent in 2010s.

- 3.6 **Cotton:** Cotton production increased at a very fast rate (14.2 percent) in the decade spanning from 2001-02 to 2010-11. Most of this production was driven by increase in productivity since the growth in area during this period was only 3.17 percent. This turnaround occurred mainly due to the introduction of *Bt* Cotton during this time period. However, growth has turned negative (-1.38 percent) during the present decade. Both area (-0.39 percent) and yield (-0.98 percent) have registered negative growth rates during 2010s. This fall can be mainly attributed to drought conditions and incidence of pests mainly whitefly and pink bollworm. Therefore, it is important to address these issues to improve productivity of cotton.

**Table 3.1: Trends in CAGRs (percent) of Major Kharif Crops (1991-92 to 2017-18)**

Crops	Area			Production			Yield		
	1990s	2000s	2010s	1990s	2000s	2010s	1990s	2000s	2010s
<b>A-Cereals*</b>	<b>0.18</b>	<b>0.27</b>	<b>0.02</b>	<b>2.03</b>	<b>2.25</b>	<b>0.30</b>	<b>1.85</b>	<b>1.96</b>	<b>0.28</b>
Kharif Cereals**	-0.51	-0.35	-0.57	0.92	1.46	0.66	1.43	1.81	1.24
Paddy**	0.78	0.11	-0.11	1.86	1.71	0.79	1.07	1.60	0.90
Bajra**	-1.06	0.12	-2.35	1.58	2.14	-0.84	2.67	2.02	1.55
Maize**	1.17	2.91	1.27	3.74	6.00	3.24	2.55	3.01	1.94
Jowar**	-3.11	-3.19	-3.15	-3.14	-0.27	-4.56	-0.03	3.02	-1.45
Ragi**	-1.99	-2.71	-0.70	-0.35	0.70	-1.04	1.67	3.50	-0.35
<b>B-Pulses*</b>	<b>-0.64</b>	<b>1.45</b>	<b>3.09</b>	<b>0.15</b>	<b>3.09</b>	<b>3.05</b>	<b>0.68</b>	<b>1.62</b>	<b>-0.04</b>
Kharif Pulses**	-1.05	0.52	5.27	-6.67	1.90	7.47	1.52	1.37	2.09
Tur**	-0.22	1.61	3.44	0.73	2.09	7.36	0.95	0.47	3.80
Moong**	-0.66	0.32	5.17	-2.56	0.94	5.04	-1.92	0.61	-0.13
Urad**	-0.74	-1.55	8.26	-1.21	-0.24	10.10	-0.48	1.33	1.70
Food Grains*	0.03	0.50	0.53	1.90	2.31	0.55	1.87	1.58	0.02
<b>C-Oilseeds*</b>	<b>-0.87</b>	<b>2.21</b>	<b>-0.46</b>	<b>0.56</b>	<b>5.37</b>	<b>-1.54</b>	<b>1.45</b>	<b>3.09</b>	<b>-1.08</b>
Kharif Oilseeds**	0.23	2.71	-0.71	2.63	6.10	-1.00	2.39	3.30	-0.28
Groundnut**	-2.75	-0.80	-0.52	-2.27	1.94	3.85	0.50	2.77	4.39
Soybean**	8.08	5.87	0.54	9.85	9.39	-2.65	1.64	3.32	-3.17
Sesamun**	-4.74	2.63	-1.84	-3.71	2.17	-0.09	1.09	-0.45	1.78
Sunflower**	-6.94	-2.29	-14.00	-7.00	-0.41	-14.84	-0.06	1.92	-0.97
Nigerseed**	-3.25	-2.08	-6.91	-4.47	-0.15	-5.15	-1.26	1.97	1.90
<b>D-Cotton**</b>	<b>2.18</b>	<b>3.17</b>	<b>-0.39</b>	<b>0.24</b>	<b>14.20</b>	<b>-1.38</b>	<b>-2.08</b>	<b>10.70</b>	<b>-0.98</b>

Note: \*Calculations based on Final Estimates, 2016-17

\*\*Calculations based on 2<sup>nd</sup> Advanced Estimates, 2017-18

Source: CACP using DES, Department of Agriculture, Co-operation and Farmers Welfare data



## Price Policy for Kharif Crops

### 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. Further, the NSSO data indicate higher productivity in secondary and tertiary sectors in comparison to 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 labour. Thus, shortage of labour coupled with low productivity can become an insurmountable problem in near future as migration of labour from farm to non-farm sector picks up further. The lesser supply of labour also creates a pressure on rural wages, which further increases cost of cultivation. For example, in states like Kerala, Haryana, Punjab and Tamil Nadu wage rate was well above the all-India average for the year 2015-16. Therefore to overcome the twin problems of low productivity and shortage in agricultural labour, renewed focus on customized and low cost farm mechanization is necessary. Considering the fragmented nature of agricultural land in India, it is important to address the problem of farm mechanization on a collective rather than individual basis to ensure economic viability. In this regard, the example of Andhra Pradesh is worth mentioning wherein Custom Hiring Service Centres (CHSCs) have been established in PPP mode. Through CHSCs farm machinery is made available to small and marginal farmers on a rental basis on concessional rates. Other states like Karnataka, Gujarat and a few more have also set up Custom Hiring Centres. Similarly, remaining states should also explore such innovative ideas to overcome the problem of unaffordable farm equipment.

### Crop Productivity in the Major Producing States

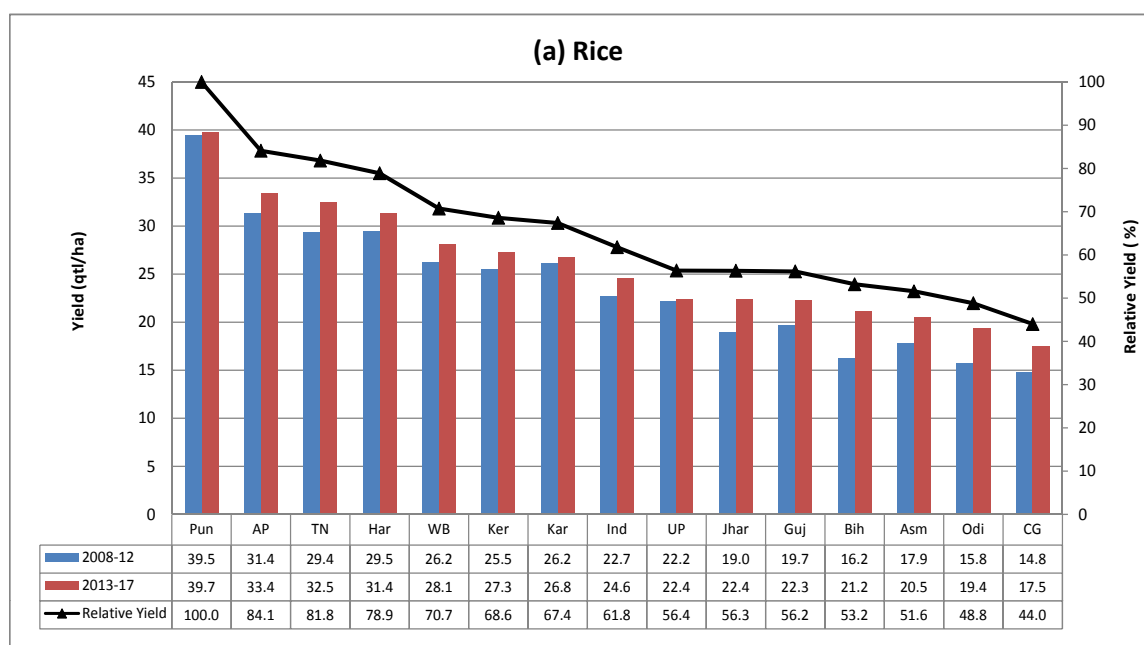
- 3.8 Crop productivity in India varies across states to a great extent inter-alia due to variations in agro-climatic conditions and use of farm inputs. In order to study state-wise productivity trends, 5-year Olympic average yield per hectare (The Olympic average is calculated by dropping the highest and lowest yield from the most-recent 5-years and calculating the average based on remaining 3 yields) in major producing states has been compared during 2008-2012 and 2013-2017 and results are presented in Charts 3.1 (a) to (g).
- 3.9 **Rice:** Amongst the major producing states, Bihar recorded the highest increase in productivity in the last 10 years (30.2 percent). Further, increase in productivity was greater than 15 percent for 3 other major states namely; Odisha (23.1 percent), Chhattisgarh (18.3 percent), Jharkhand (17.7 percent). Further, Assam also witnessed an impressive increase in productivity (14.8 percent). As can be observed

## Price Policy for Kharif Crops



from the above statistics, eastern region states have witnessed high increases in productivity levels in the recent years. Government's programme, "Bringing Green Revolution to Eastern India (BGREI)" has played a key role in this turnaround. BGREI is a sub-scheme of Rashtriya Krishi Vikas Yojana which has been formulated to address constraints limiting the productivity of rice based cropping systems. Under the Scheme, activities like cluster demonstrations of improved practices, asset building, site specific activities and marketing support are undertaken. However, it may be noted that, despite showing impressive productivity growth, yield levels in the above mentioned states remain significantly lower than the all-India average (24.6 quintals per hectare). Therefore, it is important that continued focus on BGREI may be maintained. Apart from the above mentioned states, productivity growth in Gujarat (13.6 percent) and Tamil Nadu (10.6 percent) stayed above the all-India average (8.2 percent). An area of concern is the stagnating yields of rice in Punjab which has traditionally been the most productive state for rice. Rice productivity in Punjab has only increased by 0.2 quintals per hectare in the last 10 years. It is important that immediate steps may be taken to address this situation. Also, low productivity growth in Uttar Pradesh (1.1 percent) is a matter of concern as Uttar Pradesh is the largest producer of rice in the country due to its large area under rice. It is important to address this issue immediately.

**Chart 3.1: Crop Productivity of Kharif Crops in the Major Producing States**



Source: DES, DAC & FW

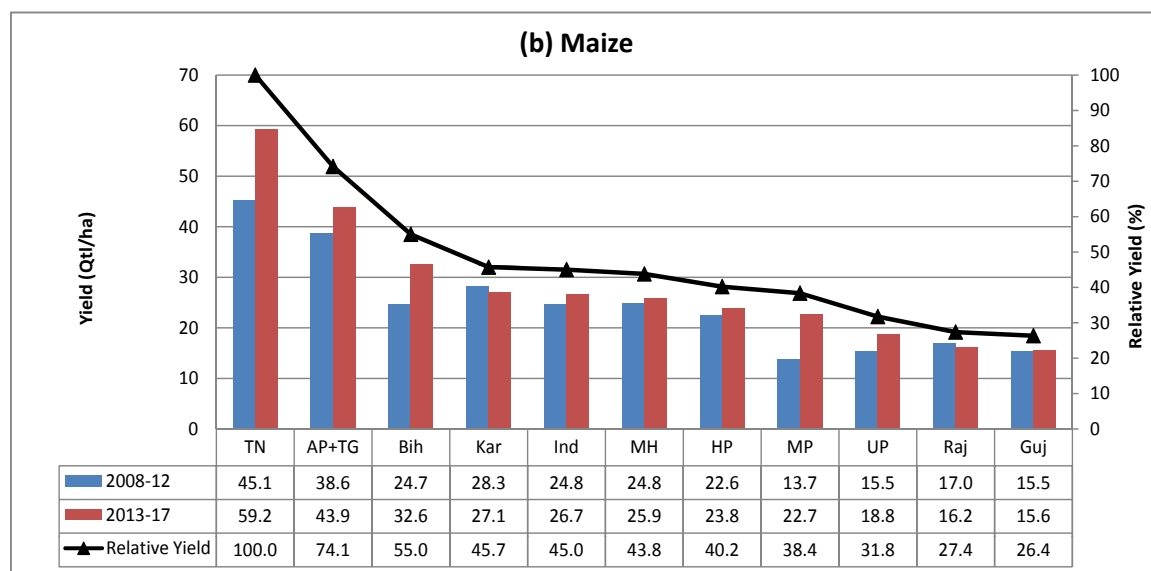




## Price Policy for Kharif Crops

**3.10 Maize:** All- India Maize yields increased at the rate of 7.6 percent from the period 2008-12 to the period 2013-17. This increase was largely driven by Madhya Pradesh (65.5 percent), Tamil Nadu (31.2 percent), Bihar (31.9 percent) and Uttar Pradesh (21.6 percent). However, decline in yields in the 2 major producing states i.e. Karnataka (-4.4 percent) and Rajasthan (-4.8 percent) exerted a downward pressure on growth in yield at the all-India level. It may also be noted that after Tamil Nadu, which recorded the maximum yield (59.2 quintals per hectare) in the period 2013-17 the yield in the next best performing state i.e. Andhra Pradesh and Telangana (AP+TG) is only 43.9 quintals per hectare. This is just 74.1 percent of Tamil Nadu's yield. Further, yield level in Gujarat is only 26.4 percent of the yield level in Tamil Nadu for the period 2013-17. The above analysis highlights large scale variations in maize yields across Indian states. Active intervention is necessary to reduce such inter-state variations.

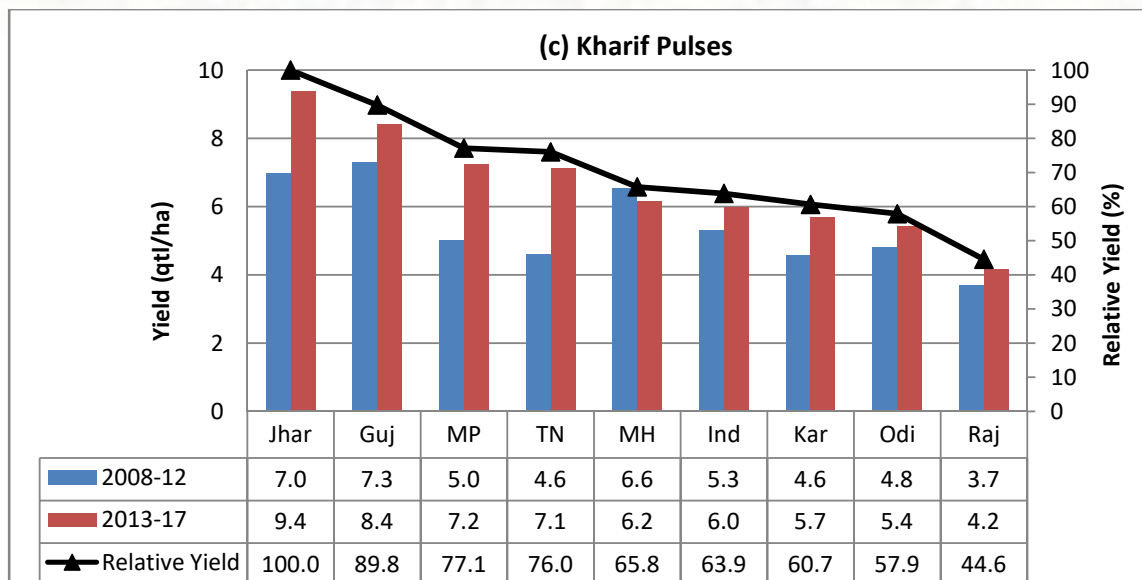
### Crop Productivity



Source: DES, DAC & FW

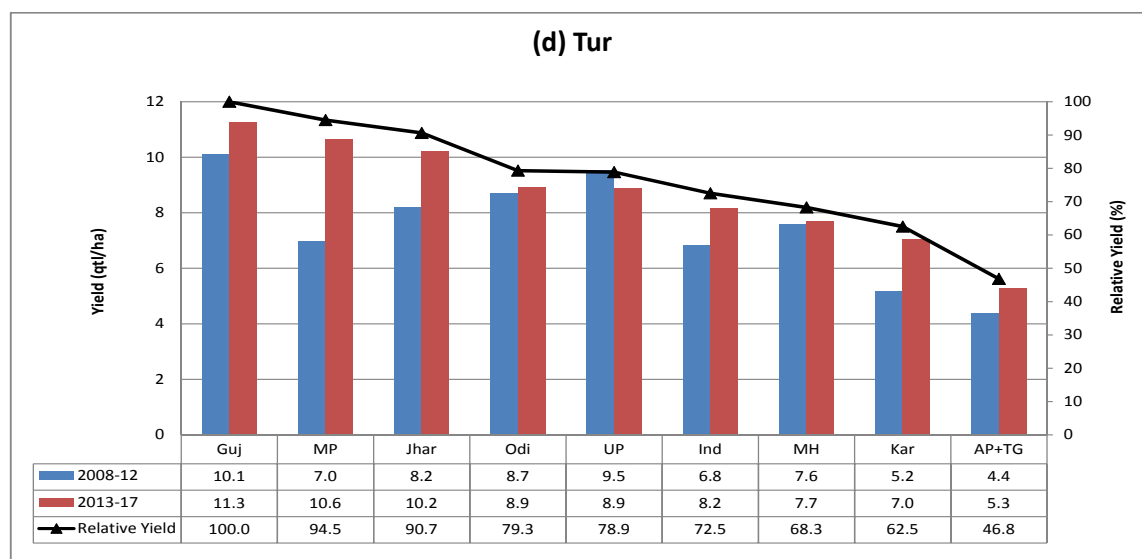
**3.11 Pulses:** Productivity of kharif pulses has increased significantly in all the major producing states except Maharashtra where productivity reduced by 5.9 percent. Productivity increase at all-India level was 12.5 percent. Particularly, yields in Tamil Nadu and Madhya Pradesh increased by 54.4 percent and 44.1 percent, respectively and stayed above the all-India average. Yield in 3 major states namely, Karnataka, Odisha and Rajasthan remained below all-India level (6 quintals per hectare). However, Karnataka has shown a high productivity growth of 24.2 percent.

## Price Policy for Kharif Crops



Source: DES, DAC & FW

3.12 All-India percentage productivity increase in Tur was 19.9 percent. However, productivity increases vary to a great extent across states. While, the highest increase in productivity was shown by Madhya Pradesh (52.7 percent), productivity increase for Karnataka and Jharkhand was 36.3 percent and 24.5 percent, respectively. Odisha (2.5 percent) and Maharashtra (1.4 percent) registered extremely low growths in productivity levels. On the other hand, productivity in Uttar Pradesh fell by 6.7 percent during the same period.

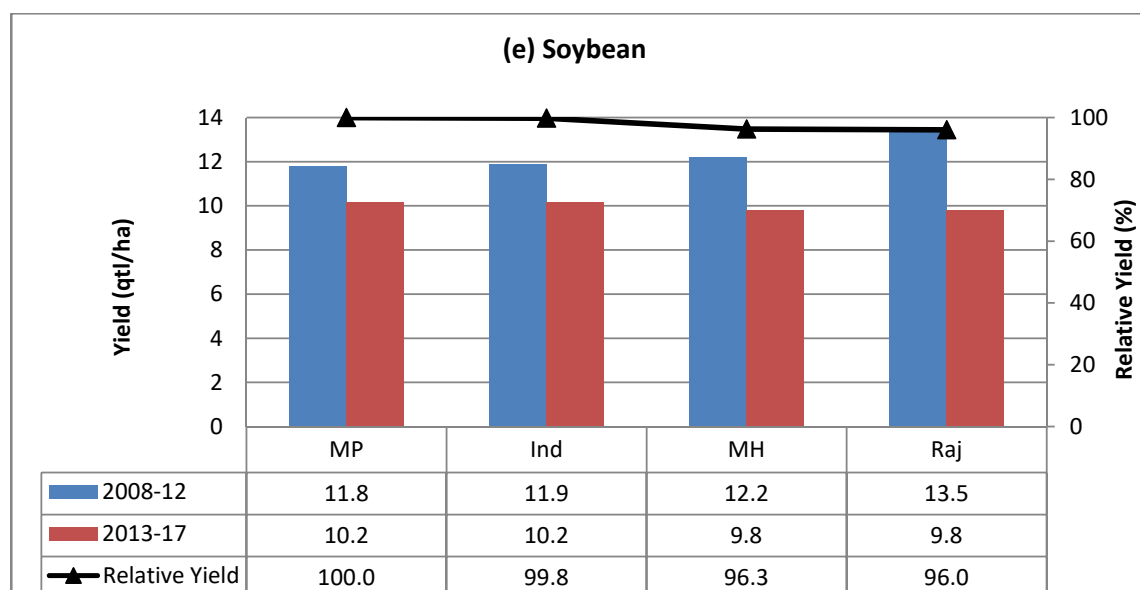


Source: DES, DAC & FW



## Price Policy for Kharif Crops

**3.13 Oilseeds:** There was not much variation in soybean yields among major producing states. While Madhya Pradesh registered maximum yield for Soybean (10.2 quintals per hectare), it was closely followed by Maharashtra and Rajasthan (9.8 quintals per hectare for both). This shows inter-state variations are minimal in case of soybean. However, it may be noted that soybean yields have declined across all major producing states in the period 2013-17. This is mainly because soybean is a rainfed crop, therefore, its yields have suffered greatly due to less than normal rainfall in the years 2014-15 and 2015-16. There is an urgent need to reverse this trend as demand for protein rich foods like soybean is expected to increase with a rise in disposable incomes. Efforts need to be stepped up to increase seed replacement ratios and extend irrigation coverage through innovative irrigation systems like drip and sprinkler under “National Mission on Oilseeds and Oil Palm (NMOOP)” to raise productivity levels for soybean. Also, new methods of cultivation like ridge and furrow may be encouraged and supported to increase soybean yields.

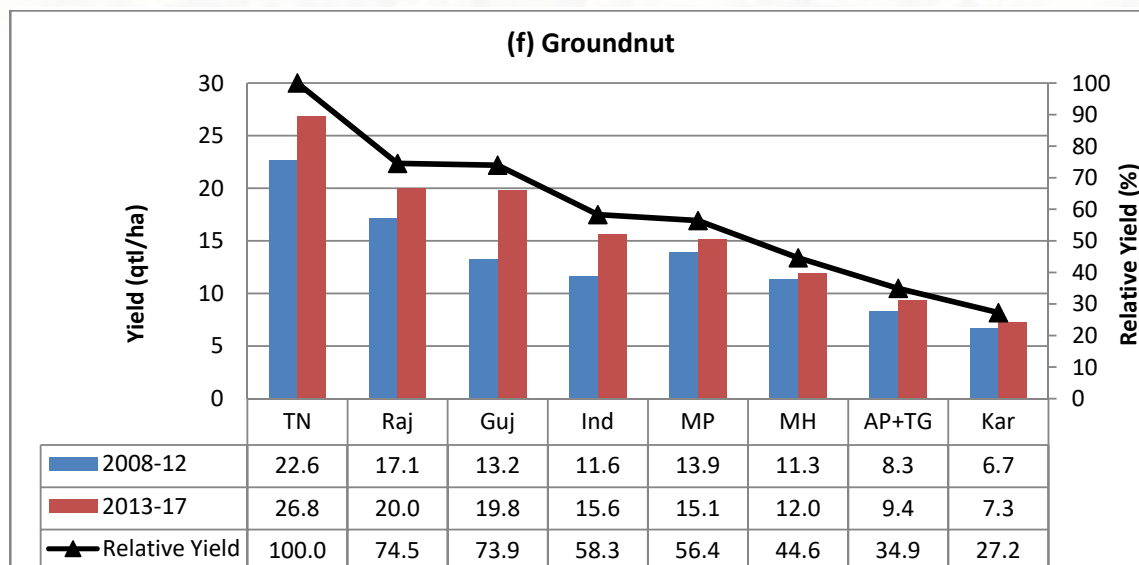


Source: DES, DAC & FW

**3.14** For groundnut, productivity increase was 34.8 percent at all-India level. However, inter-state differences in terms of productivity levels are quite large for groundnut. In Gujarat, productivity increased by 49.9 percent. In Tamil Nadu and Rajasthan productivity increases were 18.5 percent and 16.6 percent, respectively. Maharashtra and Karnataka were the states with low productivity increases (less than 10 percent).



## Price Policy for Kharif Crops

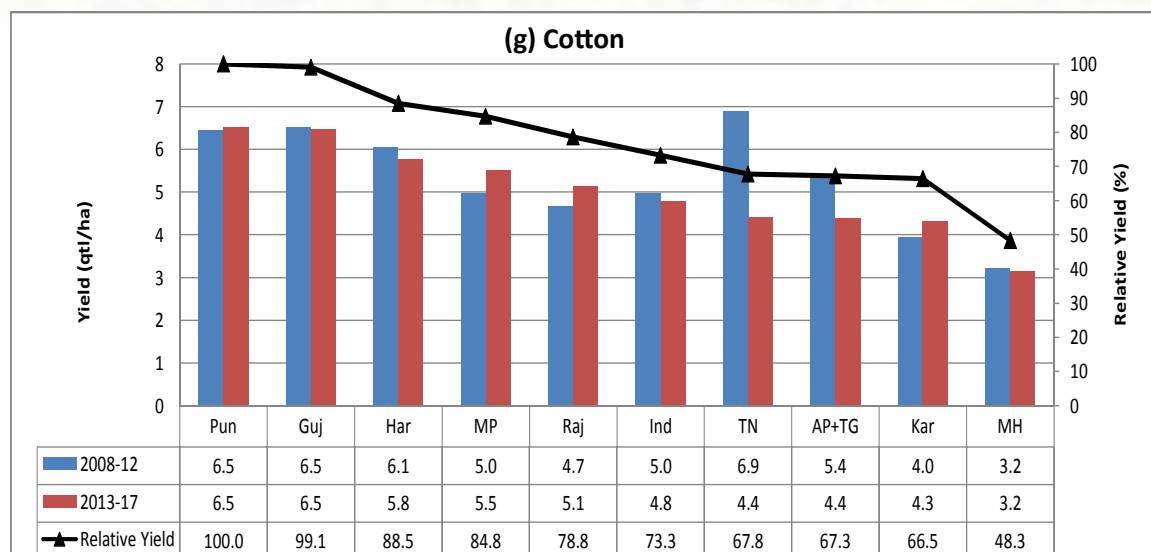


Source: DES, DAC & FW

**3.15 Cotton:** In cotton, productivity increases were seen only in a few states namely; Madhya Pradesh (11.1 percent), Rajasthan (10.2 percent), Karnataka (9.4 percent) and Punjab (1.1 percent). However, productivity of cotton has fallen at all-India level over the past 10 years from 5.0 quintals per hectare to 4.8 quintals per hectare. Among the major states that have led to this fall are: Tamil Nadu (-35.9 percent) and Andhra Pradesh + Telangana (-19.1 percent) and Haryana (-4.8 percent). It is interesting to note that Tamil Nadu, which had the highest cotton yield in the period 2008-12 (6.9 quintals per hectare), witnessed a substantial reduction in yields in 2013-17 (4.4 quintals per hectare). This occurred due to a significant decline in yields in 2017-18. This fall in all-India yield for cotton is due to several reasons. Firstly, long duration of flowering and boll formation phase leads to prolonged vulnerability of the crop to pests and diseases especially the pink bollworm that occurs as a late season pest. Secondly, there has been a gradual increase in bollworm resistance to insecticides and *Bt* toxins which has impacted yields negatively. Thirdly, due to frequent incidences of pest infestation farmers have resorted to excessive use of pesticides which has depressed yields further.



## Price Policy for Kharif Crops



Source: DES, DAC & FW

3.16 Table 3.2 analyses the variations in growth performance of productivity of kharif crops at the state level. As discussed in the earlier section, at all-India level, the growth rate of yield decelerated in most crops (except tur, urad, sesamum and groundnut) during 2010s compared with 2000s. For paddy, number of states having negative yield growth increased from one in 2000s to three in 2010s. In Bihar, which showed negative yield growth during 2000s (-1.4 percent) the situation reversed in 2010s as the yield growth turned positive (1.2 percent). Yield growth in states like Chhattisgarh and Jharkhand stayed above the national average in 2010s but showed a declining trend in comparison to 2000s. Most of the states recorded a deceleration in yield growth rates in all oilseed crops during last one and a half decade. In groundnut, although the growth rate in yield improved at the all-India level in 2010s, four states recorded negative growth in yields. This highlights the large inter-state variations in growth rate of yields for groundnut. Except for Madhya Pradesh, growth rate in soybean yields was negative for all the major producing states in 2010s. This is in sharp contrast to the 2000s when Madhya Pradesh, Chhattisgarh and Rajasthan registered impressive increase in yields. In case of cotton, all states witnessed deceleration in yield growth. In fact there was a decline in yields for Punjab (-2.0 percent), Gujarat (-4.6 percent) and Tamil Nadu (-4.6 percent). Since, yield growth has to be a predominant source of growth in agricultural output, a steep deceleration in the growth rates of yields in many crops and most of the states in the recent years is a matter of great concern for the researchers and policymakers

# Price Policy for Kharif Crops



**Table 3.2: State-wise Productivity Growth of Major Kharif Crops (2001-02 to 2017-18)**

Crop	CAGR (2001-02 to 2010- 11)	2001-02 to 2010-11		CAGR (2011-12 to 2017- 18)	2011-12 to 2017-18	
		>National Average	<National Average		>National Average	<National Average
Paddy	1.60	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)	0.90	Odi (4.0), CG(2.9), Jhar (2.1), Kar (1.4), AP (1.3), Asm (1.2), Bih (1.2), Pun(1.2),	WB (0.2), Har(-0.1) TN (-1.0), UP(-1.8),
Bajra	2.02	TN (5.1), UP (3.9), Raj (2.7)	AP (-5.7), Guj (-11.4)	1.6	MP(7.4), TN (4.1), Guj(3.2)	AP (1.1),Raj (0.7), UP(0.7), Kar (-0.7), Mah (-3.8)
Maize	3.01	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)	1.9	MP (10.7), UP (2.6), TN (2.4)	Guj(1.8), Har (1.8), Bih (1.1), MH (-0.5), Raj(-1.4), Kar (-3.4), AP+TG(-6.1)
Jowar	3.02	Kar (7.88), MP (4.13), Raj (3.76), AP (3.13),	MH (2.21),Bihar (1.7),UP (-0.13), TN (-7.16)	-1.4	MP (3.9), MH (3.1), TN (1.2), Bih (0.0),Kar (-1.0)	UP(-1.6), Raj (-1.9), AP(-3.6)
Tur	0.47	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)	3.8	MP (13.6), Kar(4.5), AP (4.1),	CG(2.5), Guj (1.8), MH (0.9), Jhar (0.1), UP (-0.5), Bih (-1.4)
Moong	0.61	UP (4.07), Raj (2.89), Guj (2.82), Kar (2.59), Odi (2.87), MP(1.16), AP (0.85), Bih (0.73)	MH(-0.49), CG (-0.65) TN (-3.72)	-0.1	MP (16.9), CG (10.6), Bih (1.3), TN (0.6), Kar (0.3)	Guj (-1.1), AP (-2.3), Odi (-3.0), UP (-8.5)

Crop Productivity



## Price Policy for Kharif Crops

Crop	CAGR (2001-02 to 2010- 11)	2001-02 to 2010-11		CAGR (2011-12 to 2017- 18)	2011-12 to 2017-18	
		>National Average	<National Average		>National Average	<National Average
Groundnut	2.77	Raj (4.9), AP (4.1), TN (4.1), MP (3.7), Guj (3.3)	CG (2.6), Kar (1.5), MH (0.7)	4.4	Guj (9.0),	AP (2.6), Raj (2.1), CG (1.8), Mah (-0.2), MP (-0.6), TN (-3.0), Kar (-4.9)
Soybean	3.32	MP (5.3), CG (5.0), Raj (4.1)	Guj (-0.3), MH (-1.9)	-3.2	MP(2.5)	CG(-5.3), Raj (-5.8), Guj (-8.0), MH (-8.0)
Sesamum	-0.45	MP (5.7), Raj (5.1), Kar (3.4), TN (0.9), WB(-0.1)	Guj (-2.9), UP (-4.8)	1.8	MP (7.4), TN (4.1), Guj (3.2)	AP (1.1), Raj (0.7), UP (0.7), Kar (-0.7), MH (-3.8)
Sunflower	2.96	MH (3.4),	Kar (2.8), AP (1.2)	-1.0	AP (1.4)	Kar (-1.6), MH (-4.9)
Cotton	10.70	Raj (15.6), Guj (14.7), Kar (12.0), Har (11.1)	MH (10.5), TN (8.9), AP (6.4), Pun (6.4)	-1.0	MH (5.3), Kar (4.0), AP (1.9), Raj (0.4)	Pun (-2.0), Guj (-4.6), TN (-4.7)

Source: Computed from DES, DAC & FW

### Yield Gap Analysis

3.17 Yield gap analysis basically involves measurement of yield potential and realized yield. This helps in identification of constraints and management options to reduce the gaps with feasible and implementable policies that encourage adoption of gap-bridging technologies and practices. In Charts 3.2 to 3.4, we calculated three types of yields for major pulses for TE2016-17 namely; (i) yields achieved under Front Line Demonstration (FLD), where best scientific and management practices are followed, (ii) realized farm yield of improved technology under farmer's practices and (iii) state average yields. Based on the above, estimated increases in production by bridging the yield gap have been calculated in Table 3.3. In the Table, resultant increase in production from 25 percent, 50 percent, 75 percent and 100 percent reduction in yield gaps has been calculated. Two types of yield gaps have been considered for the above calculation, viz, (i) Yield

## Price Policy for Kharif Crops



Gap (A): difference between realized yields and state average yields, (ii) Yield Gap (B): difference between FLD yields i.e. potential yields and state average yields. Yield Gap (A) is mainly due to non-availability of technology. On the other hand, Yield Gap (B) is due to combination of both biological and socio-economic constraints.

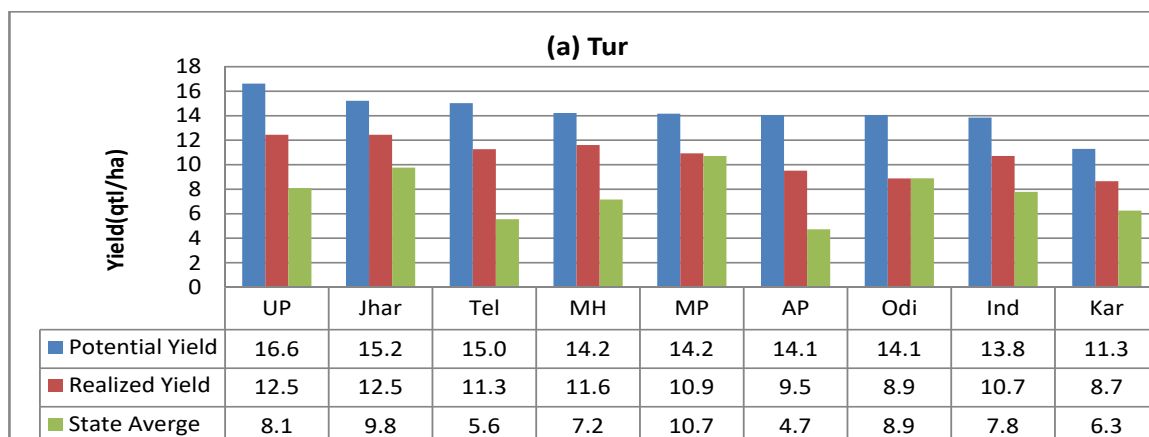
### Pulses

- 3.18 In all kharif pulses, there are significant gaps between the realized yields and state average yields (yield gap (A)) (Chart 3.2 (a) to (c)). Gap between potential and state average yields (yield gap (B)) are also significant in most of the states. This points to major shortfalls in technology and economic means as far as pulses farming is concerned.
- 3.19 For tur, yield gap (B) was high in all the major producing states. It exceeded 50 percent in Andhra Pradesh (66.3 percent), Telangana (63.1 percent) and Uttar Pradesh (51.3 percent). Lowest yield gap (B) was observed in Madhya Pradesh i.e. 24.4 percent. However, for yield gap (A) inter-state variations were much larger. While, Yield Gap (A) was 50.8 percent and 50.3 percent for Telangana and Andhra Pradesh, respectively, it was only 2.0 percent in Madhya Pradesh. Lower Yield Gap (A) in Madhya Pradesh was mainly due to increased incidents of water stress at the time of maturity, poor soil conditions and unseasonal rains in areas from where realized yields were calculated.
- 3.20 For urad, state average yield was 49.6 percent lower than potential yield in Rajasthan and 49.2 percent lower in Maharashtra. In case of difference between realized yield and state average yield, the gap was negative for Madhya Pradesh i.e. -11.4 percent whereas, for Rajasthan it was 36.6 percent. However, on account of larger area under cultivation of urad in Madhya Pradesh yield gap (A) at all- India level was only 1.7 percent.
- 3.21 In case of moong, the potential yield exceeds the state average yield by 72.2 percent in Karnataka, 46.6 percent in Rajasthan, 42.9 percent in Tamil Nadu and 36.7 percent in Gujarat. This has led to a large overall gap between potential yields and state average yields at all-India level (42.9 percent). Similarly yield gap (A) for moong at all-India level was 27.5 percent which was largely due to high yield gap (A) in Karnataka (66.5 percent). Lowest Yield Gap (A) was observed in Maharashtra (14.6 percent).

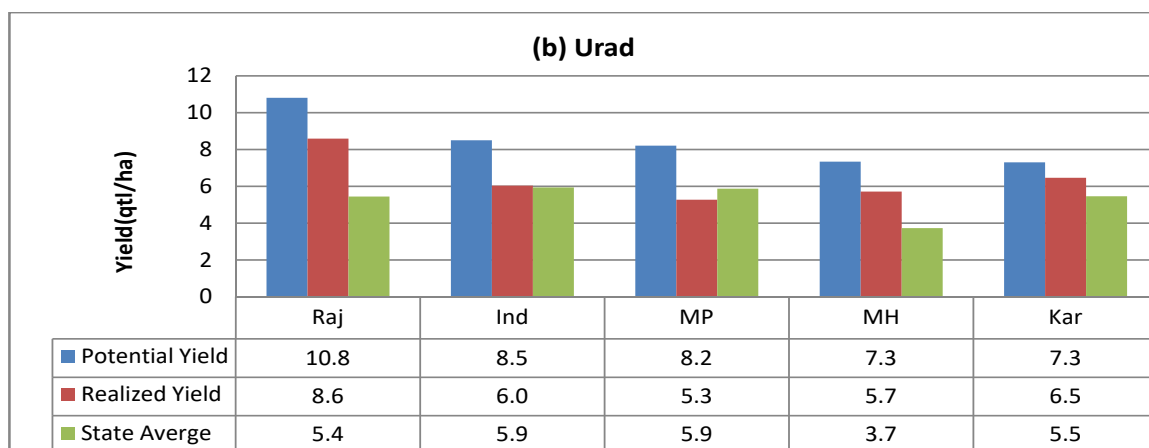


# Price Policy for Kharif Crops

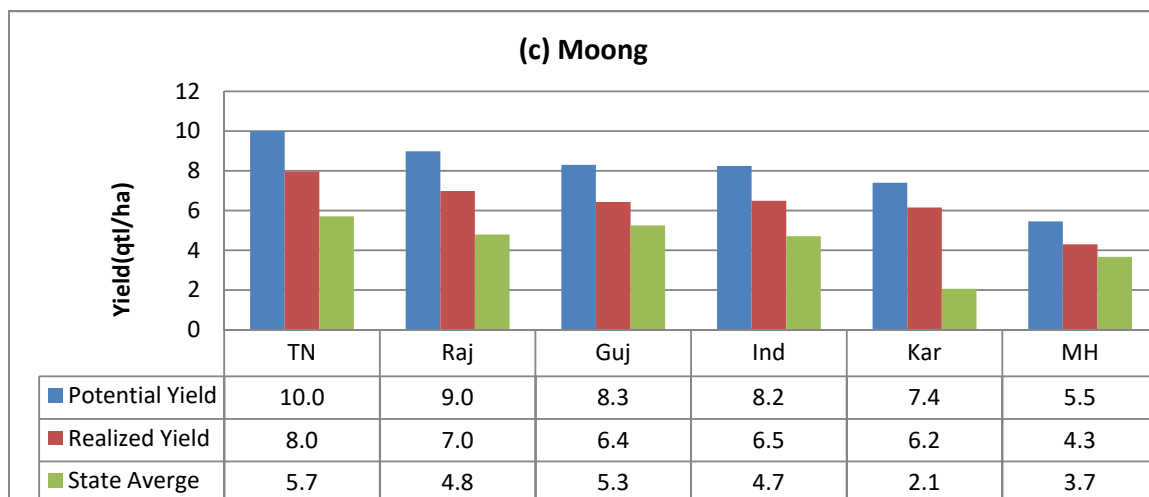
**Chart 3.2: Yield Gap Analysis of Pulses in Major Producing States**



Source: Indian Institute of Pulses Research, Kanpur



Source: Indian Institute of Pulses Research, Kanpur



Source: Indian Institute of Pulses Research, Kanpur



## Price Policy for Kharif Crops



- 3.22 Based on calculations made by CACP using the yield gap analysis, it is possible to increase production of kharif pulses by about 2.0 to 5.0 million tonnes even with the existing technologies if biological and socio-economic constraints are addressed and farmers follow best practices (Table 3.3).

**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 A				Yield Gap B			
	25%	50%	75%	100%	25%	50%	75%	100%
Tur	321	643	964	1285	664	1328	1992	2656
Urad	10	19	29	38	243	486	720	972
Moong	166	332	499	665	330	659	989	1318
Total	499	994	1492	1988	1237	2473	3701	4946

### Oilseeds

- 3.23 Yield gaps in oilseeds are quite large and show a great deal of variation across states. Yield gap (A) i.e. difference between realized yield and state average yield ranges from -2.9 percent for groundnut (Madhya Pradesh) to 74.0 percent in Sunflower (Karnataka). Similar variations can be seen for yield gap (B) i.e. difference between potential yield and state average yield for oilseeds. Yield gap (B) was minimum in Gujarat for groundnut (15.2 percent) and maximum in Karnataka for sunflower (77.6 percent). The yield gaps for 3 oilseeds viz., groundnut, soybean and sunflower are analysed in Charts 3.3 (a) to (c).
- 3.24 In case of groundnut, among the major producing states, yield gap (A) was highest in Karnataka (50.0 percent) followed by Maharashtra (36.7 percent) and Andhra Pradesh (31.9 percent). Madhya Pradesh was an outlier since yield gap (A) was negative in the state (-2.9 percent) which shows that state average yields exceeded realized yields in Madhya Pradesh. This mainly resulted from the fact that in Madhya Pradesh data on realized yields was calculated from resource poor marginal farmers in rainfall deficit districts. Further, potential yields exceeded state average yields in all groundnut producing states. This is depicted by yield gap (B) which was as high as 60.0 percent in Karnataka and minimum of 15.2 percent in Gujarat.
- 3.25 For soybean, there was a large gap between potential yields and state average yields (yield gap (B)) in Karnataka (64.6 percent) and Maharashtra (60.8 percent) while the all-India gap between potential yields and state average was 44.1 percent. Further, there were large inter-state variations in yield gap (A) as well. Yield gap (A) remained

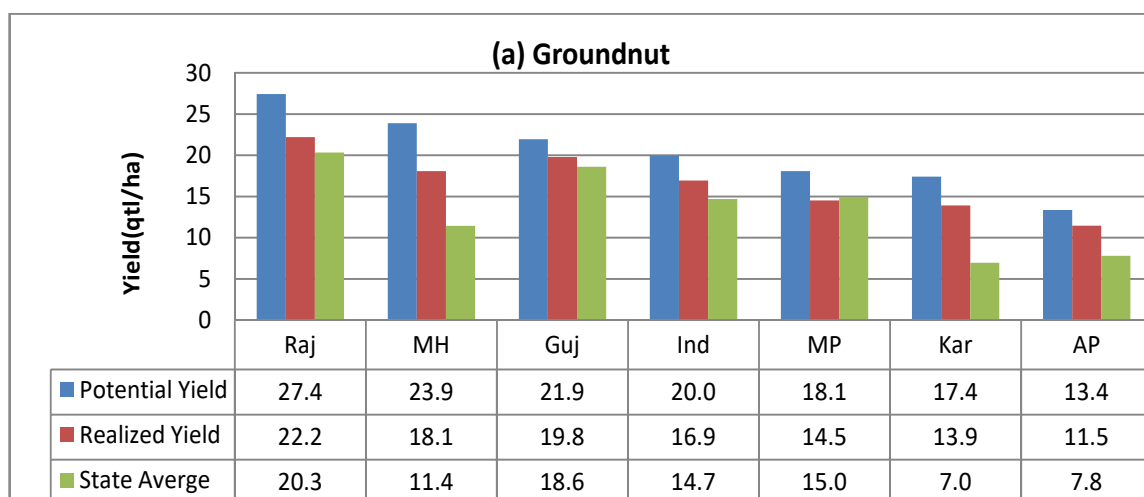


## Price Policy for Kharif Crops

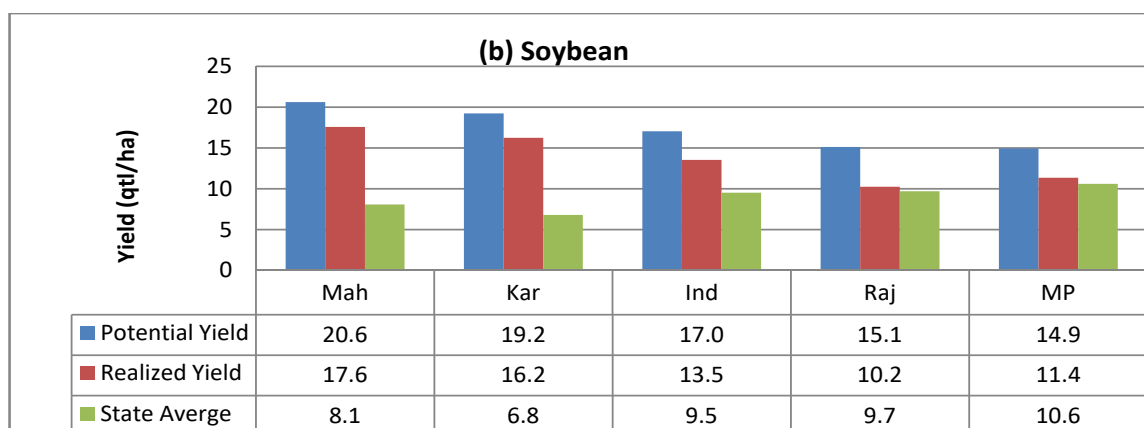
above 50 percent in Karnataka (58.1 percent) and Maharashtra (54.1 percent). In, Madhya Pradesh and Rajasthan the gap was relatively lower i.e. 6.5 percent and 5.4 percent, respectively.

- 3.26 For sunflower, all-India yield gaps were very high. While yield gap (A) was 61.9 percent, yield gap (B) was 67.6 percent for all-India. This was due to high level of yield gaps in Karnataka (yield gap (A): 74.0 percent, yield gap (B): 77.6 percent) and Maharashtra (yield gap (A): 58.9 percent, yield gap (B): 67.7 percent). This shows that there is a large potential to increase soybean production by using innovative farming methods.

**Chart 3.3: Yield Gap Analysis of Oilseeds in Major Producing States**

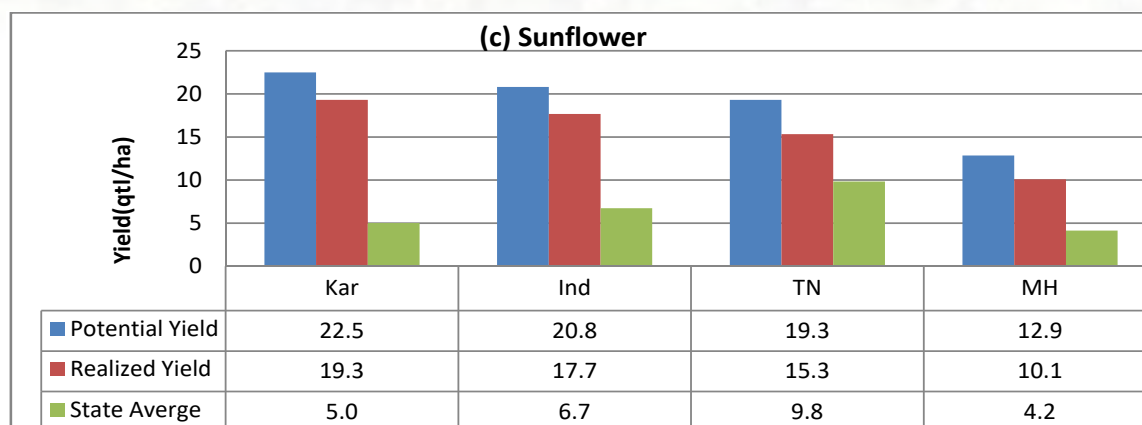


Source: Directorate of Groundnut Research, Junagarh



Source: Indian Institute of Oilseeds Research, Hyderabad

## Price Policy for Kharif Crops



Source: Indian Council of Agricultural Research, Delhi

3.27 If state average yields can be further improved and reach a level of potential yield, about 11.7 million tonnes of additional oilseeds, particularly soybean can be produced (Table 3.4). 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. In view of this, we need to improve seed replacement rate and particularly promote protective irrigation.

**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 A				Yield Gap B			
	25%	50%	75%	100%	25%	50%	75%	100%
Soybean	1127	2253	3380	4506	2112	4224	6336	8448
Groundnut	274	548	822	1097	649	1298	1948	2597
Sunflower	133	266	399	532	171	342	513	684
Total	1534	3067	4601	6135	2932	5864	8797	11729

### Cotton

3.28 In case of cotton also, state average yields fall well short of both potential and realized yields (Chart 3.4). In all the states, realized yields exceeded the state average by more than 50 percent. Highest gap was observed in Karnataka (76.1 percent) while, lowest was observed in Punjab (64.2 percent). Yield gap (B) was also very high across India. Yield gap (B) was highest in Karnataka (79.9 percent) followed by Maharashtra (77.3 percent). High yield gap in Individual states has manifested itself in the form of high yield gaps at all-India level as well. At the all-India level yield gap (A) and yield gap (B)

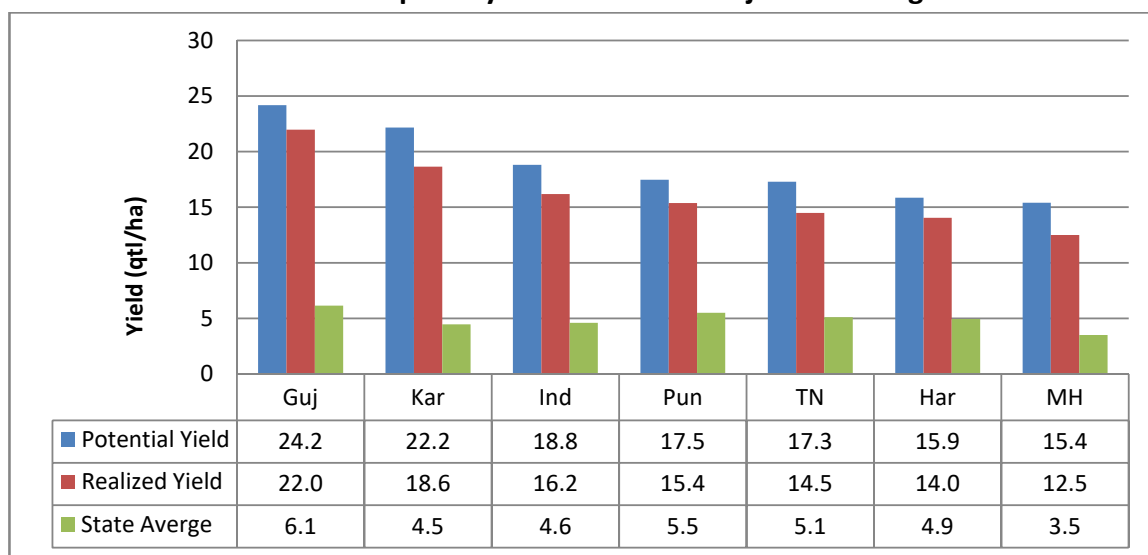




## Price Policy for Kharif Crops

were 71.5 percent and 75.5 percent, respectively. A fraction of such high yield gaps can be attributed to the high level of pest infestation in the cotton crop in recent years due to which yields in respective states have seen a declining trend. In view of this worrying trend, it is important to develop efficient production strategies for cotton along with contingency planning and capacity building to bridge the widening yield gaps. From calculations, it is observed that such yield gap abridgement facilities can lead to increase in production by as much as 17 million tonnes.

**Chart 3.4: Yield Gap Analysis of Cotton in Major Producing States**



Source: Indian Council of Agricultural Research, Delhi

### Drivers of Yield Growth

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

### Quality Seed Production and Distribution

3.30 Seeds are an important determinant of agricultural productivity. Performance of other agricultural inputs is greatly dependent on the quality of seeds used. Therefore, it is important to ensure timely availability of quality seeds to farmers. Hybrid seeds can prove to be a critical element in yield gap bridging strategy. Hybrid seeds in cross-pollinated crops give higher yield; hence, to improve crop productivity, greater emphasis should be laid on hybrid seeds. The aggressive promotion measures undertaken for the use of hybrid seeds has resulted in increased demand and

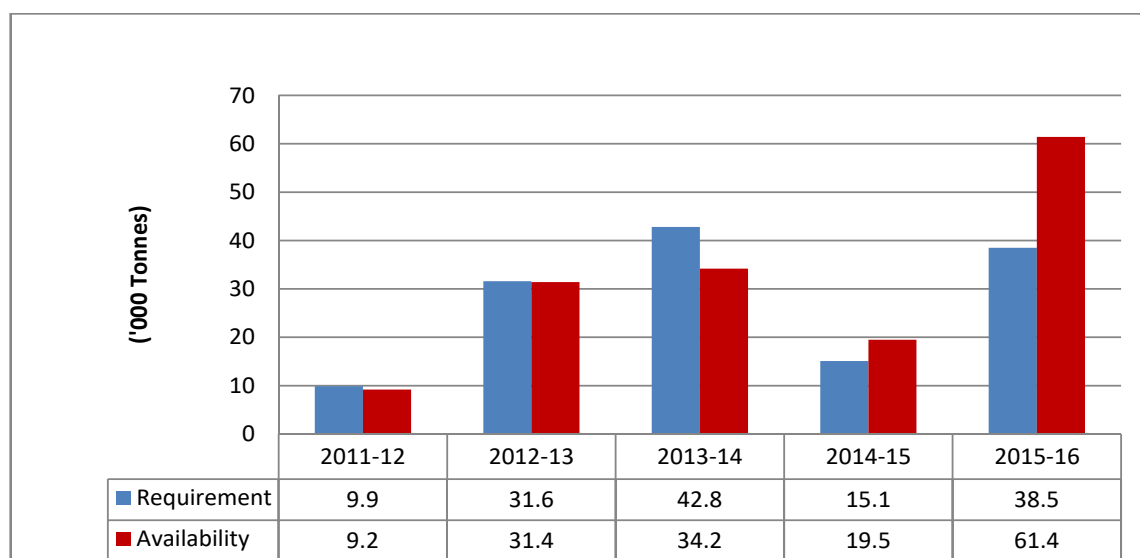
## Price Policy for Kharif Crops



production of hybrid seeds in the country as a whole. All-India availability of hybrid seeds has increased from 210.1 thousand tonnes in 2011-12 to 259.1 thousand tonnes in 2015-16. Similarly, during the same period, requirement has increased from 179.1 thousand tonnes to 211.2 thousand tonnes. However, despite the overall increase, inter-temporal and inter-crop variations in requirement/ availability of seeds remain significant. Crop-wise requirement and availability of hybrid seeds during the period 2011-12 to 2015-16 is shown in Charts 3.5 to 3.8.

- 3.31 For rice, requirement and availability of certified/ quality hybrids has shown large fluctuations during the period. As can be observed in Chart 3.5, there was a massive jump in requirement (219.2 percent) and availability (241.3 percent) in 2012-13 for certified/ quality hybrids for rice in comparison to 2011-12. However, requirement and availability fell by 64.7 percent and 43 percent, respectively in 2014-15 over the previous year (2013-14). This period of decline was again followed by an impressive jump in 2015-16. For 2015-16, requirement and availability of certified/ quality hybrids was 38.5 thousand tonnes and 61.4 thousand tonnes, respectively.

**Chart: 3.5: Requirement and Availability of Certified/ Quality Seeds of Hybrids for Rice (2011-12 to 2015-16)**



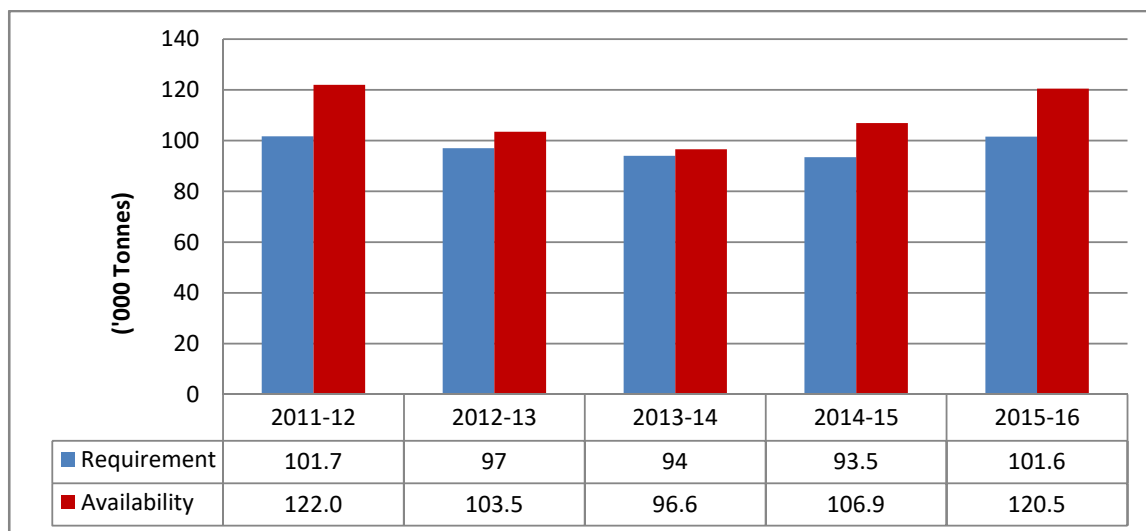
Source: DAC & FW

- 3.32 For Maize, requirement and availability figures stayed relatively stable during the period. From Chart 3.6 it can be observed that, while requirement was nearly the same in 2015-16 (101.6 thousand tonnes) as in 2011-12 (101.7 thousand tonnes), there was a marginal dip in availability from 122 thousand tonnes in 2011-12 to 120.5 thousand tonnes in 2015-16.



## Price Policy for Kharif Crops

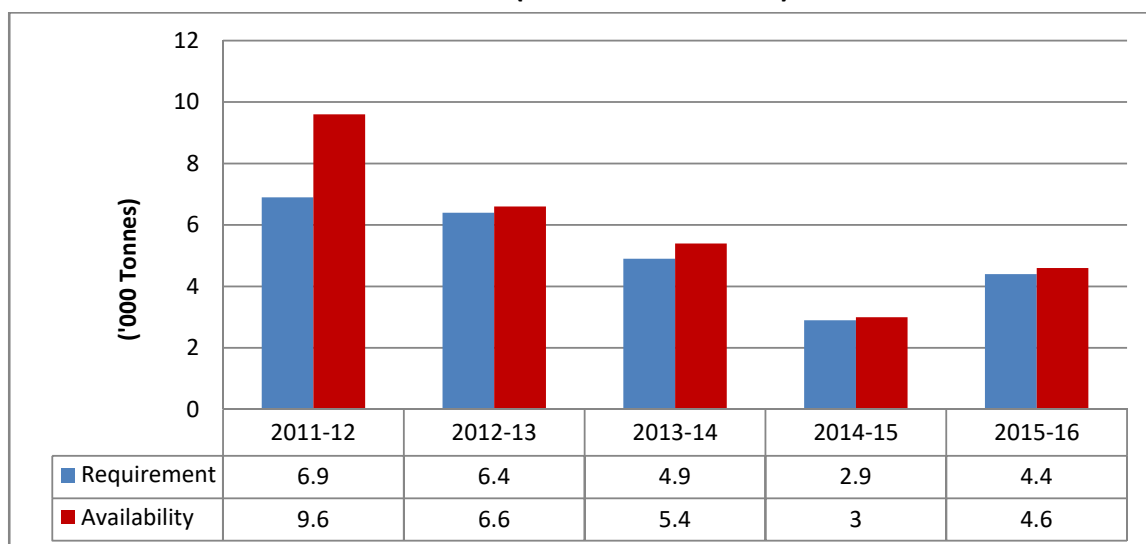
**Chart: 3.6: Requirement and Availability of Certified/ Quality Seeds of Hybrids for Maize (2011-12 to 2015-16)**



Source: DAC & FW

3.33 In case of sunflower, requirement and availability of certified/ quality seeds increased for the first time in 2015-16 after a period of sustained decline from 2011-12 to 2014-15 (Chart 3.7). However, despite increase, the requirement (4.4 thousand tonnes) and availability (4.6 thousand tonnes) figures in 2015-16 have stayed below 2011-12 figures (Requirement: 6.9 thousand tonnes, Availability: 9.6 thousand tonnes).

**Chart: 3.7: Requirement and Availability of Certified/ Quality Seeds of Hybrids for Sunflower (2011-12 to 2015-16)**



Source: DAC & FW

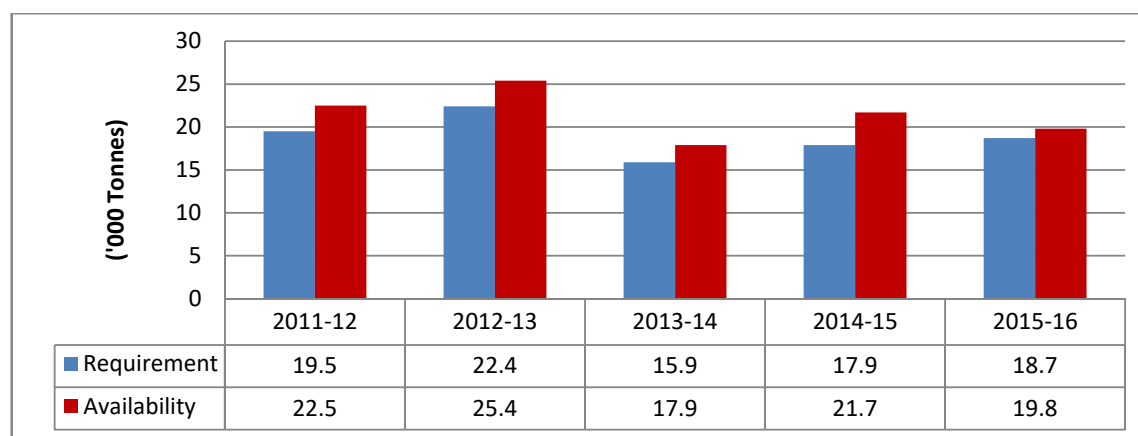


## Price Policy for Kharif Crops



3.34 In case of cotton, requirement and availability statistics for certified/ quality hybrids are not very encouraging. Requirement has fallen by 4.1 percent over the 2011-12 figures whereas fall in availability has been 12 percent over the same period (Chart 3.8).

**Chart: 3.8: Requirement and Availability of Certified/ Quality Seeds of Hybrids for Cotton (2011-12 to 2015-16)**



Source: DAC & FW

3.35 Although, as shown by above analysis requirement and availability of certified/ quality hybrid seeds has increased in the recent years yet significant ground needs to be covered. When we consider the percentage use of improved as well as hybrid seeds combined, it is observed that while their usage is nearly 100 percent in case of paddy, for other major kharif cereals it is relatively lower. For example, in maize use of improved as well as hybrid seeds is below 80 percent. Further, it is observed that although most of paddy is being grown using either improved or hybrid seeds but within this reach of hybrids in particular still remains very low. Usage of hybrid seeds within the category of “improved and hybrid seeds” is very miniscule i.e. around 2 percent for paddy whereas for maize it is around 30 percent. Among pulses, tur offers significant scope to adopt hybrid and improved seeds as the usage at present is only around 60 percent. Within this, usage of hybrid seeds is only around 5 percent. Similarly, for groundnut and soybean as well usage of hybrid seeds stayed low (below 5 percent). This shows that if policies are directed towards shift from local needs to improved and hybrid seeds significant production gains can be achieved.<sup>1</sup>

### Irrigation

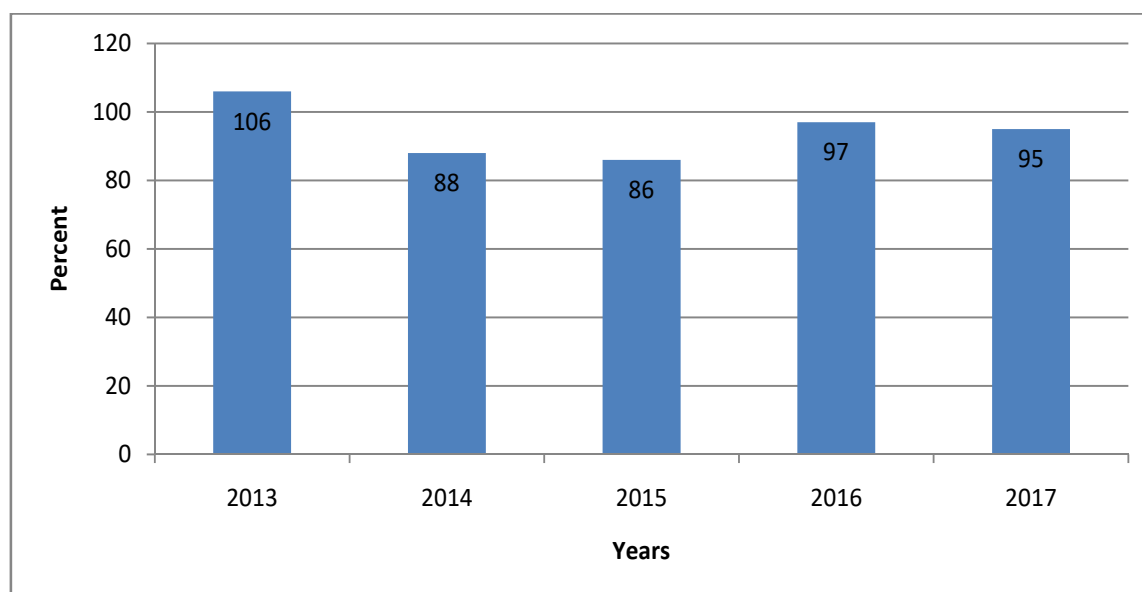
3.36 Productivity of kharif crops to a great extent is dependent on the performance of the south west monsoon. However, the extent of rainfall during the south west

<sup>1</sup> ICAR, “Draft Background Paper on Agricultural Policy and Reforms for Higher and Sustained Farmers’ Income”

## Price Policy for Kharif Crops

monsoon season often falls below its long period average affecting productivity negatively. Further, there is also a significant variation in geographical distribution of rainfall across India. As can be viewed in Chart 3.9, in five years beginning from 2013, rainfall during the South West Monsoon season remained below its Long Period Average (LPA) in four years. In this regard, there is a need to accelerate the coverage of gross irrigated area to mitigate the impact of extreme weather events on agricultural yields. For the year 2014-15, gross irrigated area as a percentage of total cropped area stood at 48.6 percent at all-India level. Therefore, more than half of total cropped area still remains unirrigated. It shows that there is significant ground to be covered in terms of expanding irrigation coverage in Indian agriculture. Further, Chart 3.10 brings out the large inter-state variations in irrigation coverage. As seen in the chart, for the year 2014-15, irrigation coverage in northern states, especially Punjab (98.7 percent) and Haryana (89.1 percent) was extremely high. However, for other states there exists a wide scope for expansion of irrigation facilities. Specifically in states like, Maharashtra (18.2 percent), Kerala (17.9 percent), Jharkhand (14.3 percent) and Assam (9.2 percent) irrigation coverage falls well below the all-India average. There is an urgent need to plug this gap to improve yields in agriculture and improve farm incomes.

**Chart 3.9: Actual Rainfall as a percentage of Normal Rainfall in the South West Monsoon Season (June 1 - September 30)**

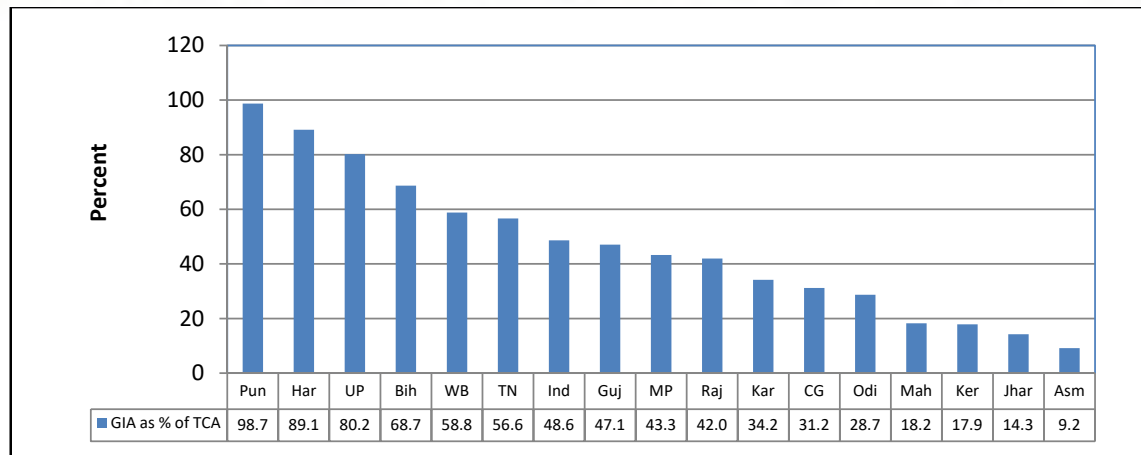


Source: DES, DAC & FW

## Price Policy for Kharif Crops



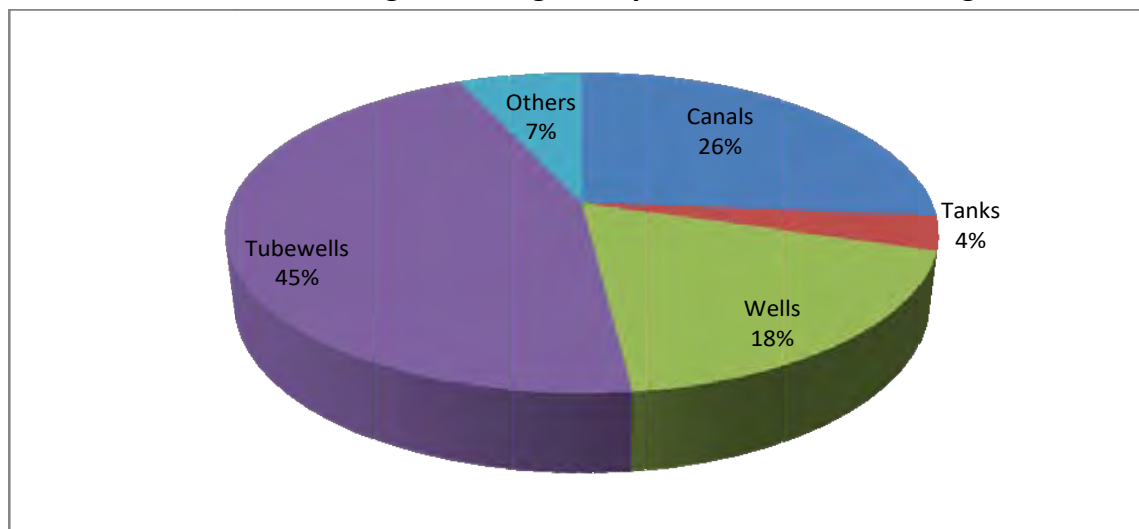
**Chart 3.10: Gross Irrigated Area as percentage of Total Cropped Area**



Source: DES, DAC & FW

3.37 However, it is important to ensure that a major chunk of future extension in irrigation is achieved through modern techniques like drip and sprinkler irrigation. This is because, micro irrigation techniques i.e. drip and sprinkler ensure economy of water use. Efficient use of water assumes particular significance in view of increasing instances of river water sharing disputes across states, depleting levels of ground water and increasing frequency of droughts. Chart 3.11 shows the percentage distribution of area irrigated by different sources of irrigation as per the Agricultural Census 2010-11. As can be inferred, the area under irrigation from sources other than tubewells, canals, wells and tanks was just 7 percent. In absolute terms, other sources (which include drip and sprinkler) only covered 4329 hectares.

**Chart 3.11: Percentage Area Irrigated by Different Sources of Irrigation**



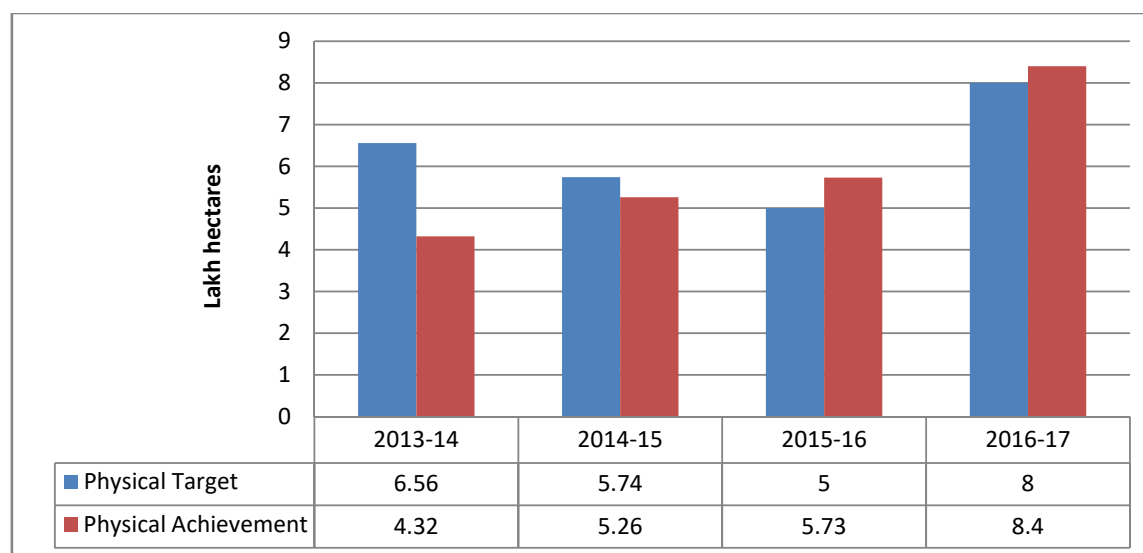
Source: CACP using DAC & FW data (Agriculture Census 2010-11)



## Price Policy for Kharif Crops

3.38 Considering the above scenario, to expand area under irrigation and consequently reduce dependence of Indian agriculture on rainfall, Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) is being implemented with the objective of developing a long term solution for mitigating the effect of drought and increasing the area under irrigation with the motto: Har Khet Ko Pani. The scheme has been envisaged with an outlay of ₹ 50,000 crore for a period of 5 years (2015-16 to 2019-20). The scheme particularly lays special emphasis on micro irrigation with the motto “Per Drop More Crop”. The renewed thrust provided to Micro irrigation under PMKSY is evident from Chart 3.12 which presents the all- India figures for Physical target/ achievements for area under micro irrigation. As can be seen from the chart, physical achievements fell short of the targets for the years 2013-14 and 2014-15. However, after the introduction of micro irrigation under PMKSY, physical achievements have exceeded the targets in two consecutive years viz. 2015-16 and 2016-17. Further, as on 25<sup>th</sup> December, 2016 all-India coverage under micro irrigation stood at 8626.8 thousand hectares. Therefore, the area under micro irrigation has nearly doubled since the Agricultural Census 2010-11. It is important that the present thrust on micro irrigation under PMKSY be maintained to achieve more effective utilization of a scarce resource like water.

**Chart 3.12: Physical Target/ Achievement under Micro-Irrigation**



Source: DAC & FW

3.39 **Fertilizers:** Chart 3.13 shows fertilizer consumption over the period: 2010-11 to 2016-17. As can be observed from the chart, total consumption of fertilizers has reduced in 2016-17 when compared to consumption in the previous year (2015-16). There

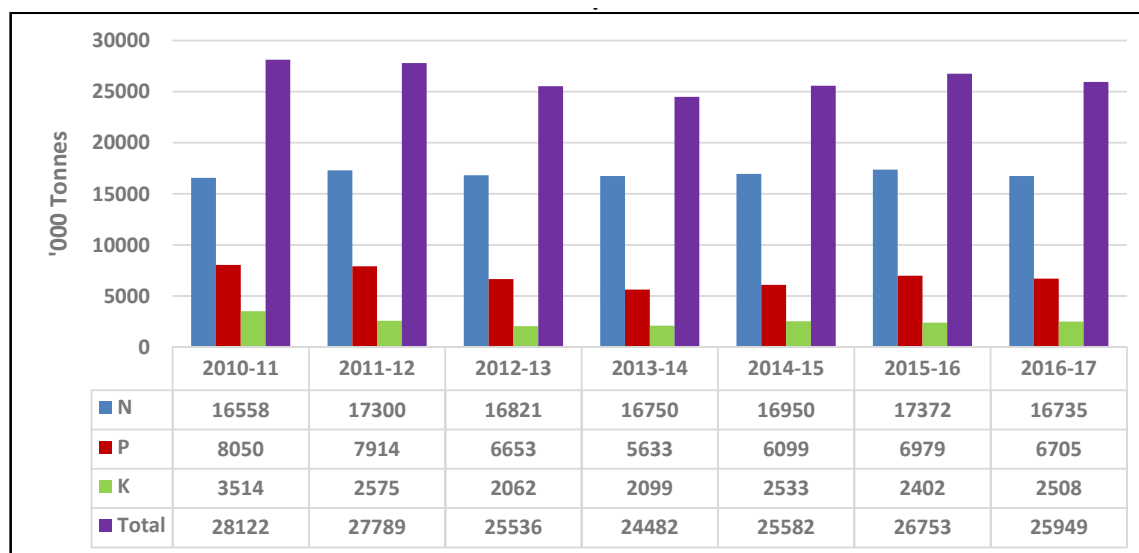
## Price Policy for Kharif Crops



has been a reduction in usage of N and P nutrients in 2016-17 over the previous year. While consumption of N fell by 3.7 percent, fall in consumption of P was 3.9 percent. It may be noted that the recent fall in consumption of N can be linked to the steps taken by the Government to check diversion of highly subsidized urea towards non-agricultural purposes. One such step was the introduction of the policy of 100 percent neem coating of indigenously produced urea and imported urea w.e.f 1<sup>st</sup> September, 2015 and 1<sup>st</sup> December, 2015, respectively. However, consumption of K nutrient has marginally increased in 2016-17 (4.4 percent) over the previous year. Due to the above changes the N,P,K ratio has improved to 6.7:2.7:1 on account of reduction in N and P usage after touching a high of 8.1:3.2:1 in 2012-13. Despite slight improvement in ratio, excessive use of fertilizers still remains a serious problem. This has also led to a decline in soil fertility. To find a long term solution to the problem of excessive and imbalanced use of fertilizers, it is essential to link the distribution of fertilizers to the recommendations in Soil Health Cards at the earliest, across India. Further, the idea of providing cash transfers instead of fertilizer subsidies may be explored as it has the potential to allow farmers to choose fertilisers in the combination best suited to their needs thereby correcting fertilizer imbalances. In view of this, introduction of DBT in fertilizer distribution is a welcome step.

Crop Productivity

**Chart 3.13: Consumption of Fertilizers**



Source: Fertilizers Association of India



## Price Policy for Kharif Crops

### Inter-Country Comparisons of Crop Productivity

- 3.40 India is among the top producers of several important crops such as wheat, rice, pulses, sugarcane and cotton. For all the major crops, there has been a long term increasing trend in production. However, despite increasing production agricultural yields are found to be lower in case of most crops in comparison to other major producing countries. The problem of low yields has made it difficult to free up agricultural land for other income generating activities without compromising on production. Table 3.5 shows a comparison of Indian agricultural yields with world agricultural yields for the year 2015. As can be observed from the table, all-India yields for major kharif cereals i.e. rice and maize fell well below the world average. For rice, all-India yields (2400.2 kg per hectare) are only 51.7 percent of the world average (4636.6 kg per hectare). In fact, yield in even the most productive state i.e. Punjab (3974.1 kg per hectare) fell below the world average. Further, all-India yield for rice is roughly one-third of the China (6932.4 kg per hectare) which has the highest yield among the major rice producing countries. For maize also the gap between world average and all-India yield is very large. All-India yield for maize is less than half (45.4 percent) of world average. In view of this, India must make efforts to increase yields of rice and maize to reach world average through effective policy interventions.
- 3.41 In case of pulses, yield gap between world average (731.2 kg per hectare) and all-India average (656.2 kg per hectare) was relatively smaller. Introduction of higher MSPs for pulses in the recent years has played a significant role in bridging the yield gap. However, it is pertinent to keep up the efforts to increase yields of pulses even further and bring them at par or higher than the world average.
- 3.42 For oilseeds, difference in world average yield and all-India yield was not much in case of groundnut (7.9 percent). However, all-India yield for soybean (738.4 kg per hectare) is significantly lower than world average (2675.7 kg per hectare). This is mainly due to damage suffered by soybean crop in the agricultural year: 2015-16 on account of low rainfall. Therefore, to increase soybean yields, investment in irrigation must be enhanced under the programme National Mission on Oil Seeds and Oil Palm (NMOOP).



# Price Policy for Kharif Crops



**Table 3.5: Yield Comparisons for Major Crops (kg per hectare)**

Crop	World Average*	World Highest*	All-India Average#	State Highest#
Rice (Paddy)	4636.6	6932.4 (China)	2400.2	3974.1 (Pun)
Maize	5640.1	10960.4 (USA)	2562.7	7010 (TN)
Pulses (Total)	731.2	5540.3(Australia)	656.2	931 (Guj)
Tur	829.9	1612.3 (Kenya)	646.1	1124.8 (Guj)
Soybean	2755.6	3500.6 (USA)	738.4	831 (MP)
Groundnut	1590.1	4118.6 (USA)	1464.9	2574.3 (TN)

Note:\* FAOSTAT for World Average and World Highest

#DES, Department of Agriculture, Co-operation and Farmers Welfare for All-India Average and State Highest.

## Linking MSP with Oil Content in Sunflower

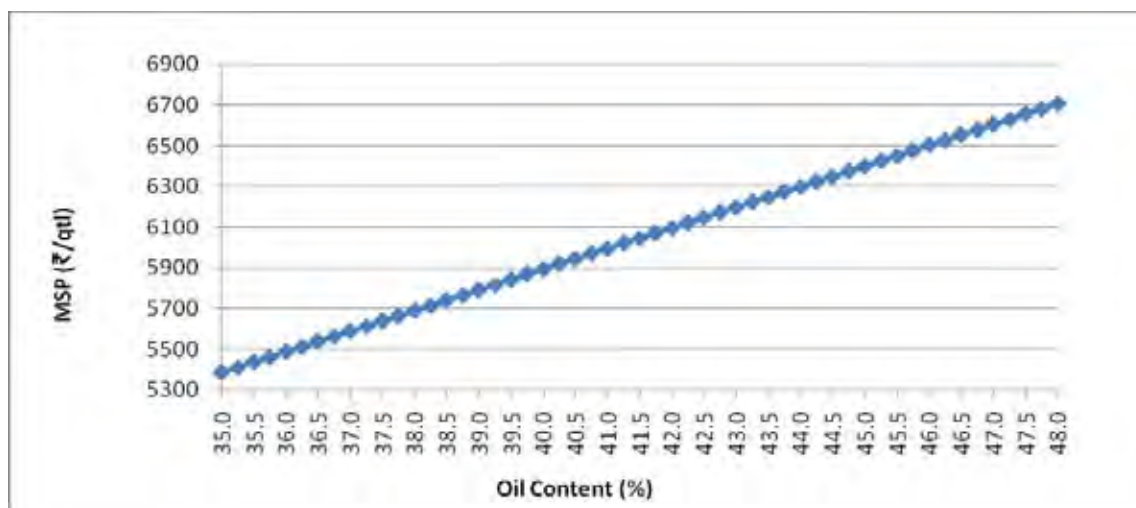
3.43 Area under sunflower has declined from 3.81 lakh hectare in 2016-17 to 3.35 lakh hectare in 2017-18. This decline has implications for sunflower oil production. In order to increase area under sunflower, farmers should be incentivized through linking MSP of sunflower seed with its oil content. There are variations in oil content of different varieties of sunflower and therefore a uniform MSP may not be desirable. Therefore, the Commission is of the opinion that farmers be incentivized for higher 'oil content'. As recommended in previous reports, Commission reiterates 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.

3.44 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 ₹4053 (₹5385 – ₹1333) which will contain 35 kg of oil. Thus, the MSP will increase by ₹25.39 for every 0.25 percent point increase in oil content (Chart 3.14). 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 ₹25.39 per quintal. Hence Commission recommends that MSP of sunflower seeds should be increased by ₹25.39 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.



## Price Policy for Kharif Crops

Chart 3.14: MSP based on Oil Content of Sunflower



### Recapitulation

- 3.45 Production growth rates decelerated in 2010s for all kharif cereals. Further, it is a matter of concern that in oilseeds production growth has become negative with the exception of groundnut wherein growth in production remained positive and showed an increasing trend. Similarly, cotton has also witnessed negative production growth rates. Production growth rate for total pulses has been constant over the last two decades. However, within pulses tur, moong and urad have shown impressive growth rates in the present decade. Since productivity improvement is 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 gap 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.
- 3.46 Fertilizer consumption has reduced in 2016-17. This has been led by a reduction in consumption of Nitrogen (N) based fertilisers which has resulted in a slight improvement in N, P, K ratio. This is an encouraging sign. Also, significant expansion in micro-irrigation has been achieved since the launch of PMKSY in 2015. But, to overcome the challenges posed by a possible water crisis in the future, it is essential to continue the efforts made under PMKSY.

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## Chapter 4

# Trade Competitiveness of Indian Agriculture

### Trade Performance

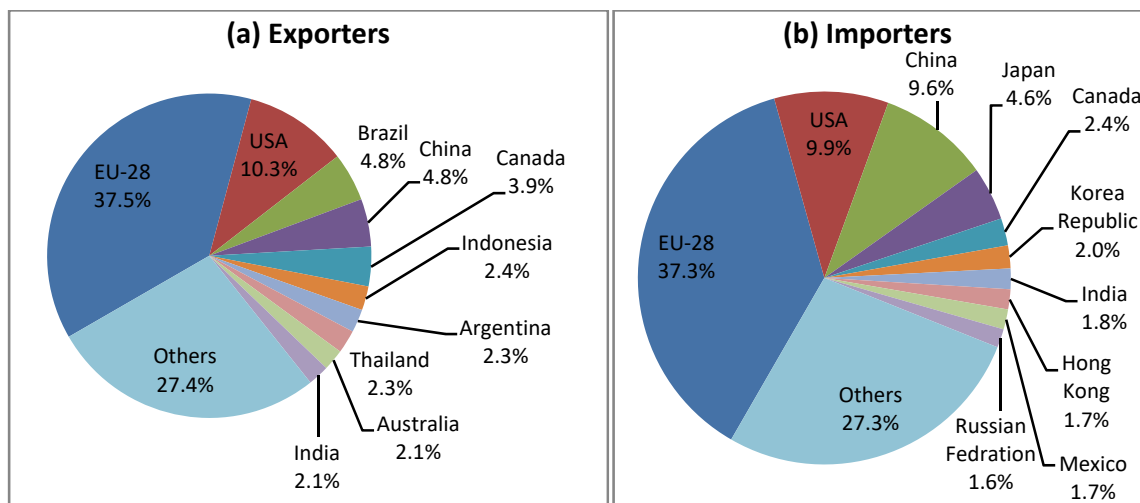
- 4.1 Balance of Trade (BoT) in agri-sector has been better than the overall BoT for India. It is evident from the fact that India's share in total world export is 1.7 percent in 2016, while the share in world agri-exports is higher at 2.1 percent during the same year. Similarly, India's share in total world imports in the year 2016 is 2.2 percent whereas the share in agri-imports is lower at 1.8 percent for the same period (Annex Tables 4.1 & 4.2). As per DGCIS data, the share of India's agri-exports in total exports, declined by 0.4 percent, from 13 percent in 2015-16 to 12.6 percent in 2016-17. Whereas the share of agri-imports in total imports, increased by 0.6 percent, from 6.6 percent to 7.2 percent in the corresponding period. It may be relevant to underscore here, that if the objective of farmer's welfare is to be realized, improving terms of trade of agri-sector is going to be a crucial factor. World's major agri-exporters and importers are given in Chart 4.1. As regards agri-exports, India remains at 9<sup>th</sup> position whereas for agri- imports, it stands at 7<sup>th</sup> position. India's agri-trade performance in 2016 was not very comfortable as agri-exports registered a decline of 5 percent and agri-imports increased by 5 percent in that year. A look at the four years exports data from 2013-14 to 2016-17 shows that the share of India's agri-exports in its total exports registered a negative annual growth rate of 3.2 percent whereas the share of agri-imports in total imports registered a steep increase of 21.5 percent in the same period. Due to this our net agri-trade surplus decreased substantially from the level of ₹ 159 thousand crore in 2013-14 to ₹ 48.3 thousand crore in 2016-17. Major agri-export commodities are rice, marine products, meat, spices, cotton and sugar, whereas the major import-commodities are edible oils, pulses, wood & wood products, fresh fruits, cashew, spices and sugar (Annex Tables 4.3 & 4.4). In the overall import bill of India, share of vegetable oil is largest at 44.1 percent of total bill during 2017, followed by pulses (13.1 percent) (Annex Table 4.4). Major kharif



## Price Policy for Kharif Crops

crops of India being traded and crucial for enhancing welfare of India's farmers are discussed in paragraphs below.

**Chart: 4.1 World's leading Agri-Exporters and Importers -2016**



Source: WTO

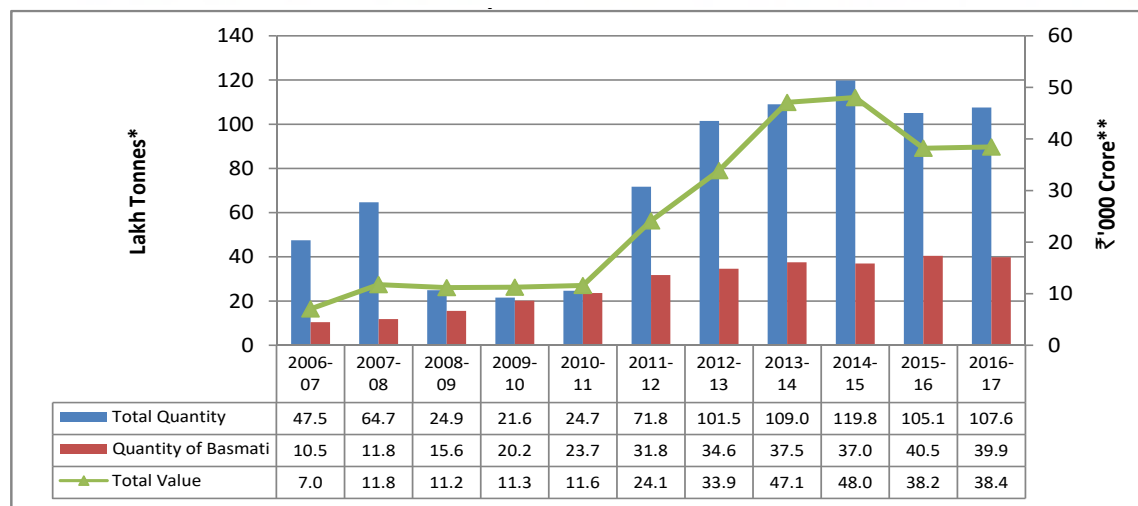
### Rice

- 4.2 Rice is one of the most prominent export commodities from India. As per USDA, global production of rice was 479.8 million tonnes in triennium ending (TE) 2016-17 and about 9 percent of the production was traded. China is the largest producer with a share of 29.8 percent, followed by India (22.6 percent). Other major producers of rice are Vietnam (5.6 percent), Indonesia (7.6 percent) and Bangladesh (7.1 percent). India is the largest exporter of rice with a share of 25.6 percent closely followed by Thailand (24 percent). Other major exporters are Vietnam (13.7 percent), Pakistan (7.7 percent) and Myanmar (6.6 percent). China is also the largest importer of rice with a share of 11.3 percent. Nigeria, Bangladesh, EU, Saudi Arabia, Iran and Philippines are other major importers of rice, accounting for about 22.7 percent of global rice imports.
- 4.3 Ban on export of non-basmati rice in India was lifted in September 2011. India has emerged as the largest exporter of rice since 2012-13, and this includes both basmati and non-basmati. Export of rice (Basmati + non-Basmati) was about 72 lakh tonnes in 2011-12 and increased to 120 lakh tonnes in 2014-15 but declined to 108 lakh tonnes in 2016-17, due to fall in non-basmati exports. Basmati rice recorded a notable increase in export during 2015-16 from 37 lakh tonnes in 2014-15 to 40.5 lakh tonnes in 2015-16 and is about 40 lakh tonnes in 2016-17. The country's export of rice (Basmati + non-Basmati) from 2006-07 to 2016-17 is shown in Chart 4.2.

# Price Policy for Kharif Crops



**Chart 4.2: India's Export of Rice, 2006-07 to 2016-17**

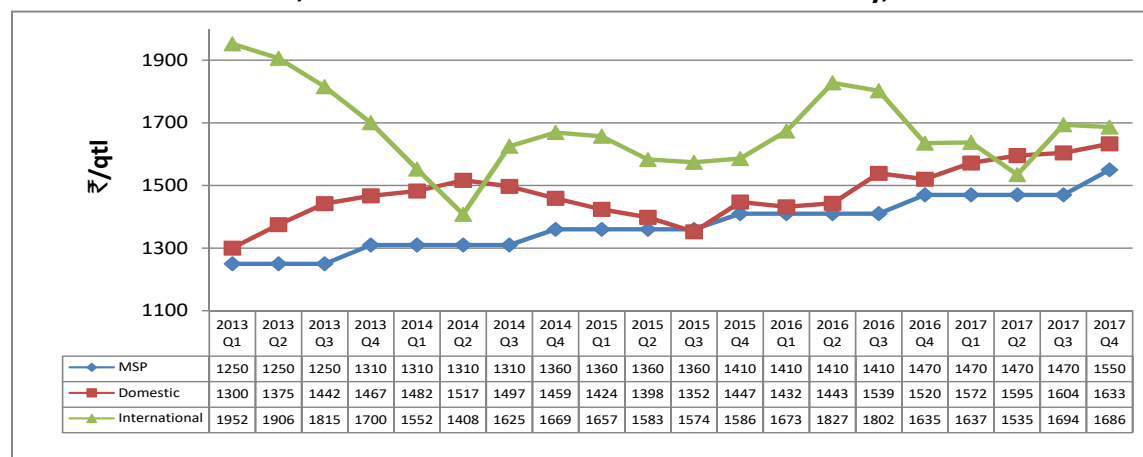


Note: \* 1 lakh =100000 \*\*1 crore =10000000

Source: DGCIS

4.4 Chart 4.3 below reveals that domestic wholesale prices of rice were generally lower than its international prices during 2013-2017, barring the second quarter of 2014 and 2017. This is a clear proof that Indian rice has remained export competitive barring a few occasions between period 2013 and 2017. Also, the domestic whole sale price of paddy, converted into rice, has been generally higher than MSP [except 2015 (Q<sub>3</sub>)]. MSP has been continuously lower than international prices during this period.

**Chart 4.3: MSP, Domestic and International Prices of Paddy, 2013 to 2017**



Note: 1. Rice (Thailand), 25 percent 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 Andhra Pradesh (AP), Assam, Chhattisgarh, Gujarat, Haryana, Kerala, Karnataka, Madhya Pradesh (MP), Maharashtra, Punjab, Tamil Nadu (TN), Uttar Pradesh (UP) and West Bengal (WB), which covered 77 percent of production in 2016-17.

Source: DES, DAC&FW for domestic wholesale prices and World Bank for International prices



## Price Policy for Kharif Crops

- 4.5 Export of non-basmati rice from India was banned on 15<sup>th</sup> October, 2007. However, the ban on export of rice was replaced with Minimum Export Price (MEP) of US \$425 per tonne on 31<sup>st</sup> October, 2007 which has been revised from time to time. Export of non-basmati rice was prohibited from Central Pool in March 2008 and also on private account in April, 2008 in view of tight position of rice in the domestic market. This ban continued till July 2011 when export of 10 lakh tonnes of non-basmati rice on private account was 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 domestic market, import of milled and semi-milled rice was allowed at zero percent import duty from 01.03.2008 to 01.04.2009. With some intermittent relaxations, import duty on rice remains at 70-80 percent. Such a high level of import duty on a water guzzling crop like rice may not be desirable and if import duty on rice is rationalized, it may support crop diversification into much needed crops like oilseeds and pulses.

### Maize

- 4.6 As per USDA, the global production of maize was 1024.3 million tonnes in TE2016-17, out of which about 13 percent was traded. USA is the largest producer of maize (corn) with a share of 35.8 percent followed by China (20.4 percent), Brazil (9.1 percent), EU (5.7 percent), Argentina (3.8 percent) and India (2.4 percent). USA is also the largest exporter with a share of 39.2 percent followed by Argentina (16.2 percent), Ukraine (15.1 percent) and Brazil (14 percent). EU (10.8 percent), Japan (10.7 percent), Mexico (10.3 percent), South Korea (6.5 percent) and Egypt (6.2 percent) are the major importers of maize, accounting for about 44.4 percent of the global imports.
- 4.7 Export of maize from India has increased substantially since 2006-07 till 2012-13 (Chart 4.4) which was made possible through increase in productivity as a result of introduction of single cross hybrid (SCH) variety in 2005. India's exports increased from 6.4 lakh tonnes in 2006-07 to about 48 lakh tonnes in 2012-13 and thereafter it started falling gradually for next two years and it plunged to 7 lakh tonnes in 2015-16 and further fell to 5.7 lakh tonnes mainly due to low world prices and fall in domestic production. It can be seen from chart 4.5 that domestic wholesale prices of maize have been lower than the international price till 2013 ( $Q_3$ ) but from 2013 ( $Q_4$ ), the domestic prices moderately moved higher than the international price and

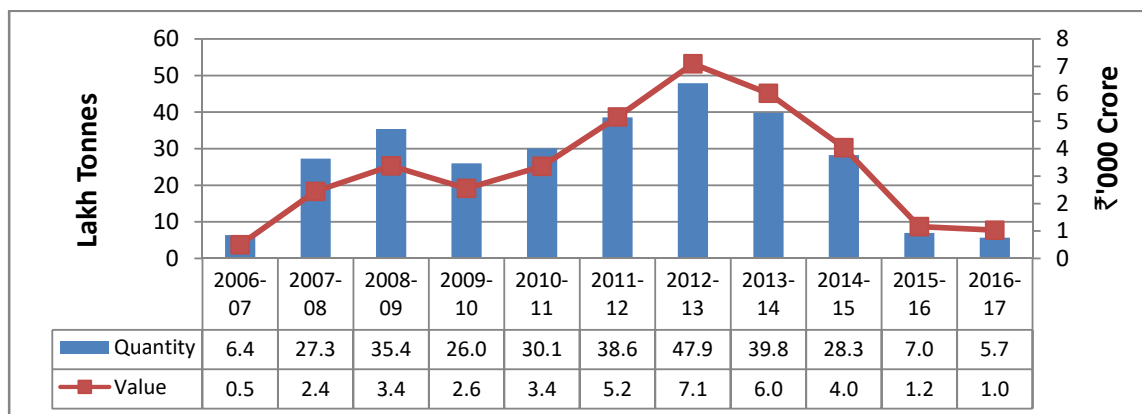


## Price Policy for Kharif Crops



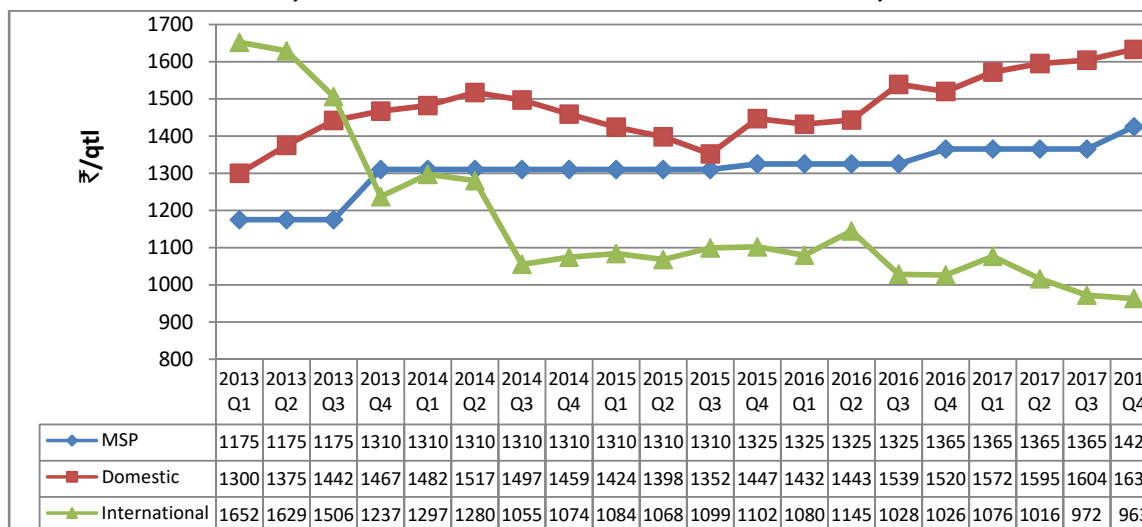
have continued the trend with the gap between two prices increasing thereafter till 2017. Currently, Indian maize is not export competitive, therefore, there is a need to find alternative uses of maize, within the country for consumption and for industrial purposes such as thickener of gravies, sauces, food fillers, baking & various uses in ice creams and in pharmaceuticals, textiles & paper industries, etc. MSP of maize is currently lower than the domestic wholesale price, but it is considerably higher than the international prices.

**Chart 4.4: India's Export of Maize, 2006-07 to 2016-17**



Source: DGCIS

**Chart 4.5: MSP, Domestic and International Prices of Maize, 2013 to 2017**



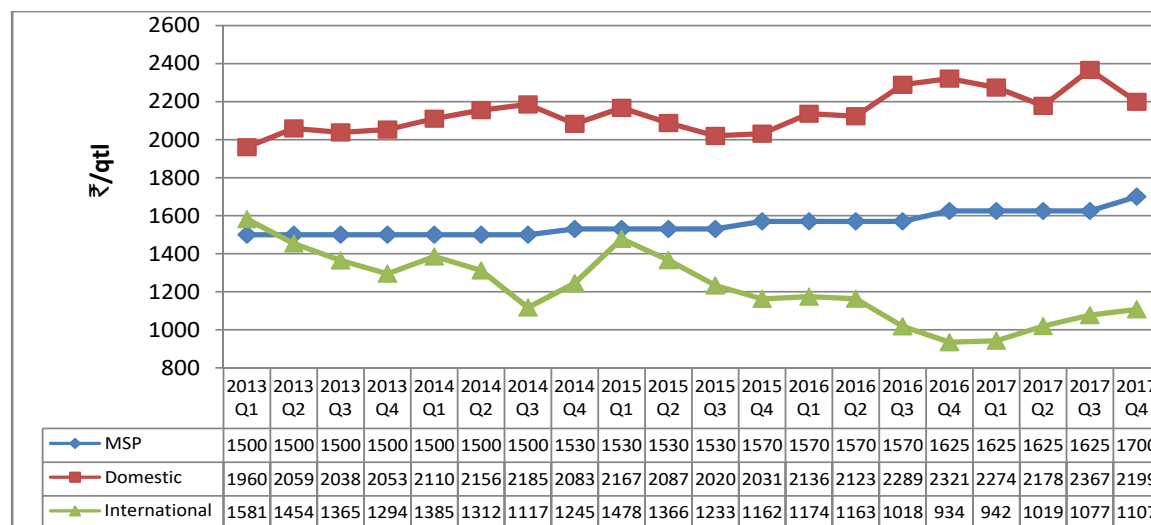
Note: 1.Maize (US), No. 2, yellow, f.o.b. US Gulf ports2. Weighted wholesale price of AP, Bihar, Gujarat, Karnataka, MP, Maharashtra, Punjab, Rajasthan, TN and UP, which cover 78 percent of production in 2016-17  
Source: DES, DAC&FW for domestic wholesale prices and World Bank for International prices.

## Price Policy for Kharif Crops

### Jowar

- 4.8 As per USDA, the global production of jowar has increased from 61.4 million tonnes in 2015-16 to 63.2 million tonnes in 2016-17. The global production of jowar was 63.6 million tonnes in TE2016-17 out of which 15.7 percent was traded. USA is the largest producer with a share of 19.3 percent followed by Nigeria (10.9 percent), Sudan (9.28 percent), Mexico (7.44 percent) and India (7.23 percent). USA is also the largest exporter with a share of 79.4 percent followed by Australia (7.1 percent) and Argentina (6 percent). China is the largest importer with a share of 68 percent followed by Japan (7.3 percent).
- 4.9 Import duty of 50 percent on jowar was levied in April 2000 and that has been raised to 80 percent. Quantitative ceiling on export of jowar was removed in March 2002 and its export continues to be free. During the period from 2006-07 to 2016-17, India's exports of sorghum & jowar combined have fluctuated between a low of 59.13 thousand tonnes in 2006-07 to a high of 286.82 thousand tonnes in 2012-13. Exports of sorghum & jowar combined have declined to 66.13 thousand tonnes in 2016-17. The domestic wholesale prices of jowar have been continuously higher than international prices during 2013 to 2017 (Chart 4.6). Freight advantage compared to USA allows India to export small quantities to countries like Pakistan, Saudi Arabia, UAE and Kenya. MSP of jowar has been continuously lower than the domestic wholesale prices but higher than the international prices from 2013 (Q<sub>2</sub>) onwards.

**Chart 4.6: MSP, Domestic and International Prices of Jowar, 2013 to 2017**



Source: DES, DAC&FW for domestic wholesale prices and World Bank for International prices.

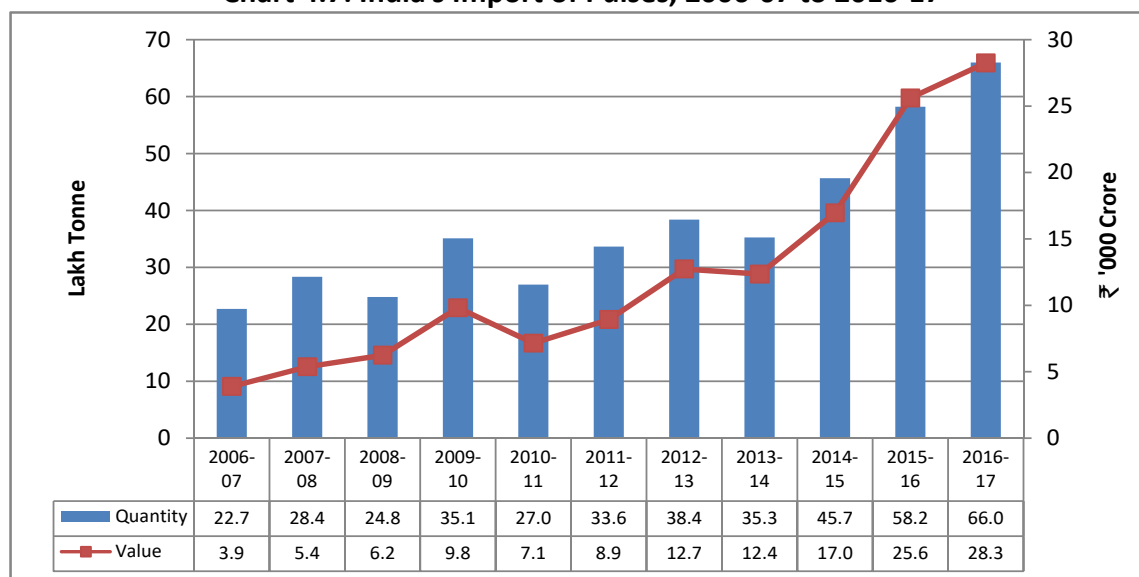
## Price Policy for Kharif Crops



### Pulses

- 4.10 Pulses such as lentils, beans, peas and chickpeas forms critical part of the general food basket in India. Promoting cultivation of pulses can help India overcome nutrition insecurity, improve soil fertility by nitrogen fixation and provide income support to farmers. Here we need to underline that instead of promoting exports of water intensive crops like paddy and sugarcane, considering the size of import bill of pulses, it would make better sense to encourage further production of pulses to curtail India's import bill by offering incentives to farmers to grow more pulses by rotating crops and bringing in high-yielding seeds and also with appropriate support price.
- 4.11 India is the largest producer, consumer and importer of pulses in the world. As per DGCIS, imports of pulses have increased from 22.7 lakh tonnes valued at ₹3900 crore in 2006-07 to 66 lakh tonnes valued at ₹28300 crore in 2016-17 (Chart 4.7). Peas constitute the largest share (48 percent) in pulses imports followed by chickpea (16.4 percent), lentils (12.5 percent) and Pigeon peas (10.6 percent) in 2016-17. As per FAO, the global production of pulses was 83.3 million tonnes in TE2016. India was the largest producer of pulses with a share of 20.4 percent followed by Canada (9.5 percent), Myanmar (7.63 percent), China (4.9 percent), Nigeria (3.5 percent), Russian Federation (3.4 percent) and Ethiopia (3.2 percent). Canada (lentils and peas), Myanmar (moong/urad) and Australia (chickpeas) are major exporters of pulses to India and account for about three-fourth of total imports in the country. Other importers are Russia, Mozambique, Kenya and USA.

**Chart 4.7: India's Import of Pulses, 2006-07 to 2016-17**



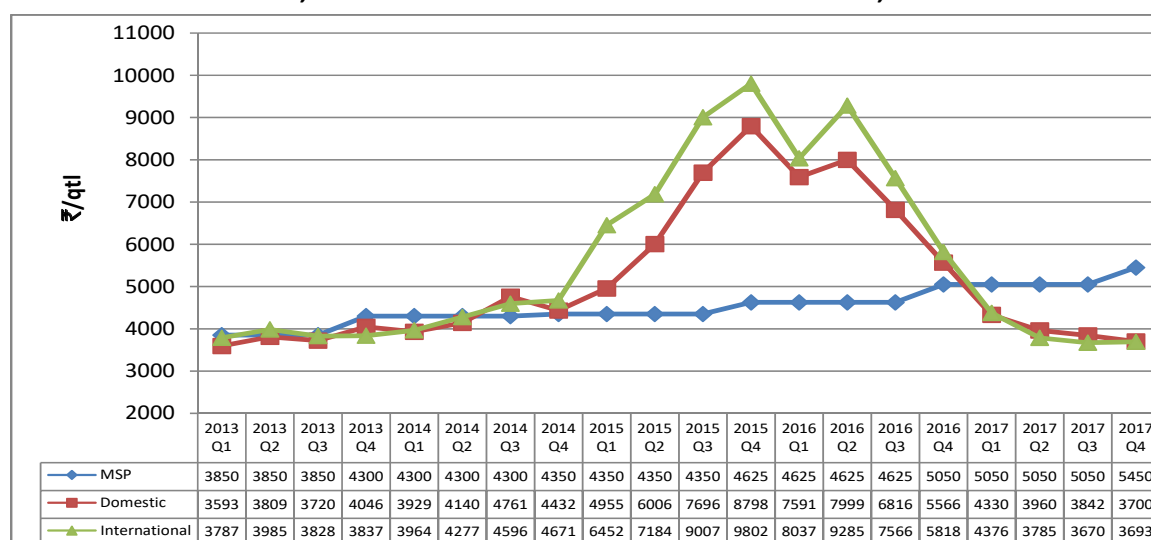
Source: DGCIS



## Price Policy for Kharif Crops

- 4.12 Import duty on pulses was brought down from 10 percent to zero percent in June 2006 but vide government notification dated 30.6.2017, 10 percent import duty was imposed on Tur (Arhar) due to steep decline in domestic prices as a result of increased domestic production, with a view to save domestic farmers. In August 2017, three pulses were brought under quantitative restrictions for imports. First, on 05.08.2017, 2 lakh MT annual (fiscal year) quota was imposed on tur dal, and on 21.08.2017, 3 lakh MT annual quota imposed on Urad and Moong due to increased production and domestic price falling below MSP. On 21.12.2017, Government imposed 30 percent import duty on Chickpeas and Lentils which was further increased to 60 percent on chickpeas in March 2018, due to oversupply and depressed prices in domestic market. Exports of pulses were banned in June 2006 initially for a period of six months which has now been freed for exports of all varieties of pulses including organic pulses without any quantitative ceiling, vide government notification dated 22.11.2017, subject to export shall be through Customs Electronic Data Interchange (EDI) Ports only. However, exports through Land Custom Stations (LCS) Indo-Bangladesh and Indo-Nepal border shall also be allowed subject to registration of quantity with DGFT.
- 4.13 The domestic wholesale prices of kharif pulses have been compared with international prices (C&F) during the period from 2013 to 2017 in the following charts. It may be observed from Charts 4.8 to 4.10 that the domestic wholesale prices of kharif pulses, viz., arhar, urad and moong have generally followed the trend of the international prices during 2013 to 2017 except last two quarters of 2017 for Moong. These trends clearly show impact of Indian imports on world markets. MSP of Arhar, Urad and Moong are currently higher than the domestic wholesale prices and also higher than the international prices.

**Chart 4.8: MSP, Domestic and International Prices of Arhar, 2013 to 2017**

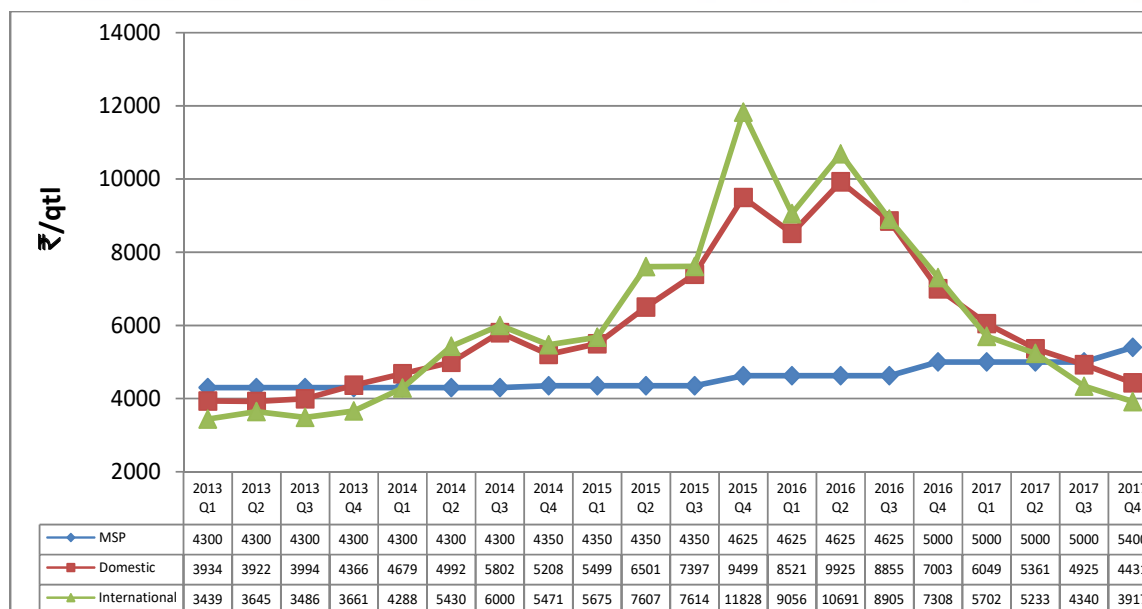


Source: DES, DAC&FW for domestic wholesale prices. DAC& FW and NAFED for International prices

# Price Policy for Kharif Crops

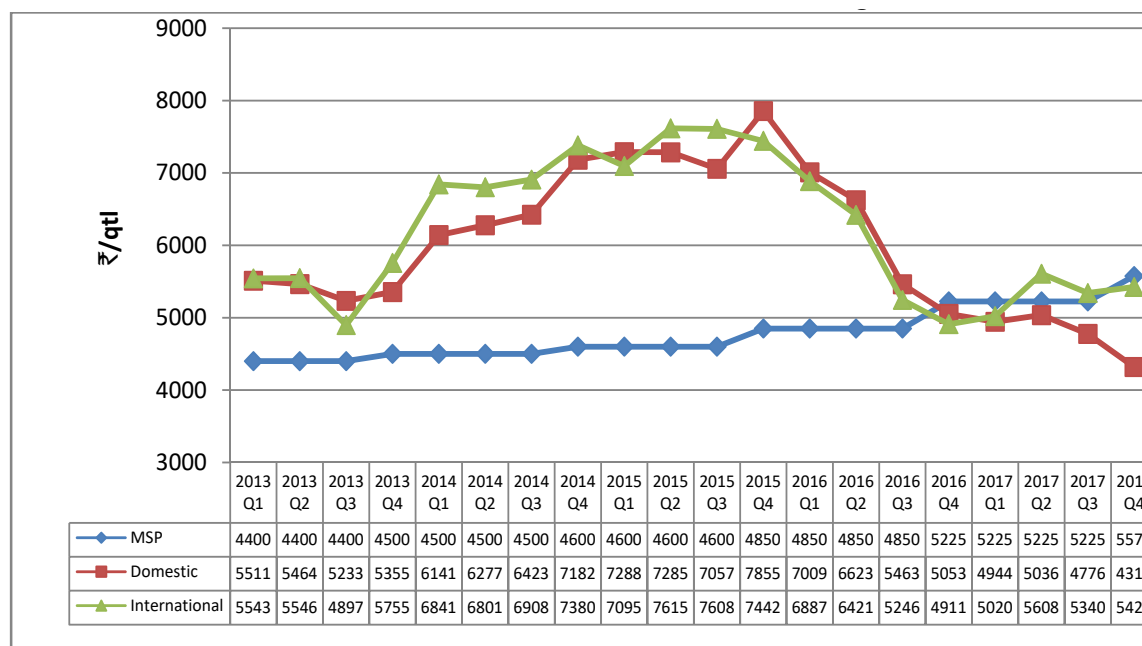


**Chart 4.9: MSP, Domestic and International Prices of Urad, 2013 to 2017**



Source: DES, DAC&FW for domestic wholesale prices. DAC&FW and NAFED for International prices

**Chart 4.10: MSP, Domestic and International Prices of Moong, 2013 to 2017**



Source: DES, DAC&FW for domestic wholesale prices. DAC&FW & NAFED for International prices



## Price Policy for Kharif Crops

### Oilseeds and Edible Oils

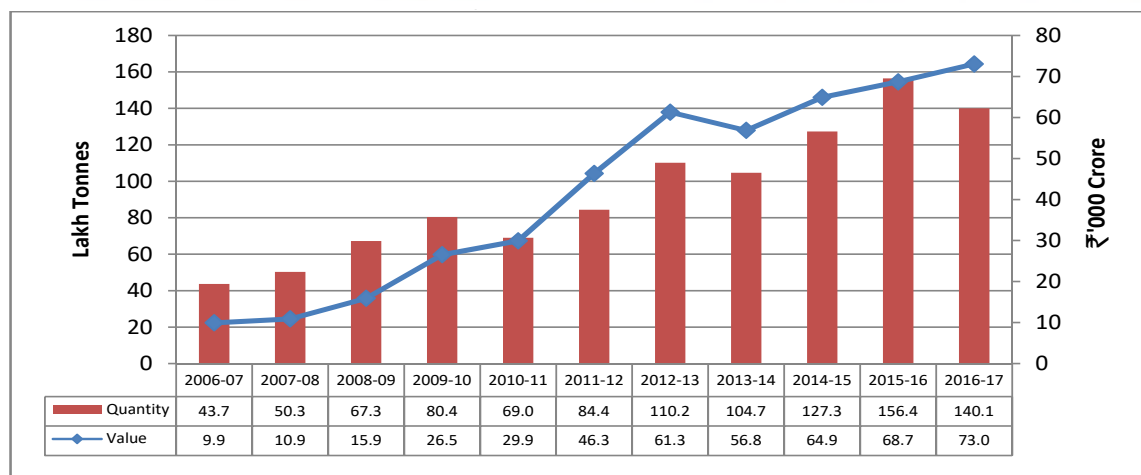
- 4.14 As per USDA, the global production of major oilseeds was 544 million tonnes in TE2016-17, out of which about 28.4 percent was traded. Soybean has the largest share in total oilseeds production with a share of 61.2 percent followed by rapeseed (12.2 percent), sunflower seed (8.3 percent), Peanuts (7.5 percent) and cottonseed (6.8 percent). USA is the largest producer with a share of 22.1 percent followed by Brazil (20.4 percent). Other major producers are Argentina (10.9 percent), China (9.6 percent) and India (6.6 percent). Brazil and USA export about 72.5 percent of global exports, with a share of 37.1 percent and 35.4 percent respectively. China and European Union account for 70.3 percent of global imports, with a share of 59.2 percent and 11.5 percent, respectively.
- 4.15 As per USDA, the global production of major edible oils was 181 million tonnes in TE 2016-17, out of which about 42.5 percent was traded. Palm oil has the largest share (34.3 percent) in total edible oils production followed by soybean oil (28.6 percent), rapeseed oil (14.8 percent) and sunflower seed oil (9.6 percent). Indonesia is the largest producer with a share of 21.8 percent followed by China (14.3 percent), Malaysia (11.2 percent) and EU (9.6 percent). Indonesia and Malaysia together account for nearly 58.7 percent of global exports with a share of 37 percent and 21.7 percent, respectively. India was the largest importer of edible oils with a share of 20.8 percent followed by EU (13.8 percent) and China (10.8 percent) in 2016-17. Demand for edible oils is going up in India, while domestic production is stagnant due to which dependence on imports to meet India's edible oil requirements is increasing year on year. Effective measures to increase domestic production are essential to reduce import dependency on edible oils. However, for the short or medium term, appropriate tariff levels on edible oils could be considered as a useful instrument.
- 4.16 As per DGCIS data, India's imports of edible oils have increased from 43.7 lakh tonnes valued at ₹ 9900 crore in 2006-07 to 140.1 lakh tonnes valued at ₹ 73000 crore in 2016-17 (Chart 4.11). Import 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. Import of edible oils in India was about 44.4 lakh tonnes in TE2006-07 that has increased to about 141.2 lakh tonnes in TE2016-17. Thus, there is an overall increase of 218 percent in import of edible oils in last decade. At present, India relies on imports for 70 percent of its edible oil consumption and increase in import duty in November 2017 is with a view to discourage imports and to lift domestic Oilseed prices and their availability for crushing in the domestic markets.



## Price Policy for Kharif Crops



**Chart 4.11: India's Import of Edible Oils, 2006-07 to 2016-17**



Source: DGCIS, Kolkata

### Soybean including Oil and Meal

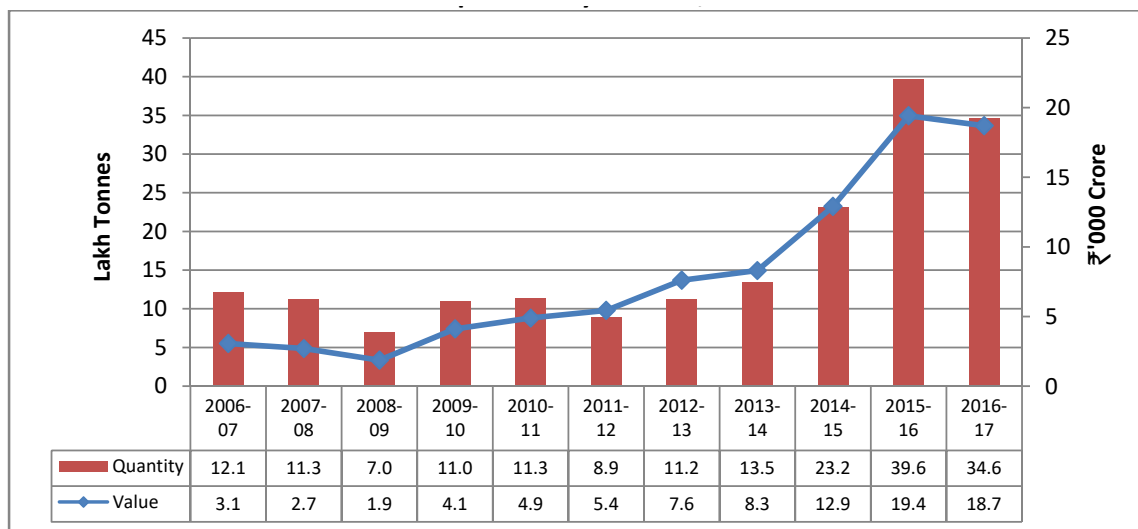
- 4.17 As per USDA, the global production of soybean was 328.3 million tonnes during TE2016-17, out of which about 42 percent was traded. Global production of soybean has increased from 313.8 million tonnes in 2015-16 to 351.3 million tonnes in 2016-17. USA is the largest producer of soybean with a share of 33.3 percent, followed by Brazil (32.5 percent) and Argentina (16.5 percent). India's share in global production of soybean is only 3.3 percent. Brazil and USA contribute 83 percent of total world exports with a share of 43 percent and 40 percent respectively. China and EU import about three-fourth of total world imports of soybean with a share of 65 percent and 9.3 percent respectively. World production of soybean is increasing every year, leading to significant drop in global soybean and soybean oil prices which are much lower than domestic prices.
- 4.18 The global production of soybean oil was 51.6 million tonnes in TE2016-17, out of which 21 percent was traded. China is the largest producer with a share of 29.3 percent followed by USA (18.6 percent), Argentina (15.6 percent) and Brazil (14.6 percent). These top four producers account for about 78 percent of total world production of soybean oil. India's share in global production of soybean oil is only 3.1 percent. Argentina, Brazil and USA account for nearly 68 percent of total world exports with a share of 47.5 percent, 10.9 percent and 10.2 percent, respectively. India is the largest importer with a share of 32.3 percent followed by Bangladesh (7.6 percent). Import of soybean oil has increased at the highest rate among all other oils in last five years.
- 4.19 The global production of soybean meal was 217 million tonnes in TE2016-17, out of which 28.5 percent was traded. China is the largest producer of soybean meal with

## Price Policy for Kharif Crops

a share of 31 percent followed by USA (18 percent), Argentina (14.7 percent) and Brazil (14 percent). India's share in global production of soybean meal is 3.3 percent. Argentina, Brazil and USA export nearly 86 percent of total world exports with a share of 48.5 percent, 21.3 percent and 16.3 percent, respectively. EU is the largest importer of soybean meal with a share of 31.5 percent followed by Vietnam (7.7 percent) and Indonesia (7.1 percent). Export of soybean meal picked up in 2016-17 because of low soybean prices in India.

- 4.20 India exports small quantities of soybean. However, the country imports soybean oil to meet domestic demand. Import of soybean oil has increased from 12.1 lakh tonnes in 2006-07 to 34.6 lakh tonnes in 2016-17 (Chart 4.12). Import of soybean oil have significantly increased in 2014-15 and 2015-16 due to decline in domestic production and international price of soybean oil during this period. Import of soybean oil has declined in 2016-17 to 34.6 lakh tonnes, in comparison to 39.6 lakh tonnes in 2015-16 which is likely to decline further due to increase in import duty in November 2017.

**Chart 4.12: India's Import of Soybean Oil, 2006-07 to 2016-17**



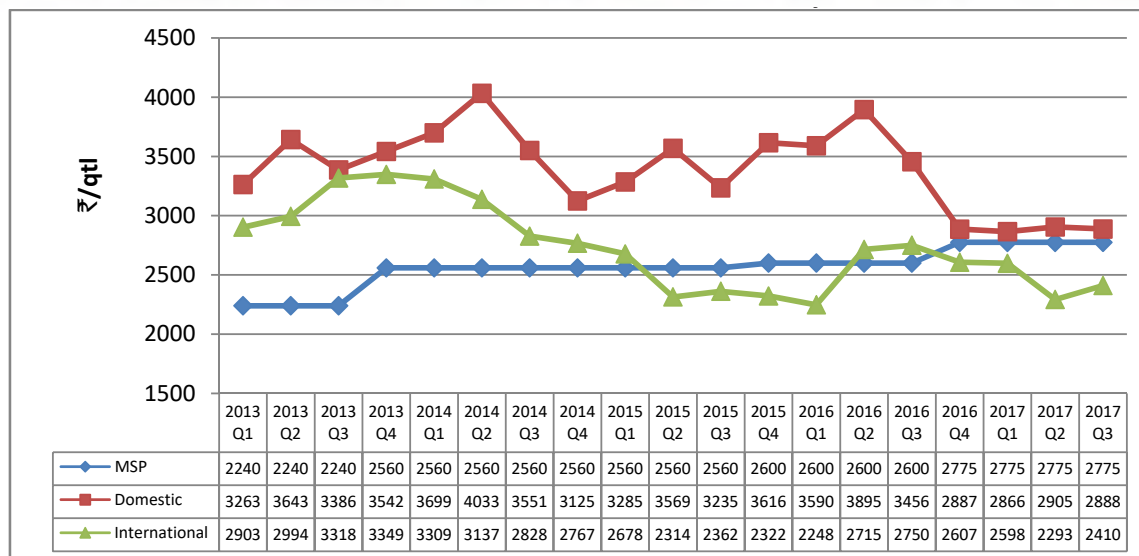
Source: DGCIS

- 4.21 Domestic wholesale prices of soybean have been continuously higher than the international prices from 2013 to 2017 ( $Q_3$ ) (Chart 4.13). MSP of soybean has been continuously lower than domestic wholesale prices, whereas it is currently higher than the international prices since 2016 ( $Q_4$ ). Domestic wholesale prices of soybean dropped from 2016 ( $Q_3$ ) onwards and now are stable slightly above MSP since 2017 ( $Q_1$ ). Due to increase in world production of soybean, there is significant decline in international prices of soybean and are constantly lower than India's domestic wholesale prices.

## Price Policy for Kharif Crops



**Chart 4.13: MSP, Domestic and International Prices of Soybean, 2013 to 2017**

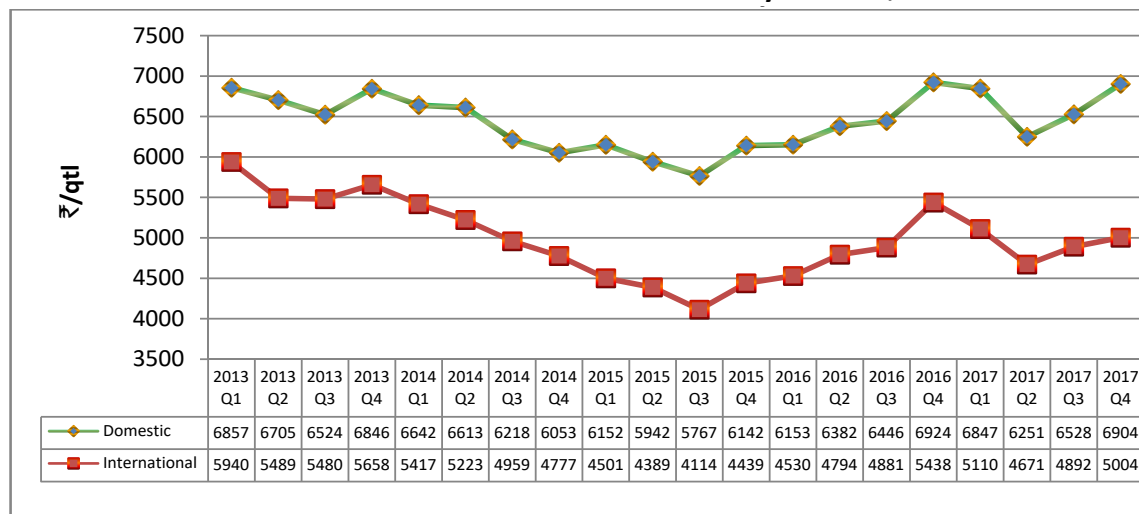


Note: 1. Argentina Up River, FOB Crude: IGC  
2. Weighted wholesale price of MP, Maharashtra, and Rajasthan, which cover 93 percent of production in 2016-17.

Source: DES, DAC&FW for domestic wholesale prices and USDA for international prices.

4.22 Domestic wholesale price of soybean oil has been continuously higher than international price during 2013 to 2017 and the gap has widened since 2013 (Chart 4.14), thereby increasing imports. Since 2017(Q<sub>2</sub>), both domestic and international prices of soybean are moving upward. However, there is a broad consistency in the trends of domestic and international prices.

**Chart 4.14: Domestic and International Prices of Soybean Oil, 2013 to 2017**



Note: Argentina Up River, FOB Crude: IGC

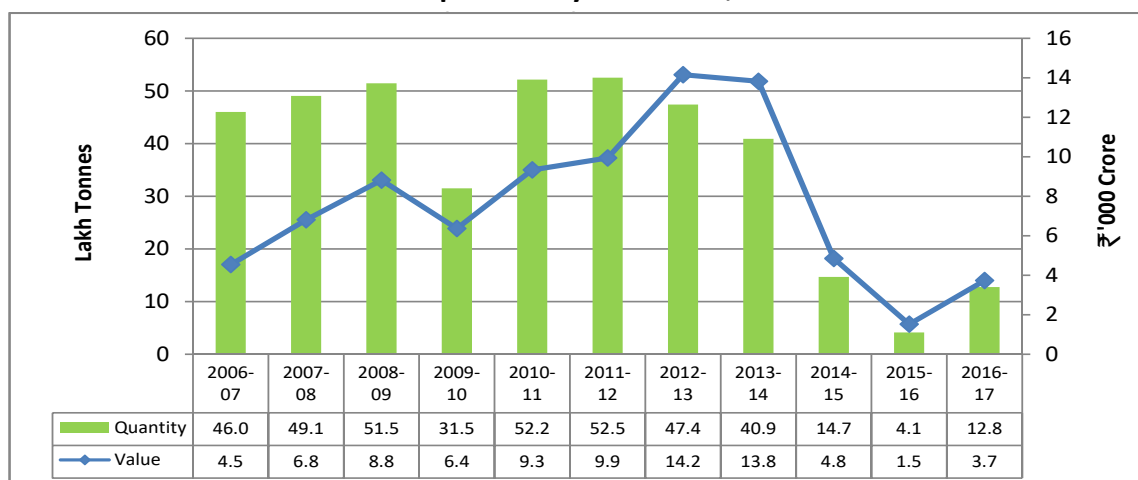
Source: The Solvent Extractors Association of India for domestic wholesale prices and USDA for International Prices



## Price Policy for Kharif Crops

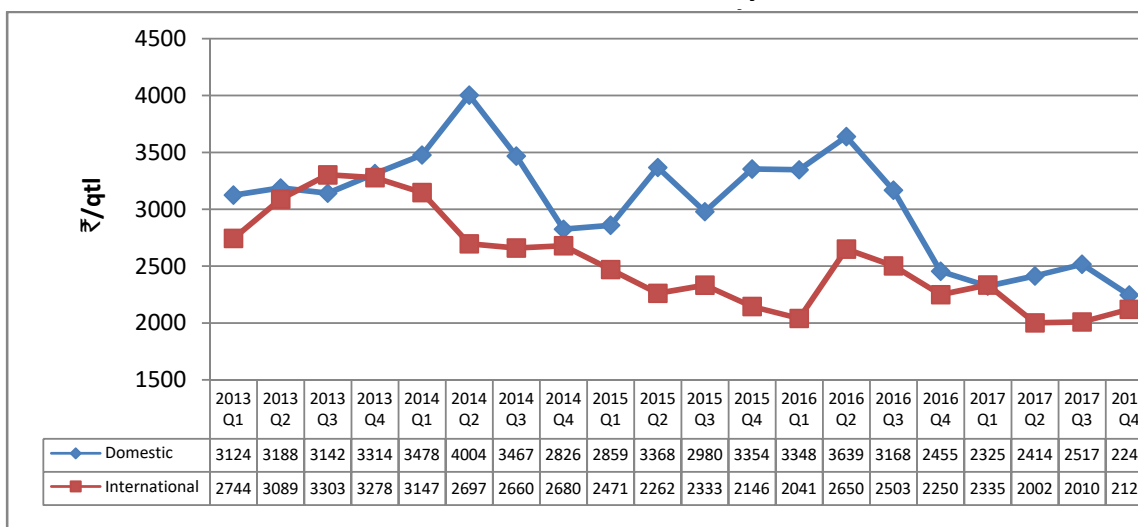
4.23 As per DGCIS, India's exports of soybean meal have increased from 46 lakh tonnes in 2006-07 to a high of 52.5 lakh tonnes in 2011-12 but it declined to only 4.1 lakh tonnes in 2015-16 before rising again to 12.8 lakh tonnes in 2016-17 (Chart 4.15). Bangladesh, Japan, France, Nepal and Myanmar were major destinations for India's export during 2016-17. Domestic wholesale prices of soybean meal have been continuously higher than international prices from 2013 (Q<sub>4</sub>) to 2017 except 2017 (Q<sub>1</sub>) (Chart 4.16), indicating that Indian exports are not competitive in the global market.

**Chart 4.15: India's Export of Soybean Meal, 2006-07 to 2016-17**



Source: DGCIS

**Chart 4.16: Domestic and International Prices of Soybean Meal, 2013 to 2017**



Source: The Solvent Extractors Association of India for domestic prices and USDA for international prices

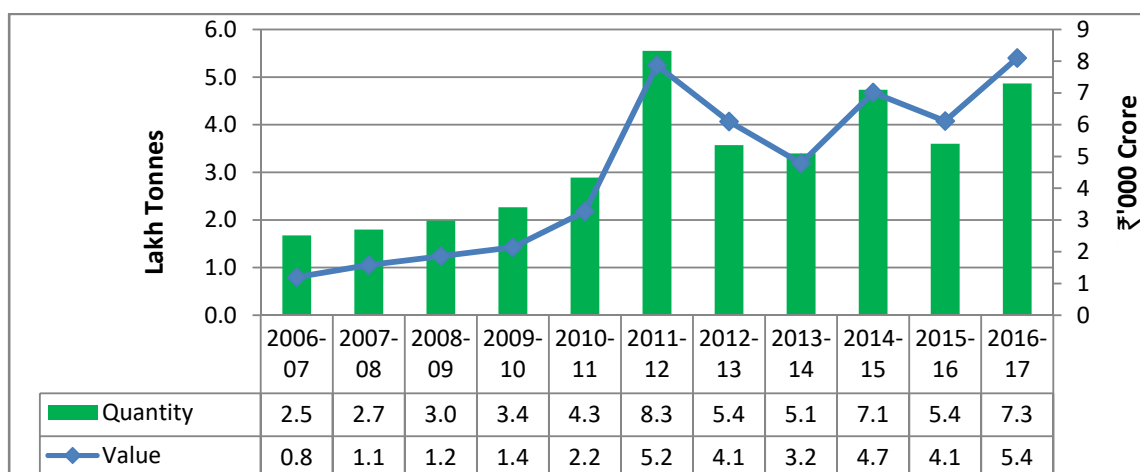
## Price Policy for Kharif Crops



### Groundnut

4.24 As per USDA, global production of groundnut was 41.21 million tonnes in TE2016-17, out of which 8.5 percent was traded. China, India, Nigeria and USA produce more than two-thirds of total world production with a share of 40 percent, 15.7 percent, 7 percent and 5.9 percent respectively. India's exports of groundnut have increased from 2.5 lakh tonnes in 2006-07 to 8.3 lakh tonnes in 2011-12 (Chart 4.17). However, export of groundnut declined subsequently to 5.4 lakh tonnes in 2015-16 before rising again to 7.3 lakh tonnes in 2016-17.

**Chart 4.17: India's Export of Groundnut, 2006-07 to 2016-17**



Source: DGCIS

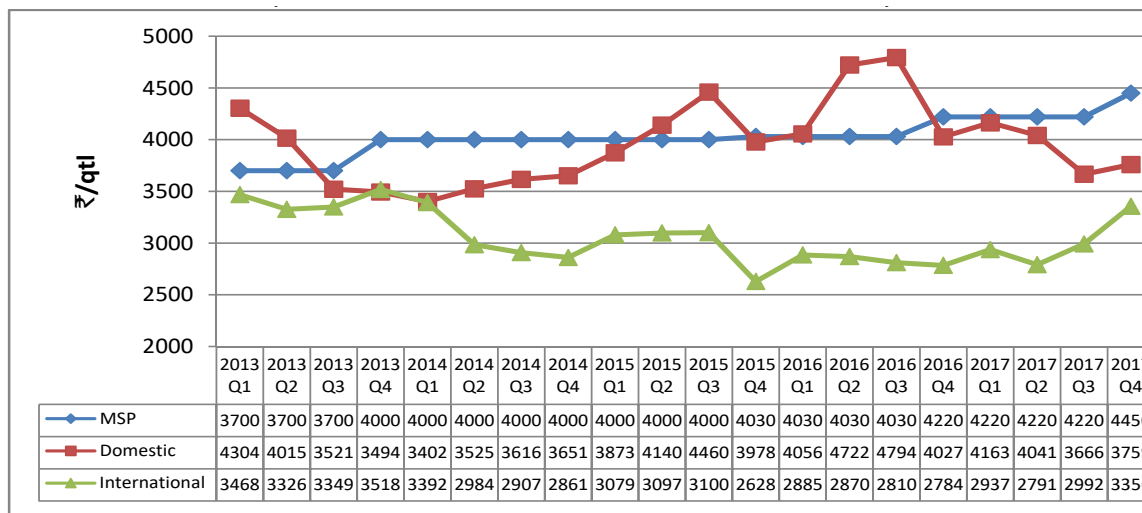
4.25 Global production of groundnut oil was 5.6 million tonnes in TE2016-17 out of which only about 4.2 percent was traded. It shows that most of groundnut oil is produced for self-consumption. China and India produce more than two-thirds of the total world production with a share of 48.8 percent and 21.1 percent respectively. China, EU and USA are the main importers of groundnut oil, whereas India, China, EU and USA export it in small quantities.

4.26 During 2013 to 2017, domestic prices of groundnut have been higher than international prices, except 2013 (Q<sub>4</sub>) (Chart 4.18). India's exports of groundnut are mainly to South-East Asian countries, Gulf countries and to neighbouring countries like Nepal, Pakistan and Sri Lanka, where India has freight advantage in comparison to other competitors like Argentina and USA. MSP of groundnut which was lower than domestic prices during first two quarters of 2013 and during 2015 (Q<sub>2</sub>) to 2016 (Q<sub>3</sub>), except 2015 (Q<sub>4</sub>), has become higher than domestic as well as international prices since then. Domestic price of groundnut oil has been continuously higher

## Price Policy for Kharif Crops

than international price since 2014 (Q<sub>4</sub>) onwards till 2017 (Q<sub>1</sub>) and thereafter it fell below the international price (Chart 4.19).

**Chart 4.18: MSP, Domestic and International Prices of Groundnut, 2013 to 2017**

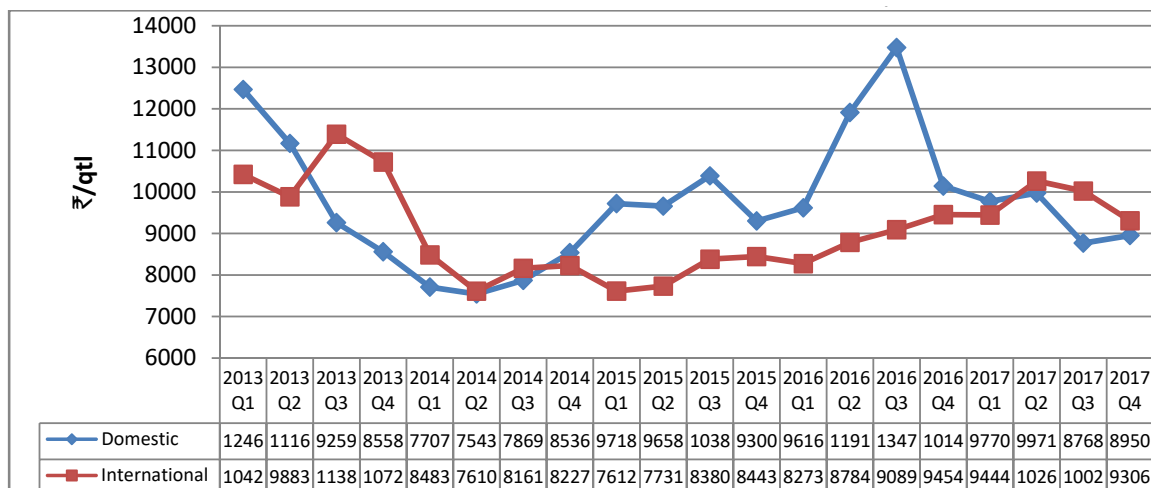


Note: 1. US Farm Price, in Shell

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 prices.

**Chart 4.19: Domestic and International Prices of Groundnut Oil, 2013 to 2017**



Note: South East Mills FOB; Tank Cars Crude; USDA

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

4.27 Global production of sunflower seed, as per USDA, was 43.9 million tonnes in TE2016-17, out of which only 5.1 percent was traded. Ukraine and Russia produce



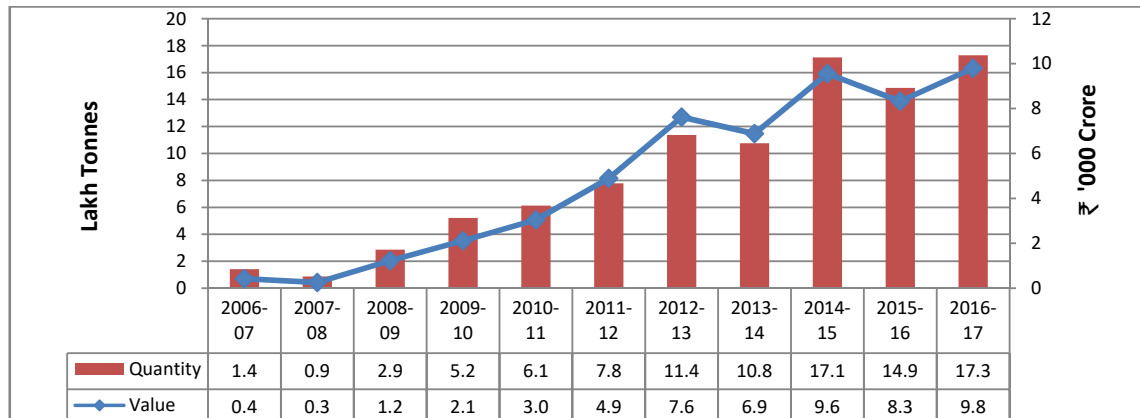
## Price Policy for Kharif Crops



more than half of total world production with a share of 32 percent and 22.8 percent respectively. Other major producers are EU (18 percent) and Argentina (7.1 percent). Russia is the largest exporter with a share of 14.8 percent followed by EU (14.2 percent) and Ukraine (7.7 percent). EU is the largest importer with a share of 31.8 percent followed by Turkey (27.8 percent) and Russia (5 percent). Global production of sunflower oil was 16.8 million tonnes in TE2016-17, out of which 55 percent was traded. Ukraine, Russia and EU produce about three fourths of total world production with a share of 34.9 percent, 23 percent and 18.3 percent respectively. Ukraine and Russia export about three-fourths of the global exports with a share of 56.2 percent and 20.9 percent respectively. EU is the largest importer with a share of 20.3 percent followed by Turkey (8.8 percent).

- 4.28 As per DGCIS, India exports small quantities of sunflower seed, whereas its imports are nil. Import of sunflower oil have increased from a small quantity of 1.4 lakh tonnes in 2006-07 to 17.1 lakh tonnes in 2014-15 (Chart 4.20), before declining to 14.9 lakh tonnes in 2015-16 and again rising to 17.3 lakh tonnes in 2016-17.

**Chart 4.20: India's Import of Sunflower Oil, 2006-07 to 2016-17**



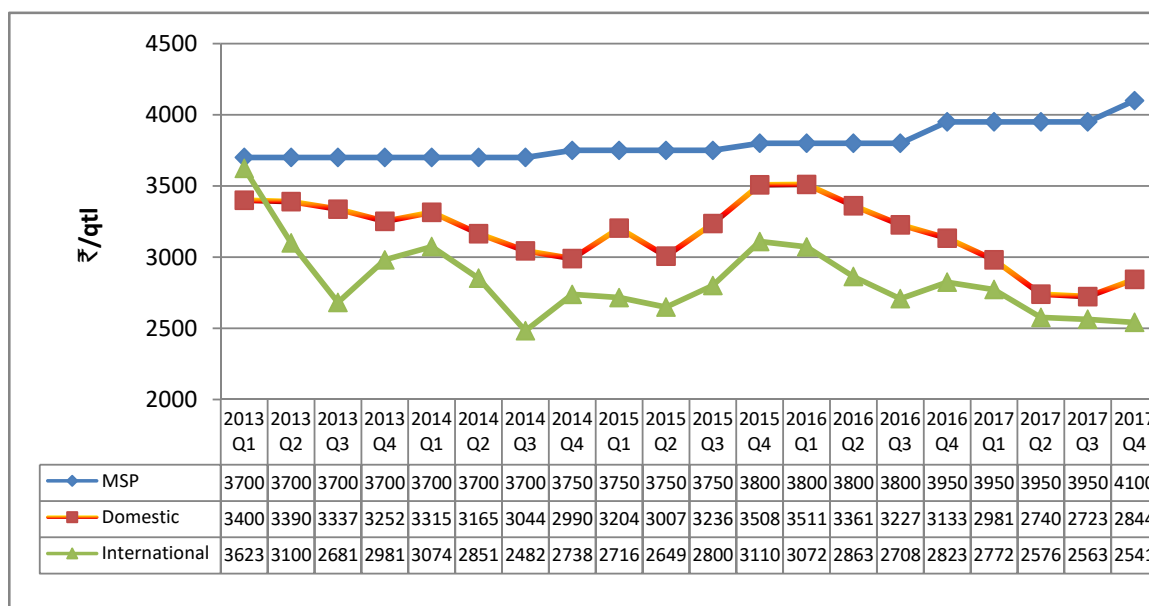
Source: DGCIS

- 4.29 Domestic wholesale price of sunflower seed has been continuously higher than the international prices from 2013 ( $Q_2$ ) onwards and following the trend more or less similar to the international prices (Chart 4.21). However, MSP of sunflower seed is higher than the domestic as well as international prices and has been increasing gradually especially from 2016 ( $Q_3$ ) onwards whereas the domestic wholesale prices and international prices are declining since 2016 ( $Q_1$ ). Also, domestic wholesale prices of sunflower oil have been continuously higher than the international prices from 2013 ( $Q_2$ ) to 2017 (Chart 4.22). Production of sunflower seed/oil increased mainly in the major producing countries, viz., Ukraine, Russia and EU countries due

## Price Policy for Kharif Crops

to favourable weather conditions which led to decline in prices of these commodities during this period.

**Chart 4.21: MSP, Domestic and International Prices of Sunflower Seed, 2013 to 2017**

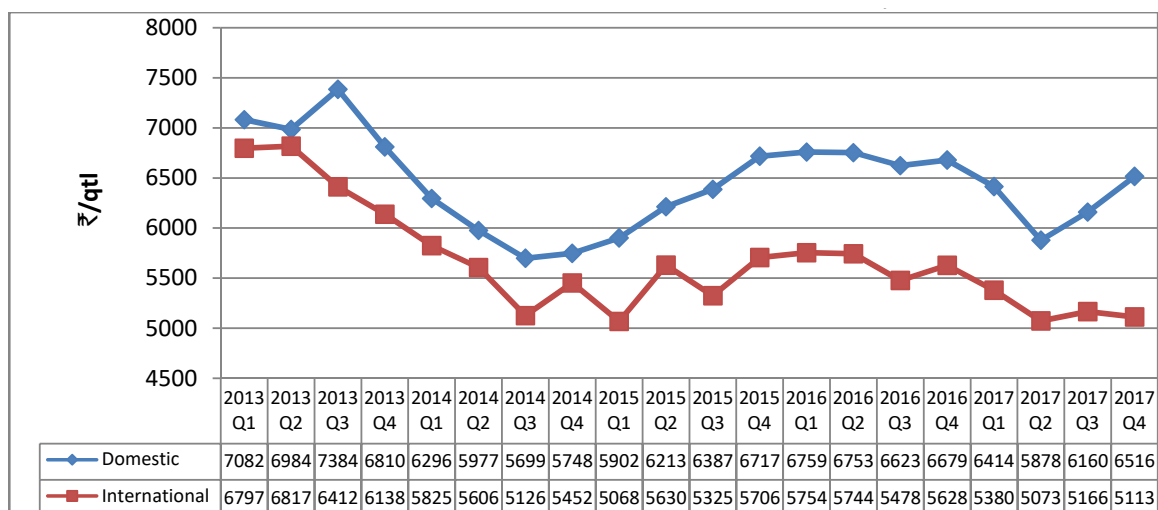


Note: 1. Rotterdam/ Amsterdam CIF; EU; Oil World.

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

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

**Chart 4.22: Domestic and International Prices of Sunflower Oil, 2013 to 2017**



Note: EU FOB NW Euro; Oil World.

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

## Price Policy for Kharif Crops



### Trade Policy of Oilseeds/Edible Oils

- 4.30 Exports of oilseeds are free while imports of oilseeds are under OGL with an import duty of 30 percent since January, 2003 but on 17.11.2017, Government increased import duty to 45 percent only on soybean, subjects to quarantine condition. Edible oils were under negative list of imports till April, 1994 when import of palm olein was placed under OGL subject to 65 percent import duty. Subsequently, imports of other edible oils were also placed under OGL and import duty was 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 vide notification dated 30.06.2017, Government increased import duty on crude soybean oil from 12.5 percent to 17.5 percent and on crude and refined palm oil from 7.5 percent to 15 percent and from 15 percent to 25 percent respectively. On 11.08.2017, government further increased import duty on crude edible oils soybean to 30 percent, palm oil to 30 percent, sunflower and rapeseed/mustard to 25 percent while on edible refined oils soybean to 35 percent, palm oil to 40 percent, sunflower and rapeseed/mustard to 35 percent in order to defend the falling domestic oil prices.
- 4.31 In order to improve self-sufficiency in edible oils, holistic changes in the import duty structure of edible oils have been introduced since November 2017 onwards wherein the import duty of crude palm oil of edible grade has been raised from 15 percent to 30 percent and on refined palm oil of edible grade from 25 percent to 40 percent. Import duty on crude soybean oil has been increased to 30 percent from 17.5 percent, while refined soybean oil has been raised to 35 percent from the current 20 percent. Similarly, the import duty on crude sunflower oil has been increased to 25 percent from 12.5 percent, while that on refined sunflower oil has been increased to 35 percent from 20 percent. Also, the import duty on soybean oilseeds has been increased to 45 percent from 30 percent.
- 4.32 Export of edible oils was initially prohibited for a period of one year in March, 2008 which was extended from time to time. However, there are certain exemptions, namely (a) castor oil, (b) coconut oil from all Electronic Data Interchange (EDI)



## Price Policy for Kharif Crops

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	80	OGL	Zero
			(Semi-milled or Wholly milled rice) - 70	70		
2	Maize	OGL	50	70	OGL	Zero
3	Jowar	OGL	80	80	OGL	Zero
B-Pulses						
4	Tur	OGL	10	100	OGL	Zero
5	Urad	OGL	Zero	100	OGL	Zero
6	Moong	OGL	Zero	100	OGL	Zero
C-Oilseeds/Edible Oils						
7	Soybeans	OGL	45	100	OGL	Zero
8	Groundnut	OGL	30	100	OGL	Zero

## Price Policy for Kharif Crops



Sl. No.	Crop/ Commodity	Trade Policy				
		Import Policy			Export Policy	
		OGL/ Import ban	Import duty (%)	Bound Duty (%)	OGL/ Export ban	Export duty (%)
9	Sunflower seed	OGL	30	100	OGL	Zero
10	Soybean oil (crude)	OGL (Tariff value –US\$ 831 per metric tonne)**	30	45	Export ban*	
11	Groundnut oil (crude)	OGL	12.5	300	Export ban*	
12	Sunflower oil (crude)	OGL	25	300	Export ban*	
13	Soybean Oil (refined)	OGL	35	45	Export ban*	
14	Groundnut oil (refined)	OGL	20	300	Export ban*	
15	Sunflower oil (refined)	OGL	35	300	Export ban*	
16	Soybean meal	OGL	Zero	100	OGL	Zero
<b>D- Commercial Crops</b>						
17	Cotton	OGL	Zero	100	OGL	Zero

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

\*\* As on 15/02/2018

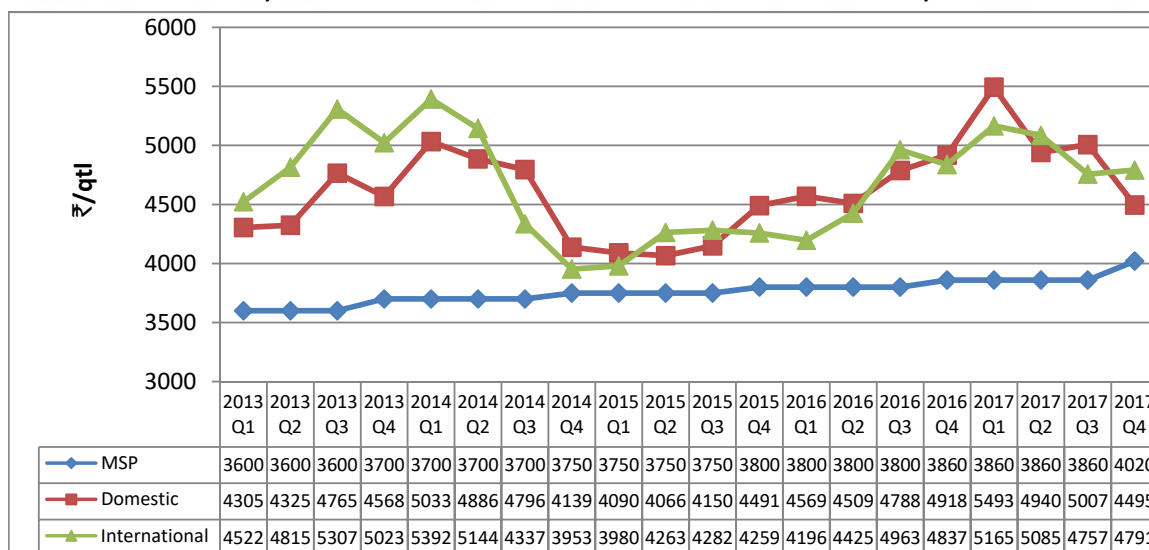
Source: CBEC and DGFT

### Cotton

4.33 Global production of cotton has increased from 21 million tonnes in 2015-16 to 23 million tonnes in 2016-17. As per USDA, global production of cotton was 23.4 million tonnes in TE2016-17, out of which about 33 percent was traded. India and China produce more than half of total world production of cotton with a share of 25.3 percent and 21.3 percent, respectively. Other major producers are USA (16.1 percent), Pakistan (7.2 percent) and Brazil (6.5 percent). USA is the largest exporter with a share of 40 percent followed by India (12.2 percent), Australia (10 percent) and Brazil (7.5 percent). Bangladesh is the largest importer with a share of 17.8 percent followed by Vietnam (14.6 percent), China (13.4 percent) and Turkey (9.8 percent).

## Price Policy for Kharif Crops

**Chart 4.23: MSP, Domestic and International Prices of Raw Cotton, 2013 to 2017**



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, DAC&FW for domestic wholesale prices and World Bank for international prices.

- 4.34 Domestic wholesale and international prices of raw cotton have been continuously higher than the MSPs from 2013 (Q<sub>1</sub>) onwards (Chart 4.23). International prices were higher than domestic wholesale prices till 2014(Q<sub>2</sub>) and remained below till 2016 (Q<sub>2</sub>) except for 2015 (Q<sub>2</sub>, Q<sub>3</sub>) and kept on crossing each other till 2017(Q<sub>3</sub>). In 2017 (Q<sub>4</sub>), international price was once again above domestic prices.
- 4.35 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, 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 export was placed on restricted category in May, 2010 but export was allowed at zero export duty in August, 2010 with the restrictions that the contracts for exports are registered with DGFT prior to shipment. Cotton export is 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 import of cheaper cotton. However, import duty was reduced to zero in July 2008, and it continues to be at the same level. India is the second largest exporter of cotton in the world. During the period from 2006-07 to 2016-17, India's export

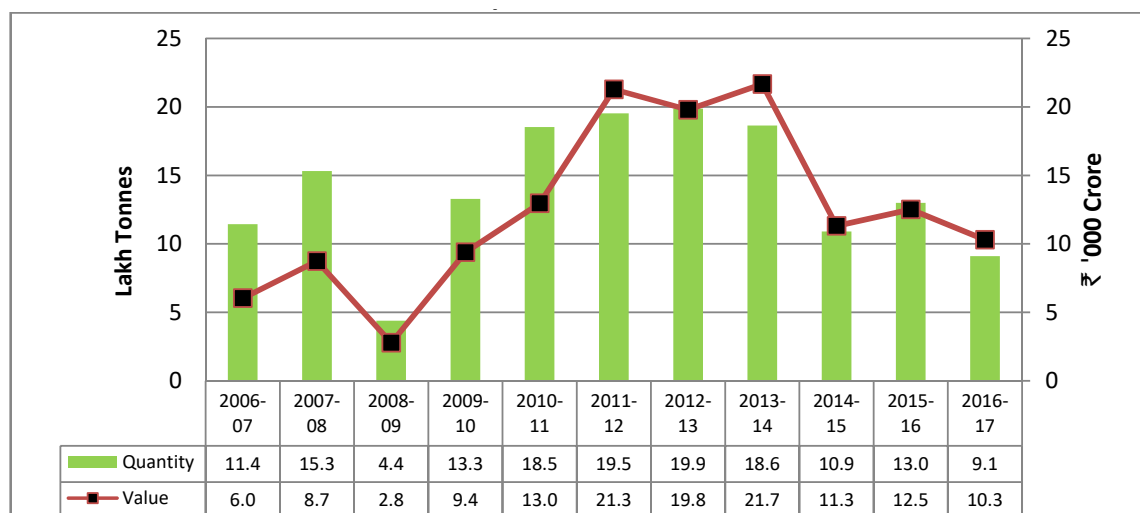


## Price Policy for Kharif Crops



of cotton fluctuated between a low of 4.4 lakh tonnes in 2008-09 to a high of 19.9 lakh tonnes in 2012-13 (Chart 4.24). 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 and again declined in 2016-17 to 9.1 lakh tonnes. The main reason for decline in exports of cotton in 2014-15 was steep decline in import demand from China due to slowdown in Chinese economy and their consequent intend to reduce cotton reserve stocks.

**Chart 4.24: India's Export of Cotton, 2006-07 to 2016-17**



Source: DGCIS

### Trade Outlook

4.36 According to the February 2018 report of Agricultural Marketing Information System's (AMIS) Market Monitor and Food Outlook November 2017, world trade in all cereals is predicted to be 404 million tonnes in 2017-18, which is only 1.8 million tonnes (0.4 percent) below the previous season's record volume. Trade in rice in 2018 is expected to decline by 2 percent to 46 million tonnes. Rice inventories in 2018 are expected to exceed by 1 percent due to higher than anticipated inventories in China. Trade in all the major cereals is expected to contract except maize. World trade in oils/fats and meals/cakes are anticipated to keep expanding in 2017/18 though the pace of expansion may be slow. Cotton trade is expected to be in the range of previous year's level despite more production, subdued demand from China and a shift to trading cotton yarn and fabrics rather than raw cotton, which emerged over the past few years, is expected to continue but in longer run it is expected to rise. According to the FAO, Food Price Index (FPI) which was 174.6 points in 2017, up 8.2 percent from the previous year represented the highest annual average since 2014.



## Price Policy for Kharif Crops

The annual average price index of cereals and oils registered a modest increase of 3.3 percent and 3.1 percent respectively over 2016 annual average prices. However, in the month of February 2018, significant increase occurred only in cereal prices index (2.9 percent) while oil prices declined by (3.1 percent) over previous month. Currently, cotton prices are ruling strong but are expected to get softened in medium term due to increased supply and subdued demand.

- 4.37 India's agri-exports have increased from 168.1 thousand crore in 2016-17 (April-December) to 190.6 thousand crore in 2017-18 (April-December) at a growth rate of 13.4 percent. Agri-imports have increased from 135.2 thousand crore to 139.2 thousand crore with a growth rate of 2.9 percent during the corresponding period. If we compare the data of 2014-15 and 2015-16 (April to December), this is a good sign for agri-trade segment, as our exports registered a significant increase and imports increased substantially at a lower level. This happened mainly due to increased exports of oil meals (63.4 percent), castor oil (56.9 percent), marine products (23.3 percent) and cashew (25.3 percent) while slow growth in imports due to lower import in pulses and lower prices of vegetable oils. Major exports that declined during 2017-18 (April-December) are sugar (33.7 percent) and fresh vegetables (18.6 percent). However, no significant increase occurred in any imported commodities. India's agri-exports in 2017-18 are likely to increase compared with 2016-17 mainly due to demand for agricultural commodities in global economy. The export of sugar is expected to decrease due to lower international prices and export duty on sugar in India. Agri-imports in 2017-18 are likely to increase moderately by about 5 percent due to widening of gap between production and consumption of edible oils, and low imports of pulses. There has been increase in domestic demand for better quality of wheat and long staple cotton, therefore, imports of these commodities may increase.
- 4.38 International prices of maize, soybean, soybean oil, groundnut, sunflower seed, sunflower oil for 2017 ( $Q_4$ ) are far lower than domestic prices and therefore export of these commodities seems to be bleak. However, rather than taking trade outlook as given, India needs to take steps to alter the outlook in its favour by utilising modern technology and increasing capacities to tap economies of scales.
- 4.39 Considering 60 to 70 percent dependency of India, on edible oil import and weightage of edible oils, in India's import bill, it is high time to consider turn-around to encourage large scale cultivation of oilseeds in the future for import substitution with better support-price-incentives over rest of the commodities and their earnest implementation. Ambitious increment in share of cropped area under oil seeds through utilisation of fallow lands and also through diversion of cropped area under

## Price Policy for Kharif Crops



water intensive crops like paddy and sugarcane may also be considered a felt need in India. Better price incentives offered to desirable crops are likely to emanate right signals required for crop change and may encourage farmers to switch over to crops like oil seeds and pulses which are actually in demand in the domestic market. This will save the markets getting glutted with commodities which are not demanded by the consumers. Import substitution-incentive policy may be extended to pulses as well in equal vigour to minimise imports. With a view to improve India's trade advantage and diversify food basket, with a view to accommodate varied demand for different grains produced and consumed in different regions of India, better incentives for cultivation of high yielding varieties of millets like jowar/sorghum, bajra etc, could also be considered.

### Recapitulation

- 4.40 It is observed that India's Balance of Trade (BoT) in agri-sector has been better than the overall BoT. However, it is also observed that this advantage has decelerated during the recent past. Four years exports data from 2013-14 to 2016-17 shows that the share of India's agri-exports in its total exports registered a negative annual growth rate of 3.2 percent whereas the share of agri-imports in total imports registered a steep increase of 21.5 percent in the same period. Major agri-export commodities are rice, marine products, meat, spices, cotton and sugar, whereas the major import-commodities are edible oils, pulses, wood & wood products, fresh fruits, cashew, spices and sugar. Prominent crops of kharif season which are traded by India and that which could make significant change in farmers' welfare have been discussed in the pages above. As cereal trade except maize is likely to shrink a bit as per the trade outlook, India's export of rice may take a hit. Oil complex trade is likely to expand slowly. Cotton trade is likely to have no change. Rise in food price index is likely to be at an all time high since 2014. International demand for India's agricultural commodities is likely to help our exports and moderate increase in agri-imports are likely as a result of widening of gap between production and consumption of edible oils, and low imports of pulses. Considering India's excessive import dependence on oils and oil seeds and their ballooning import bills, India needs to take concrete steps to scale up import substitution cultivation. Possibilities for expanding production and domestic consumption of coarse grains and scope for their trade could also be an available instrument to enhance farmers' welfare.

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## Chapter 5

### Costs and Returns

- 5.1 The Commission used to consider the cost of production (CoP) and 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 the likely impact of MSP on consumers and overall economy along with rational utilization of scarce natural resources like land and water while recommending MSPs of mandated agricultural crops.
- 5.2 The Commission uses crop-wise, state-wise cost estimates provided by the Directorate of Economics & Statistics (DES), Ministry of Agriculture and Farmers Welfare compiled under 'Comprehensive Scheme (CS) for studying the Costs of Cultivation (CoC) of Principal Crops in India'. Since CS data is generally available with a time lag of three years in case of kharif crops, this need to be projected for kharif crop season 2018-19. Based on CS data, crop-wise, state-wise projections of CoC are made for the ensuing season.
- 5.3 The projected CoC estimates of 14 mandated crops for kharif season 2018-19 are based on actual estimates for latest three years, viz., 2013-14 to 2015-16 for each state. However, CoC estimates are not projected for states where share in all-India production for a particular crop is negligible or where number of sample holdings under CS for that crop is very thin. The CoC estimates' projections capture movement in overall input cost separately for the crop season 2018-19 over each of the past three years, viz., 2013-14, 2014-15 and 2015-16. An assessment of likely changes in input costs for the crop year 2018-19 with reference to each of the above mentioned three consecutive years ending with 2015-16 is made by constructing the Composite Input Price Index (CIPi) (base 2011-12=100) based on latest prices of different inputs like human labour, bullock labour, machine labour,

## Price Policy for Kharif Crops



manures, fertilisers, seeds, pesticides and irrigation charges as per data available from Labour Bureau, Ministry of Labour and Employment, State Governments and Office of Economic Adviser, Ministry of Commerce & Industry. Based on CIPI thus constructed, the Commission projects crop-wise, state-wise CoC  $A_2$ ,  $A_2+FL$  and subsequently  $C_2$ .

- 5.4 Crop-wise, state-wise CoP are then derived from these projected CoCs using projected yields. Subsequently, all-India estimates of CoPs are derived based on crop-wise, state-wise estimates. These projected estimates of CoPs are considered into formulation of price policy recommendations by the Commission.
- 5.5 The Commission undertakes cost projection exercise on the basis of latest three years' cost estimates for each state under certain implicit assumptions. One, since projections for each crop 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 varies from year to year due to multiplicity of factors, projections of costs for last three years, latest being 2015-16, have been undertaken for each state to smoothen out fluctuations in yield and hence in CoP. However, in cases where there is wide fluctuation in yields, olympic average yield has been used.

### Costs and Returns of Kharif Crops during TE2015-16

- 5.6 The Commission examines actual costs and returns of crops for which latest CS data is available from DES. It is pertinent to mention that gross value of output (GVO) is estimated at prevailing market prices during harvest season in village/ cluster of villages where the crop is grown and harvested. With this stipulation, an analysis of rate of return over costs  $A_2$  and  $A_2+FL$  for mandated crops during TE2015-16 is presented in Table 5.1.
- 5.7 To estimate profitability of a crop, gross returns over cost  $A_2$  (GVO less cost  $A_2$ ) and gross returns over  $A_2+FL$  (GVO less cost  $A_2+FL$ ) are calculated. The average costs and average gross returns during 2013-14 to 2015-16 for various kharif crops are presented in Table 5.1 and Chart 5.1. It is evident from Table 5.1 that the average gross returns over average cost  $A_2$  and  $A_2+FL$  are positive for all kharif crops. The average gross returns over  $A_2$  vary from 35 percent in sunflower to 191 percent in sesamum while average gross returns over  $A_2+FL$  range from 2 percent in nigerseed to 95 percent in sesamum. The state-wise details of average returns are given in Annex Table 5.1.



## Price Policy for Kharif Crops

**Table 5.1: Average Gross Returns of Kharif Crops, TE2015-16**

Crop	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4- Col.2)	Percent (Col.5/ Col.2*100)	₹/ha (Col.4- Col.3)	Percent (Col.7/ Col.3* 100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>A. Cereals</b>							
Paddy	30,247	40,716	59,144	28,897	96	18,428	45
Maize	24,854	34,490	44,543	19,689	79	10,053	29
Jowar	18,669	24,272	30,363	11,694	63	6,091	25
Bajra	14,858	24,039	30,130	15,273	103	6,091	25
Ragi	18,691	30,404	33,860	15,169	81	3,456	11
<b>B. Pulses</b>							
Arhar (Tur)	23,946	32,573	63,081	39,135	163	30,508	94
Moong	12,630	18,248	25,131	12,500	99	6,882	38
Urad	12,627	17,633	33,717	21,090	167	16,084	91
<b>C. Oilseeds</b>							
Groundnut	39,168	48,271	70,015	30,847	79	21,744	45
Soybean	21,798	26,193	30,259	8,461	39	4,066	16
Sunflower	19,339	24,510	26,182	6,843	35	1,672	7
Sesamum	12,122	18,095	35,266	23,144	191	17,170	95
Nigerseed	7,619	14,029	14,270	6,651	87	241	2
<b>D. Commercial Crop</b>							
Cotton	43,014	53,704	73,616	30,602	71	19,912	37

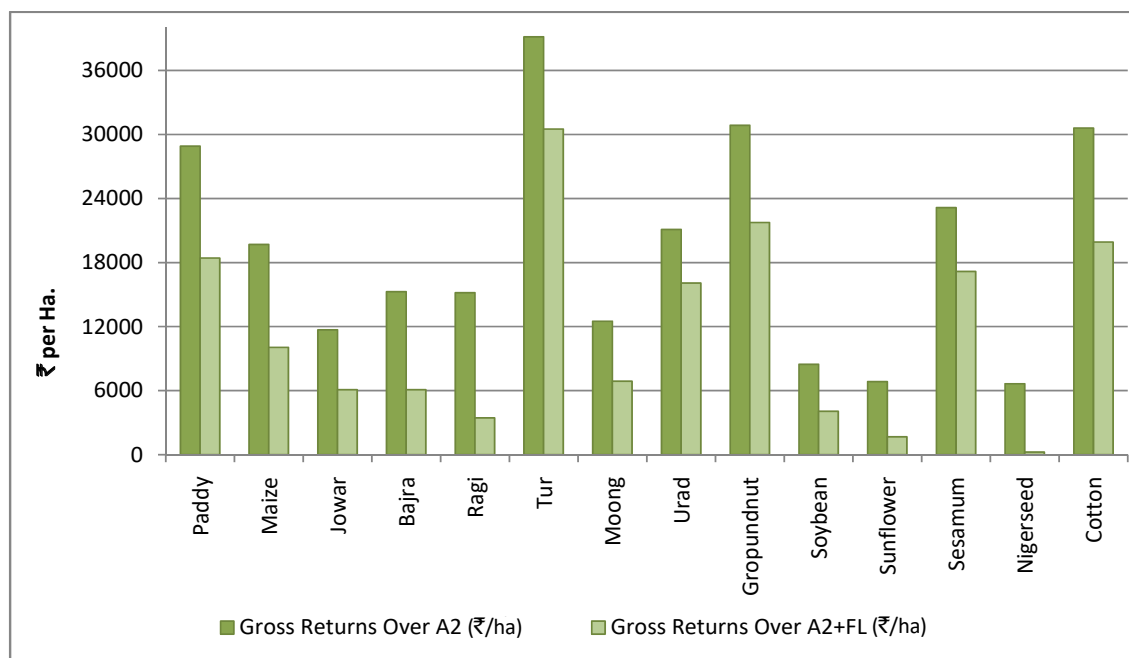
Source: CACP using CS data.



# Price Policy for Kharif Crops



**Chart 5.1: Average Gross Returns of Kharif Crops, TE2015-16**



Source: CACP calculations.

## Agricultural Wages and Input Price Movement

5.8 Table 5.2 presents average annual growth in wage rates of agricultural labour in major states and at all-India level at current prices and constant prices (2016-17=100) during TE2016-17. At all-India level, agricultural wage rate has increased by 12.8 percent in 2014-15, 3.8 percent in 2015-16 and 5.3 percent in 2016-17 at current prices; while it has increased by 6.9 percent in 2014-15, (-) 1.5 percent in 2015-16 and 1.7 percent in 2016-17 at constant prices. Further, Chart 5.2 reflects state-wise average annual wages of agricultural labour in 2016-17 and growth in average annual wages during 2016-17 over 2015-16. The wage rate is highest (₹673 per day) in Kerala and lowest in Madhya Pradesh (₹202 per day). Rajasthan witnessed a decline in average annual wage rate while Maharashtra recorded highest growth. State-wise and all-India details of monthly average wage rates for agricultural labour at current prices are given in Annex Table 5.2.

# Price Policy for Kharif Crops

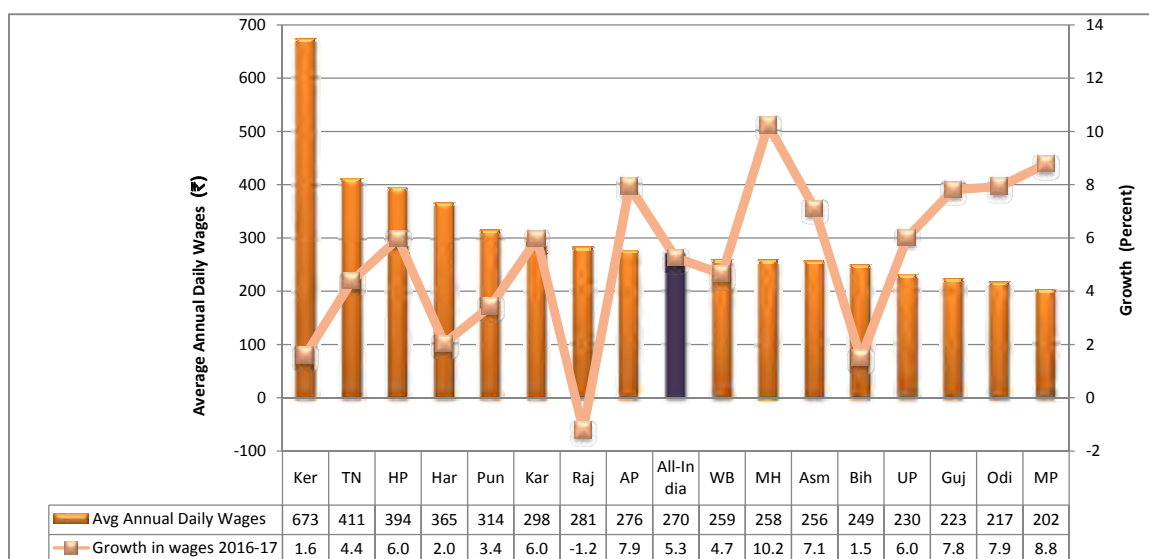
**Table 5.2: Average Annual Growth in Wages of Agricultural Labour - States and All-India**

State	Growth (percent) at Current Prices			Growth (percent) at Constant Prices (2016-17=100)		
	2014-15	2015-16	2016-17	2014-15	2015-16	2016-17
Andhra Pradesh	7.3	6.5	7.9	0.7	-0.02	4.8
Assam	22.2	4.8	7.1	14.6	2.9	6.2
Bihar	16.2	9.7	1.5	11.8	8.5	1.3
Gujarat	21.6	6.9	7.8	14.9	0.3	5.0
Haryana	7.3	3.6	2.0	0.4	0.03	-2.5
Himachal Pradesh	9.0	5.9	6.0	2.3	1.2	1.6
Karnataka	9.1	12.6	6.0	2.7	4.0	-1.2
Kerala	11.4	6.4	1.6	2.4	1.9	-4.3
Madhya Pradesh	18.1	4.7	8.8	15.7	0.1	5.7
Maharashtra	5.9	3.6	10.2	-1.1	-2.2	5.5
Odisha	18.8	-0.1	7.9	11.0	3.0	7.5
Punjab	3.7	1.7	3.4	-1.1	-2.1	-1.8
Rajasthan	17.8	-3.8	-1.2	11.3	-8.5	-5.9
Tamil Nadu	23.9	-4.0	4.4	14.7	-11.6	-1.6
Uttar Pradesh	6.9	7.4	6.0	3.5	0.8	7.2
West Bengal	9.1	4.2	4.7	5.5	3.4	2.3
<b>All-India</b>	<b>12.8</b>	<b>3.8</b>	<b>5.3</b>	<b>6.9</b>	<b>-1.5</b>	<b>1.7</b>

Note: Average - July to June.

Source: Labour Bureau, Ministry of Labour & Employment, Government of India

**Chart 5.2: Average Annual Agricultural Wages and Growth, 2016-17**



Note: Average-July to June.

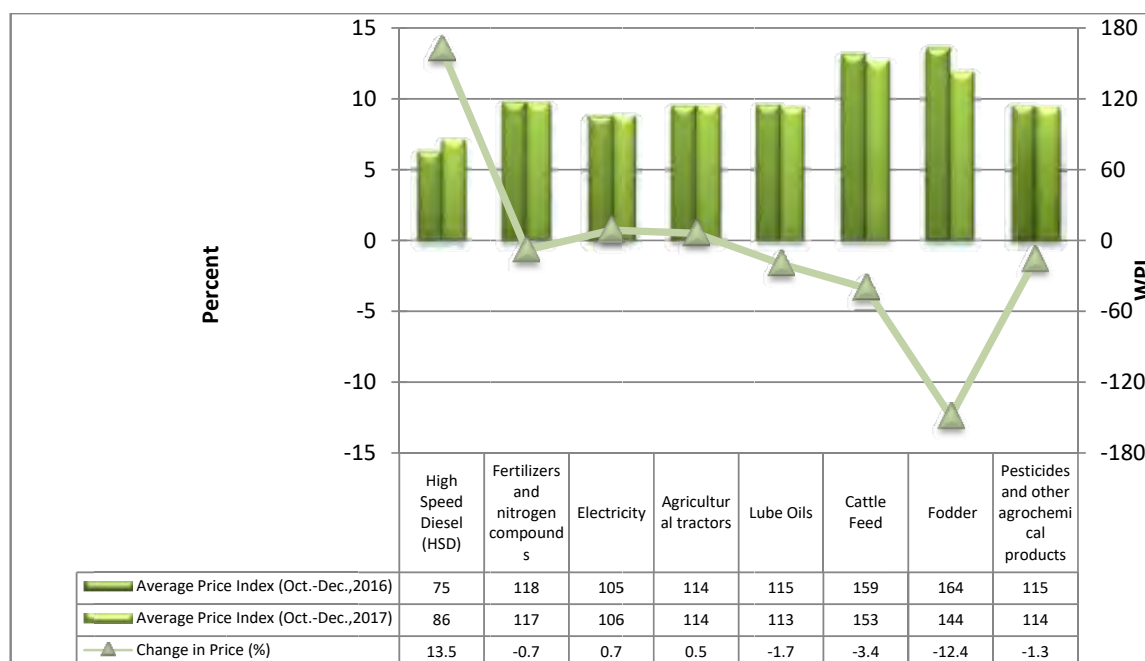
Source: Labour Bureau, Ministry of Labour & Employment, Government of India

## Price Policy for Kharif Crops



- 5.9 Chart 5.3 presents trends in prices of farm inputs (based on WPI 2011-12=100) during October to December 2017 over October to December 2016. The chart shows that prices of high speed diesel (HSD), electricity and agricultural tractors have increased in the range of 0.5 percent to 13.5 percent, while prices of fertilizers & nitrogen compounds, lube oils, cattle feed, fodder and pesticides and other agrochemical products have declined in the range of 0.7 percent to 12.4 percent (Annex Table 5.3).

**Chart 5.3: Movements in Prices of Farm Inputs**



Source: DIPP, Ministry of Commerce and Industries.

### Cost Projections for Kharif Marketing Season, 2018-19

- 5.10 Based on CIPI, state-wise CoCs are projected for each crop. However, in case of wide fluctuations in yield of a crop in a state during three years, olympic average yield was used to project CoC estimates. Based on this, state-wise CoPs are obtained by using respective three years average yield. Subsequently, all-India weighted average projected CoPs with weights being shares of states in all-India production during TE2016-17 has been worked out for kharif crops for the marketing season 2018-19 (Table 5.3). State-wise and all-India projected costs for mandated kharif crops for marketing season 2018-19 are given in Annex Table 5.4. The actual CoCs for different states for 2014-15 and 2015-16 are given in Annex Tables 5.5a to 5.5n.





## Price Policy for Kharif Crops

**Table 5.3: Projected CoP of Mandated Crops, KMS 2018-19**

Crops	Cost of Production (₹ per qtl)		
	A <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>
Paddy	865	1166	1560
Jowar	1241	1619	2183
Bajra	583	990	1324
Maize	806	1131	1480
Ragi	1446	1931	2370
Arhar (Tur)	2488	3432	4981
Moong	2958	4650	6161
Urad	2420	3438	4989
Groundnut	2615	3260	4186
Soybean	1879	2266	2972
Sunflower	3056	3592	4501
Sesamum	2682	4166	6053
Nigerseed	1744	3918	5135
Cotton	2700	3433	4514

Source: CACP Calculations.

5.11 The Commission computes all-India weighted average composite price index for years 2015-16 to 2018-19 with base 2011-12=100. For this, on the basis of state-wise CIPIs, an all-India crop-wise weighted average input price index for all inputs; with weights being relative shares of states in all-India area under the crop during TE2016-17 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 crops in total production at all-India level during TE2016-17. It may be observed from Table 5.4 that all-India kharif crops CIPI for all crops shows an increase of 4.1 percent in 2018-19 over 2017-18.

# Price Policy for Kharif Crops



**Table 5.4: All-India Kharif Crops Input Price Index (Base 2011-12=100)**

Inputs	Weights (2015-16)	Kharif Crops Input Price Index				Percentage Change in Input Price Index 2018-19 over 2017-18
		2015-16	2016-17	2017-18	2018-19	
Human Labour (HL)	0.53	157.26	165.12	172.46	179.45	4.1
Bullock Labour (BL)	0.06	179.88	186.13	192.53	199.03	3.4
Machine Labour (ML)	0.13	113.21	118.57	124.33	130.53	5.0
Seeds	0.08	145.80	154.79	164.89	176.19	6.9
Fertilizers	0.09	149.51	153.93	158.49	163.28	3.0
Manures	0.03	149.41	153.65	158.04	162.58	2.9
Insecticides	0.03	119.95	125.29	131.00	137.04	4.6
Irrigation Charges	0.05	105.94	107.60	109.34	111.14	1.7
<b>Composite Input Price Index (CIPI)</b>		<b>147.44</b>	<b>154.15</b>	<b>160.76</b>	<b>167.38</b>	<b>4.1</b>
<b>Percentage Change (year on year)</b>		<b>-</b>	<b>4.6</b>	<b>4.3</b>	<b>4.1</b>	<b>-</b>

Source: CACP Calculations.

5.12 Charts 5.4 (a) to (m) show crop-wise supply curves for CoP ( $A_2$ +FL) by states in ascending order with their corresponding relative shares in all-India production. Supply curves for different crops are graphical representation of CoP, which represent the quantum of production of kharif crops produced at different CoP in various states.

5.13 As per the supply curves presented in charts 5.4 (a) to (m), CoP ( $A_2$ +FL) for paddy, is lowest at ₹702 per qtl in Punjab while highest at ₹2102 in Maharashtra. In case of jowar, CoP ( $A_2$ +FL) at ₹1147 per qtl is lowest in Rajasthan while highest at ₹1936 per qtl in Karnataka. For bajra, CoP ( $A_2$ +FL) at ₹811 per qtl is lowest in Uttar Pradesh while highest at ₹2119 per qtl in Maharashtra. Supply curve for maize shows CoP ( $A_2$ +FL) at ₹803 per qtl is lowest in Andhra Pradesh while highest at ₹1819 per qtl in Gujarat. As regards tur, CoP ( $A_2$ +FL) at ₹2704 per qtl is lowest in Madhya Pradesh while highest at ₹4552 per qtl in Andhra Pradesh whereas in case of moong and urad, CoP ( $A_2$ +FL) of ₹3411 per qtl and ₹1860 per qtl is lowest in Andhra Pradesh while highest at ₹6688 per qtl and ₹5697 per qtl in Maharashtra. In case of groundnut, CoP ( $A_2$ +FL) of ₹1554 per qtl is lowest in Rajasthan while highest at ₹4767 per qtl in Karnataka; whereas soybean shows that CoP ( $A_2$ +FL) of ₹1984 per qtl is lowest in Madhya Pradesh while highest at ₹2777 per qtl in Maharashtra. The supply curve for

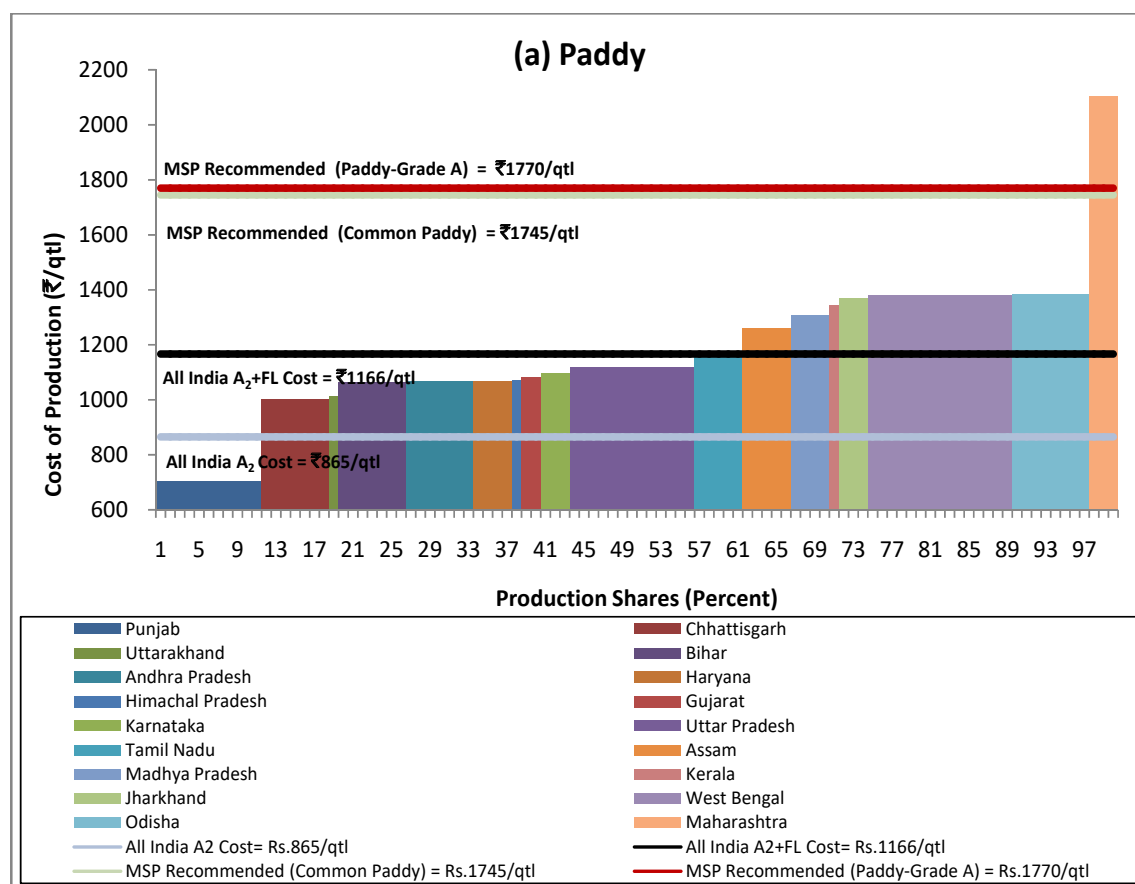


## Price Policy for Kharif Crops

cotton reveals lowest CoP ( $A_2$ +FL) ₹2656 per qtl in Rajasthan while highest at ₹4342 per qtl in Tamil Nadu.

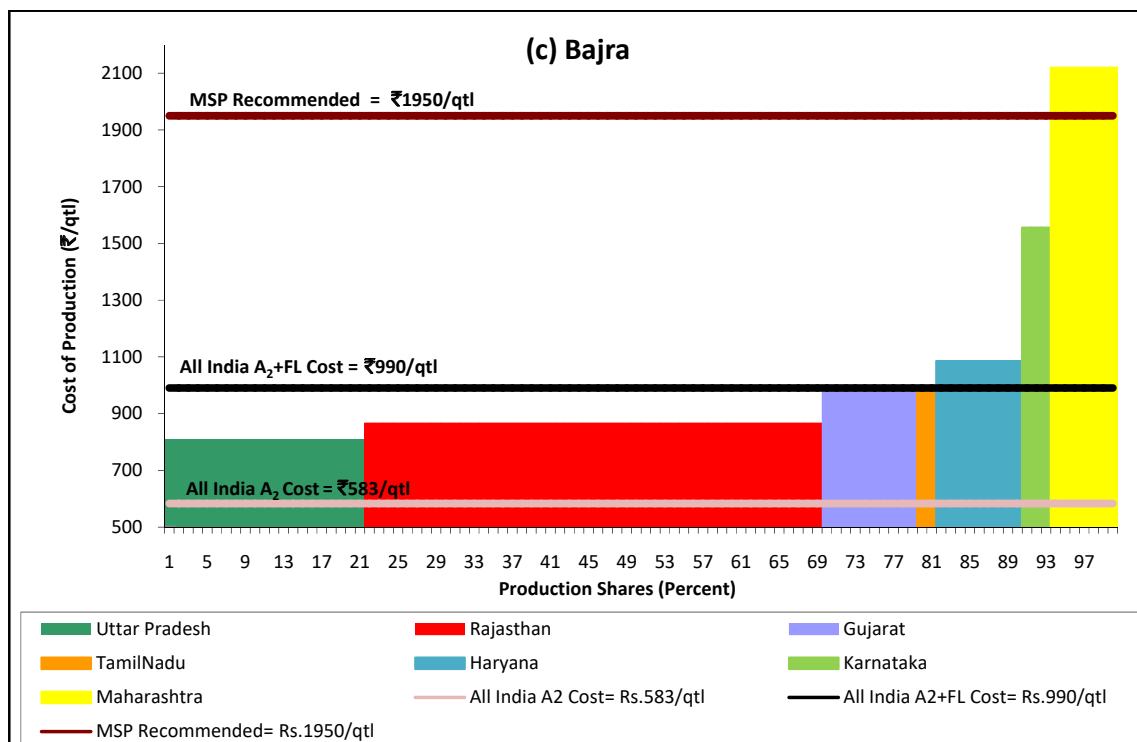
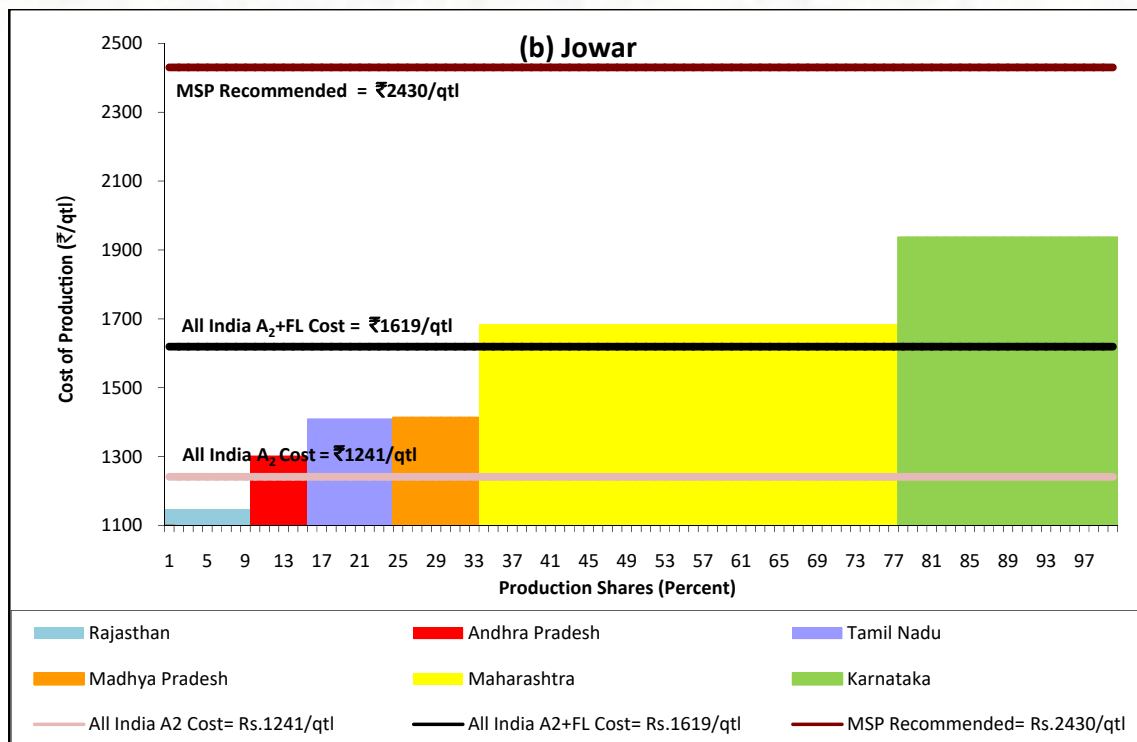
- 5.14 All India weighted CoP  $A_2$ +FL covers 56 percent of production in case of paddy, 33 percent in jowar, 79 percent in bajra, 65 percent in maize, 24 percent in ragi, 49 percent in arhar (tur), 82 percent in moong, 51 percent in urad, 27 percent in groundnut, 59 percent in soybean, 13 percent in sunflower, 53 percent in sesamum and 54 percent in cotton. Union Budget for 2018-19 has announced the pre-determined principle of offering to farmers a threshold MSP of atleast one and half times the cost of production of all mandated kharif crops. Accordingly, after recommending MSPs on the basis of atleast 1.5 times of CoP  $A_2$ +FL (Chart 5.4), share of production covered at MSP is 100 percent in case of jowar, ragi, tur, moong, groundnut, soybean, sunflower, sesamum and cotton, 97 percent in paddy and maize, 94 percent in urad and 93 percent in bajra. It may be noted that recommended MSPs (Which is atleast 1.5 times the projected CoP  $A_2$ +FL in all mandated crops) in case of paddy, bajra and urad do not cover projected CoP  $A_2$ +FL of Maharashtra.

**Chart 5.4: Supply Curve and Projected CoP for KMS, 2018-19**





# Price Policy for Kharif Crops

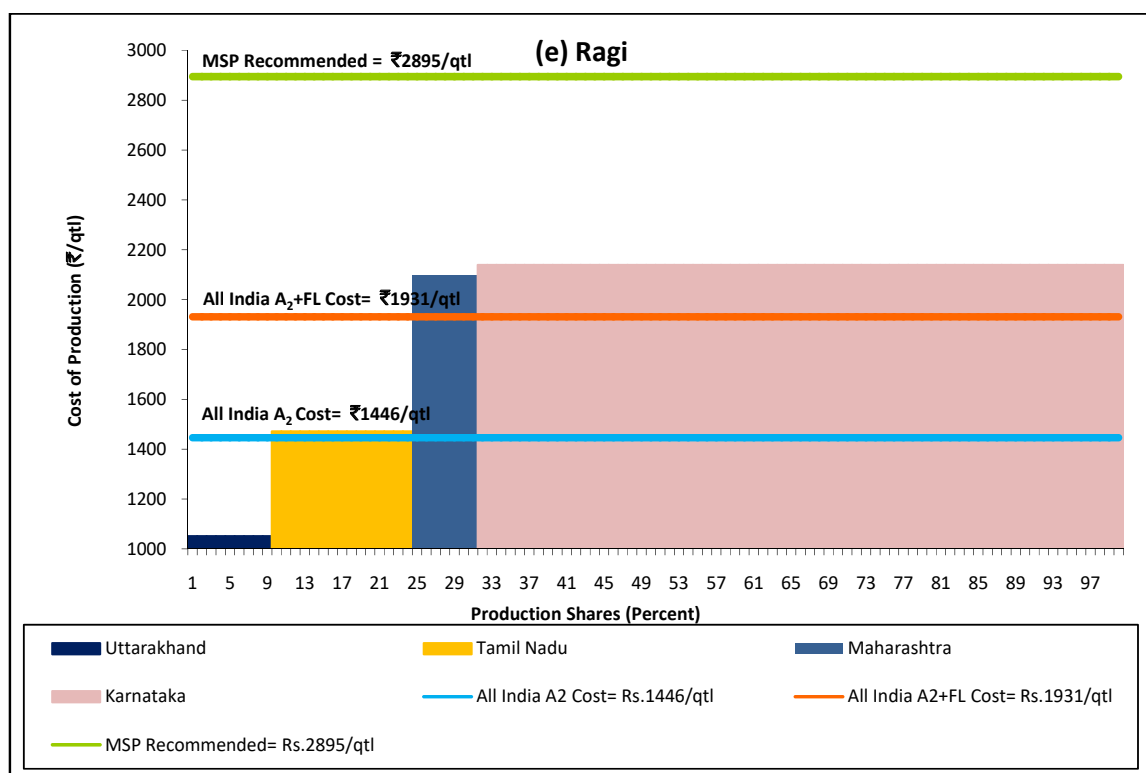
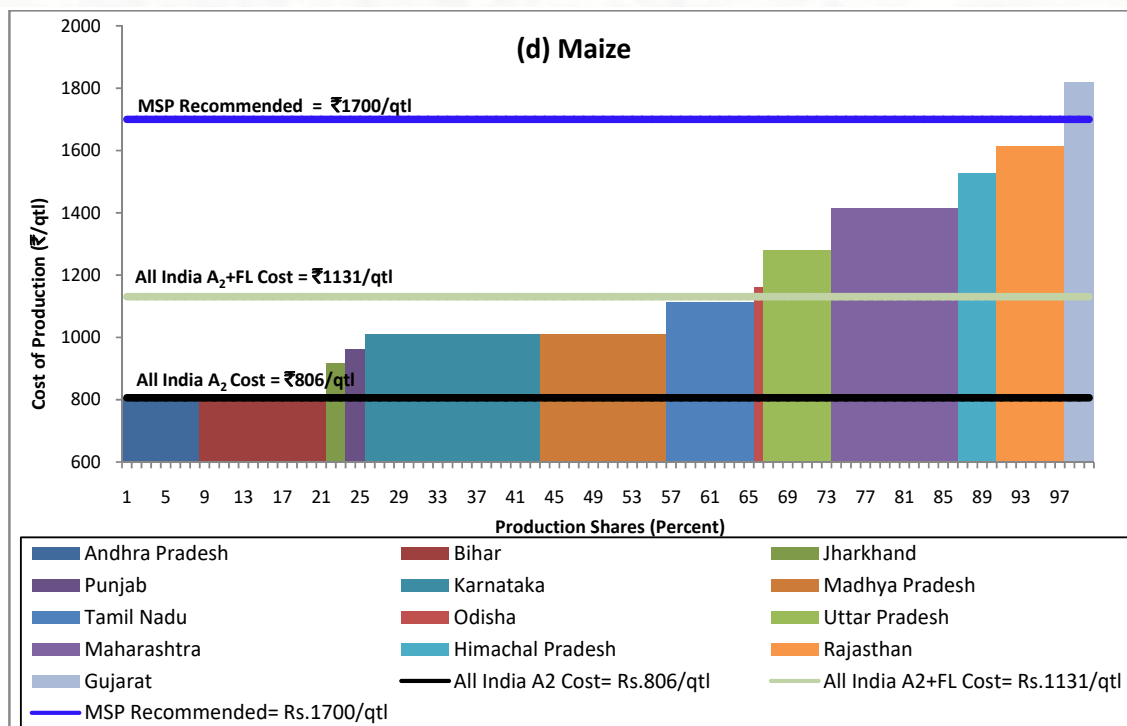


Costs and Returns

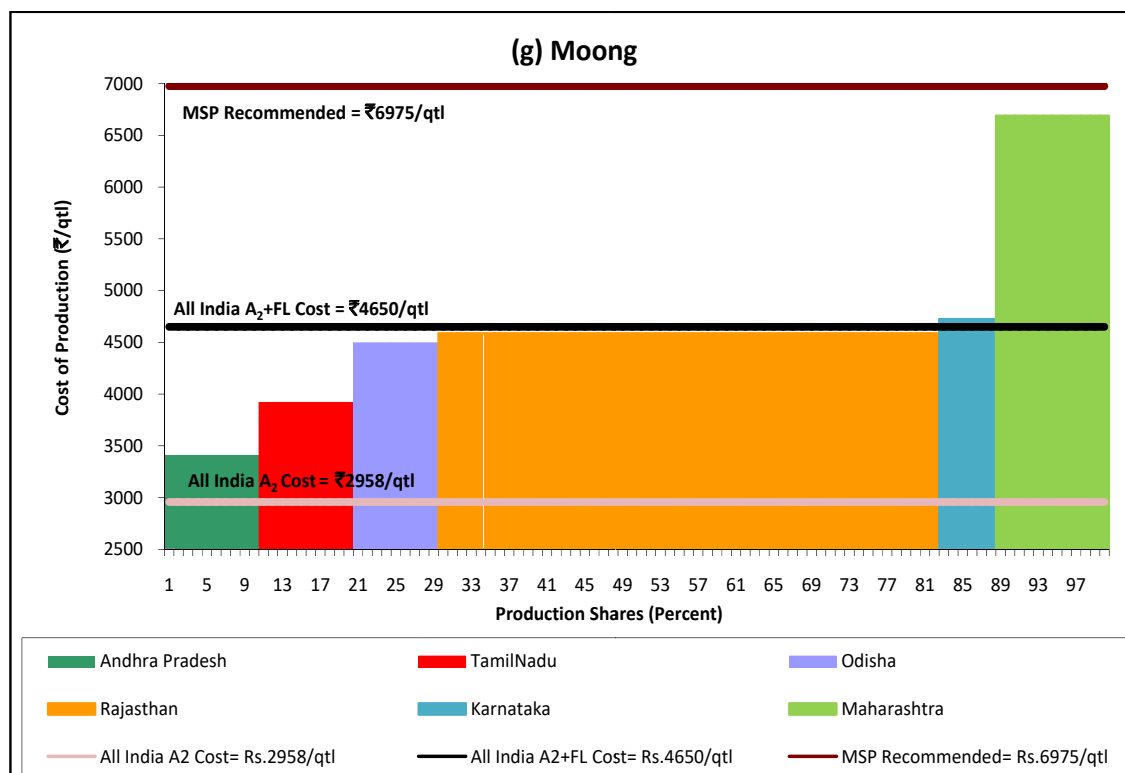
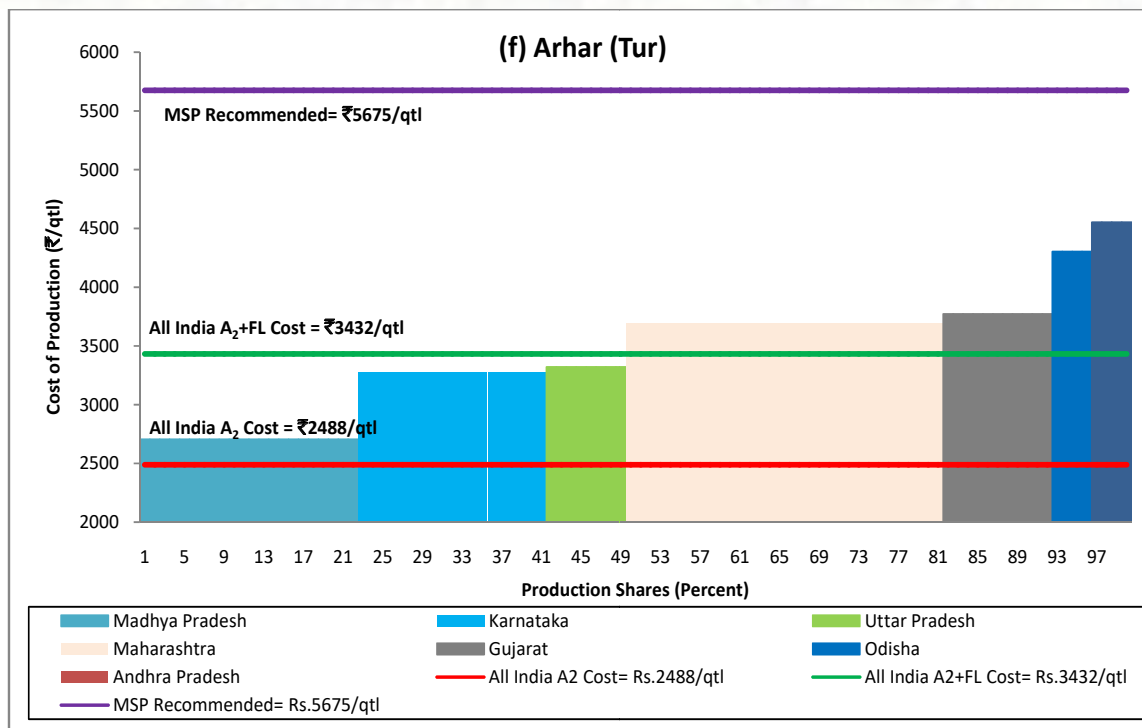


# Price Policy for Kharif Crops

## Costs and Returns



# Price Policy for Kharif Crops



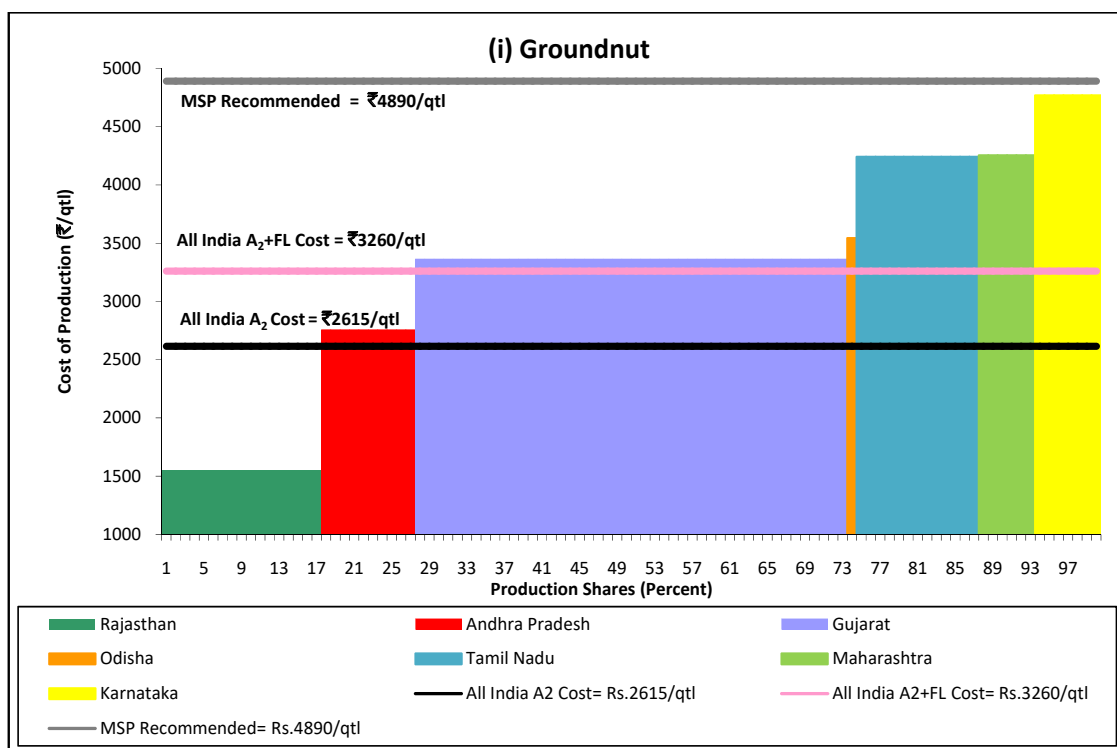
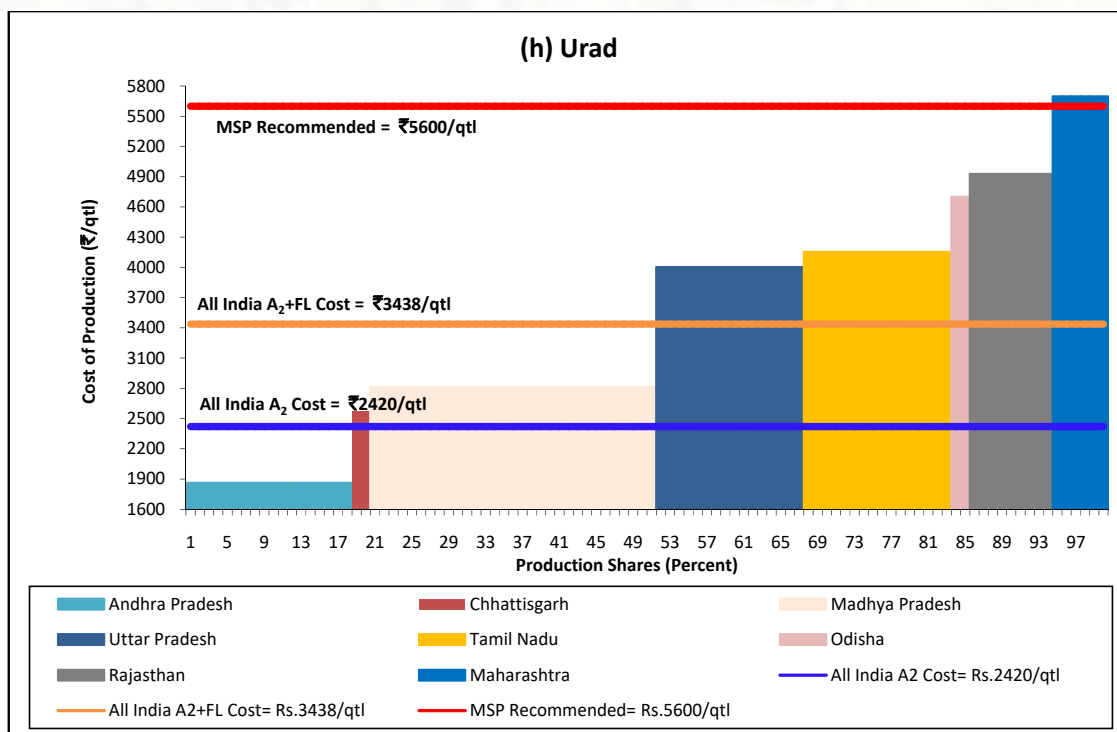
Costs and Returns



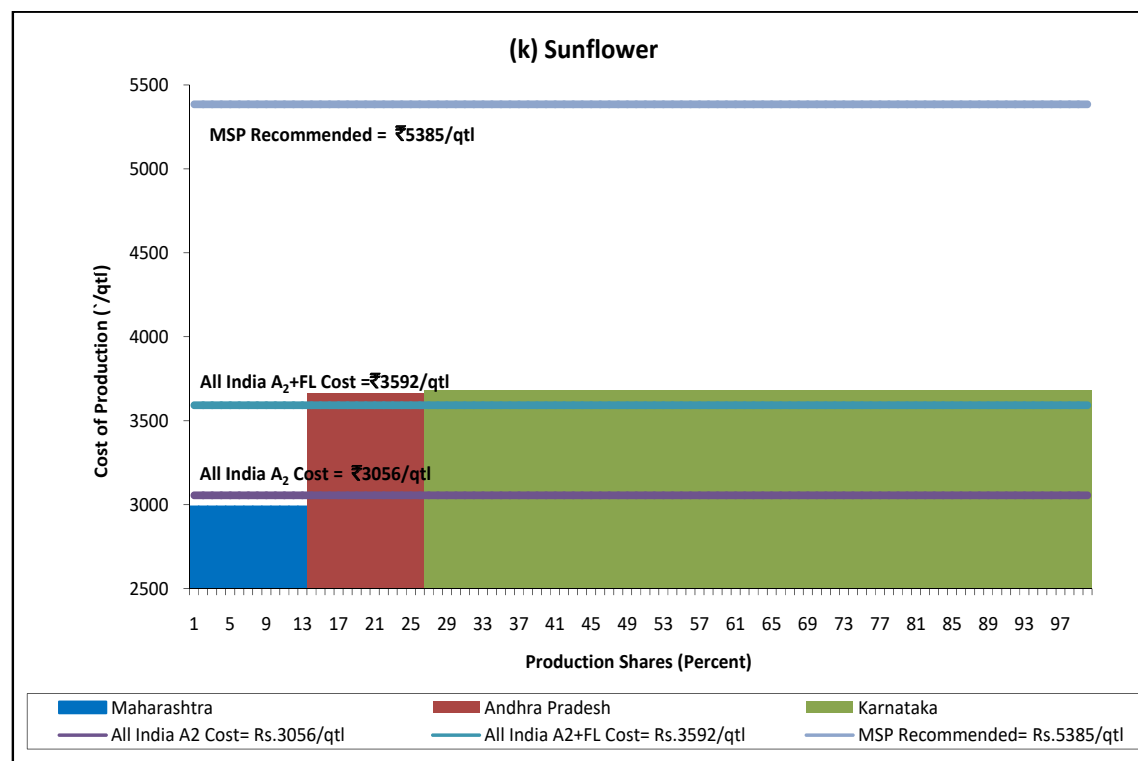
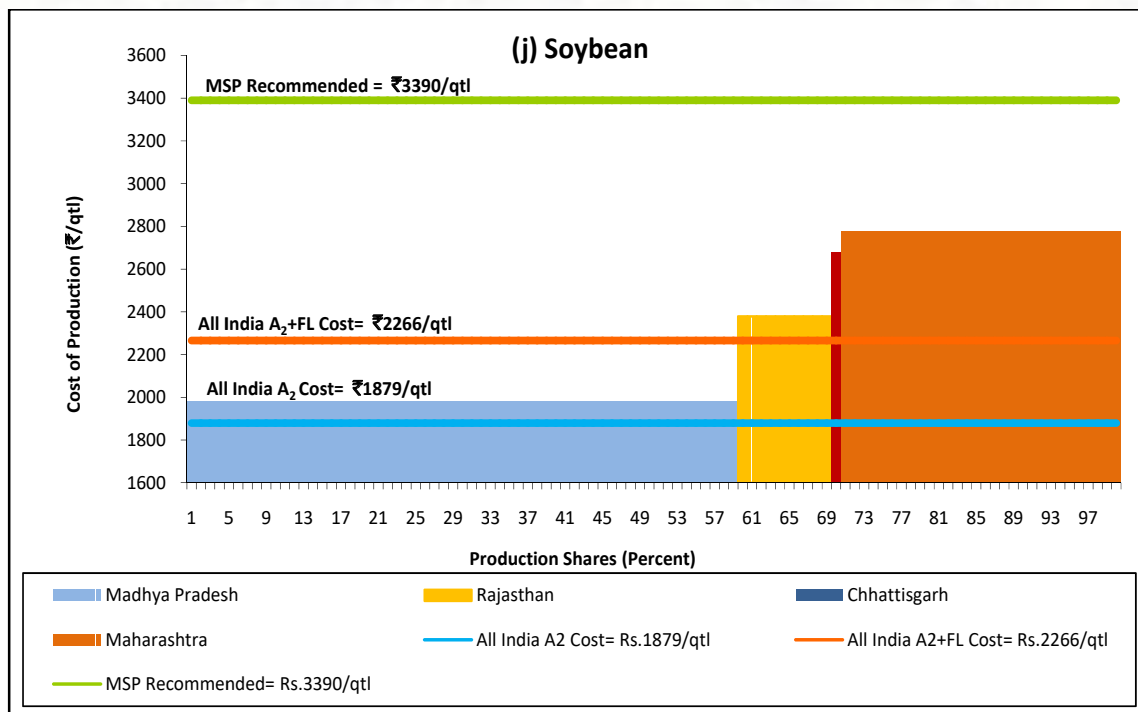


# Price Policy for Kharif Crops

## Costs and Returns



# Price Policy for Kharif Crops

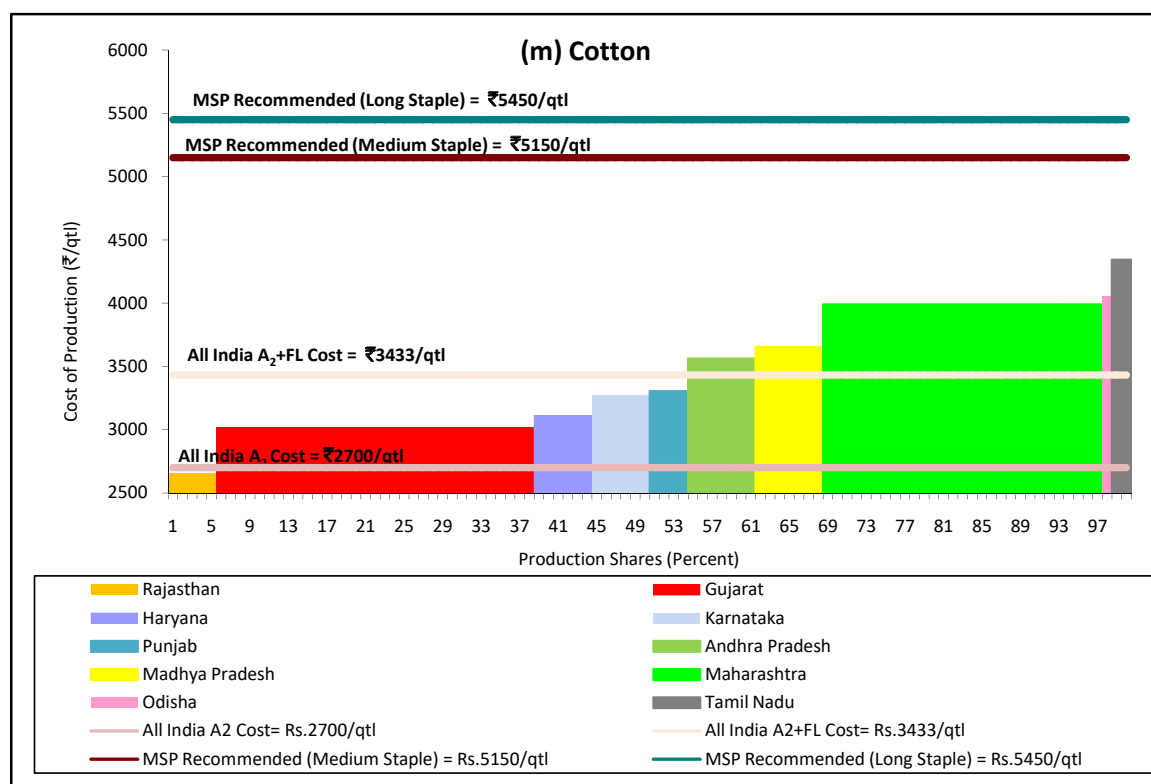
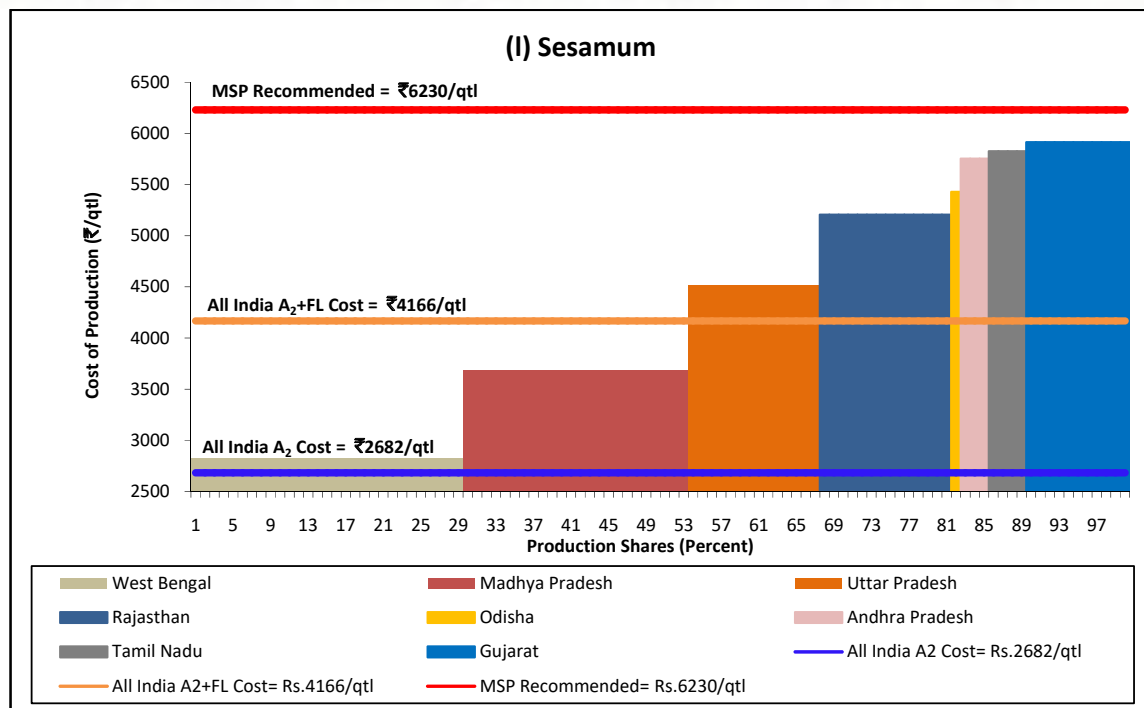


Costs and Returns



# Price Policy for Kharif Crops

## Costs and Returns





# Price Policy for Kharif Crops



## Relative Returns

5.15 Relative returns being one of the factors for determining MSP of different competing crops is computed with reference to paddy. Table 5.5 outlines average relative returns measured in percentage terms over average CoCs  $A_2+FL$  for mandated kharif crops during TE2015-16. It is observed that average relative gross returns over  $A_2+FL$  for all kharif crops vary from 1 percent in nigerseed to 166 percent in tur.

**Table 5.5: Crop-wise Average Relative Returns (Percent), TE2015-16**

Crops	Relative Gross Returns over $A_2+FL$ with respect to paddy
<b>A. Cereals</b>	
Paddy	100
Maize	55
Jowar	33
Bajra	33
Ragi	19
<b>B. Pulses</b>	
Arhar (Tur)	166
Moong	37
Urad	87
<b>C. Oilseeds</b>	
Groundnut	118
Soybean	22
Sunflower	9
Sesamum	93
Nigerseed	1
<b>C. Commercial Crop</b>	
Cotton	108

Source: CACP Calculations.

## Comparison of Projected Cost Estimates with State Estimates

5.16 The projected cost estimates of states and CACP for mandated kharif crops for marketing season 2018-19 are given in Annex Table 5.6. The estimated CoC for recommending MSP for KMS, 2018-19 is provided by Bihar for paddy, maize; Chhattisgarh for paddy, maize, arhar (tur), groundnut, soybean; Odisha for paddy;



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Punjab for paddy, cotton; Rajasthan for bajra, maize, moong, urad, soybean, sesamum, cotton; and Tamil Nadu for moong. Reasons for variations in two sets of estimates, i.e., State Government's projections and CACP's projections are due to methodological differences. For Bihar, projections of state yield & CoP for paddy, and CoP for maize are higher than respective CACP projections. Bihar has included interest on land @ 5 percent, land development cost, 10 percent risk cost and storage & transportation cost; which is not a part of net cost in CS estimates. For Odisha, discrepancies between two sets of data in projected CoC of paddy are labour charges including human, bullock and machine labour and the expenditure on manure. Punjab has used the CoC data and then projected it for KMS, 2018-19. The projected CoP for paddy, and yield & CoP for cotton of Punjab State are higher than CACP projections. The main reasons for higher CoP projections of Punjab than CACP projections are that state government has included various other charges, viz., 25 percent farmers' profit margin, 10 percent weather risk, 25 percent profit and marketing & management charges. For Tamil Nadu, yield and CoP for moong are higher than CACP projections. Tamil Nadu has included transportation cost and 10 percent managerial costs in its projections. However, state estimates are lower than Commission's estimates in respect of paddy and soybean for Chhattisgarh; and maize, moong, soybean, sesamum & cotton for Rajasthan. The state estimates and Commission's estimates in respect of bajra for Rajasthan are almost the same. Other states have not provided cost estimates for KMS, 2018-19.

### Recapitulation

- 5.17 Given the time lag of three years in availability of data, the Commission projects the cost estimates  $A_2$ ,  $A_2+FL$  and  $C_2$  per quintal for mandated kharif crops for the ensuing season 2018-19. The Commission uses CIPI to capture changes in input prices over the years and subsequently, CoP is projected using average/olympic average yield. The all-India projected CoP for KMS, 2018-19 and KMS, 2017-18, and percentage change in projected cost during KMS, 2018-19 over KMS, 2017-18 are at Annex Table 5.7. As Andhra Pradesh's share in production of soybean is very low during TE2016-17, the Commission is of the view that soybean in Andhra Pradesh may not be included under the Comprehensive Scheme. Besides, the share of production of nigerseed in Chhattisgarh, Madhya Pradesh and Odisha in all-India production are about 20 percent, 39 percent and 41 percent respectively, whereas, out of all-India sample size of 15 under CS of nigerseed, the allocation of sampling units among Chhattisgarh, Madhya Pradesh and Odisha are 1 (6.7 percent of all-India sample), 4 (26.7 percent of all-India sample) and 10 (66.6 percent of

## Price Policy for Kharif Crops



all-India sample) respectively. The Commission recommends that all-India sample of nigerseed under CS should be allocated among Chhattisgarh, Madhya Pradesh and Odisha according to their production shares. The projected all-India  $A_2+FL$  costs per quintal are ₹1166 for paddy, ₹1619 for jowar, ₹990 for bajra, ₹1131 for maize, ₹1931 for ragi, ₹3432 for tur, ₹4650 for moong, ₹3438 for urad, ₹3260 for groundnut, ₹2266 for soybean, ₹3592 for sunflower seed, ₹4166 for sesamum, ₹3918 for nigerseed and ₹3433 for cotton. These projected cost estimates have been considered into formulation of price policy recommendations, as the Union Budget for 2018-19 has announced the pre-determined principle of offering to farmers a threshold MSP of atleast one and half times the cost of production of all Kharif mandated crops.

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Costs and Returns





## Chapter 6

# Considerations and Recommendations for Price Policy

### Non-Price Policy Recommendations

#### Promotion of Pulses Production

6.1 Prices and assured marketing for pulses will go a long way in ensuring better productivity and production. To ensure that farmers get remunerative prices and there is no distress sale particularly during harvesting season, strategic intervention by Government is necessary. Firstly, there is a need for effective procurement of pulses during harvest period to ensure remunerative prices for the produce and secondly, to promote appropriate post-harvest processing and value addition in pulses at village level. Also, trade policy and prices of pulses should be monitored on continuous basis.

#### Promotion of Oilseeds Sector

6.2 India imports about two-thirds of its edible oil demand and there is an urgent need to devise a policy to increase oilseed productivity as the option of area expansion is very limited. Productivity of oilseeds in India is half that of world average and there is an urgent need to address this issue collectively by Government and private sector. To increase productivity and reduce dependence on imported edible oils, special focus should be given in distribution of quality seeds to farmers before the sowing season. In this regard, National Mission on Oil Seeds and Oil Palm (NMOOP) should play a pivotal role in increasing the productivity and production of oilseeds. It should closely work with organisations like Soybean Processors Association of India (SOPA) for quality research & development in soybean sector for distribution of quality seeds and making India competitive in global market.

## Price Policy for Kharif Crops



- 6.3 Also, oil industry should push for better returns to farmers by organising farmers in FPOs and procuring from FPOs. A provision has been made in Union Budget 2018-19 for exemption of FPOs from income tax which will go a long way for increasing the oilseed productivity and enhancing the income of farmers.

### Maize: Area Expansion and Diversified Products

- 6.4 Water requirement of maize is much lower than that of other competing cereals like rice and wheat and having wider industrial uses. Thus, expansion of area under maize will have a significant impact on sustainability in agriculture. As per Indian Institute of Maize Research (IIMR), Zero Tillage (ZT) and Permanent Bed (PB) practices reduced the irrigation water requirement by 40–65 ha-mm and 60–98 ha-mm, respectively. Thus, the study suggests that ZT/PB based crop management could be adopted for enhanced soil health and overall sustainability.
- 6.5 Recently, wholesale prices of maize decreased continuously during the peak market arrival period and ruled below MSP (September 2017 to February 2018) mainly due to increase in production in 2017-18. Hence, there is a need to create demand for maize diversified products in food processing industries. IIMR along with maize based industries should estimate the required consumption demand so that production can be efficiently utilized, thus helping farmers in getting remunerative prices for their produce.

### Quality Cotton Seeds

- 6.6 Cotton farmers face huge risks since the cotton seed market is not regulated and poses higher risks to the farmers' produce in terms of quantity and quality. Therefore, to increase the yield and compete in global market, there is an urgent need to regulate the cotton seed market in light of growing cotton industry and to safeguard our farmers.

### Procurement of Rice

- 6.7 Rice procurement has become more diversified and share of decentralised procurement (DCP) states has increased over the years. However, there are still some major rice producing states, where procurement operations are either absent or very limited e.g. Assam. In the absence of effective procurement by the Government, prices remained below MSP. Hence, strong procurement operations need to be expanded to neglected regions, particularly eastern and north eastern regions.

## Price Policy for Kharif Crops

- 6.8 The Commission had sought data on procurement of paddy from states, disaggregated categories of farmers (i.e. marginal, small, semi-medium, medium and large farmers). Government of Odisha has provided information on break up of paddy procurement by different category of farmers for kharif 2016-17. It was observed that more than 80 percent of total procurement of paddy in 2016-17 was made from large, medium and semi-medium farmers which show that benefits of MSP are not reaching small and marginal farmers. The Commission is of the considered view that data on category-wise (small, marginal, semi-medium, medium and large) farmers needs to be monitored for analysing the inclusiveness of procurement procedure as regards small and marginal farmers. All state governments should make efforts towards computerising their procurement processes so as to maintain an exhaustive database on procurement.

### Soil Health Management

- 6.9 In order to guide farmers on judicious and economic use of fertilizer nutrients, Government has implemented SHC Scheme in 2015. However, the Scheme lacks implementation in north-eastern region completely. Also, there is a wide gap in the number of samples collected vis-a-vis number of samples tested in some states. Therefore, more number of soil testing labs (STLs) needs to be opened to bridge this gap. Also, special efforts are needed to bring north-eastern region under the coverage of the Scheme.

### Input Subsidy to Farmers

- 6.10 The Commission is of the opinion that instead of providing input subsidies to the companies, they may be given directly to farmers under DBT. It is known that farmers often take loans from money lenders to buy inputs for cultivation which leads to their exploitation in the hands of money lenders. For successful implementation of this Scheme, proper computerisation of land records is essential, post which estimated input subsidy amount may be transferred directly to farmer's bank account. Farmers can then use this subsidy to buy inputs as per their requirements. To extend the benefits to tenant farmers who do not have land records in their name, a loan eligibility card/ certificate of cultivation be provided.

### Agricultural Land Leasing Policy

- 6.11 Legalization of land leasing will result in availability of more land which the rural poor can lease in. Improved access to land on lease by the landless and marginal farmers will help improve their economic condition. NITI Aayog has prepared a model land leasing law, which has been adopted by the Government of Madhya Pradesh and



## Price Policy for Kharif Crops



Uttar Pradesh so far. According to NITI Aayog (2017) there is a need to ensure that by end March 2020, at least two thirds of the states would have liberal land-leasing laws that will protect the rights of both the owner and the tenant and allow them to conclude written, mutually agreeable lease agreements. The Commission is of the view that this needs to be monitored for early completion.

### Investment in Agricultural Sector

- 6.12 Capital formation in agriculture is crucial for the development of agriculture and should be sustained in the long run considering the fact that labour shortage is a huge problem in agricultural activities. The private sector can play a significant role in enhancing investment in agriculture sector. In a few cases where corporates are taking innovation to farmers with inputs, wonderful results have been achieved. It is, therefore, of paramount importance to work towards bringing more investment in agriculture sector.

### Price Deficiency Payment Scheme

- 6.13 Government of Madhya Pradesh introduced the Scheme called Bhawantar Bhugtan Yojna (BBY). Under the Scheme, direct payment of the difference between MSP and average sale price (ASP) to farmers selling his produce in the APMC yard for notified crops is done directly in their bank accounts. It has been observed by the Commission that under BBY, the cost incurred by the Government of Madhya Pradesh is significantly lower compared to the present system of procurement of crops under MSP and therefore, Commission is of the view that the Government should explore the possibility of implementing the Scheme on pan India basis.

### Awareness about MSP and FAQ

- 6.14 Awareness about MSP and FAQ norms need to be created, as often farmer's produce is rejected on the basis of quality norms. There is a need to give wide publicity about MSP and procurement agencies by the state governments in regional/vernacular electronic and print media, announcements in 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. Commission is, therefore, of the view that there is a need to empower gram panchayats with sufficient financial powers to educate farmers about the same.
- 6.15 It has also been observed that often farmers of remote areas do not have sufficient access to APMC and their potential market is local haats and their produce is sold below MSP. Therefore, it will be beneficial for those farmers if procurement centres

## Price Policy for Kharif Crops

be opened up in remote areas at gram panchayat level. 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 instil confidence among farmers for procurement of their produce, a legislation conferring on farmers 'The Right to Sell at MSP' may be brought out.

### Reduction of Yield Gap

- 6.16 Since productivity improvement is the main driver of growth of agricultural output as area under cultivation is facing competition from other sectors due to ever increasing demands, a steep deceleration in growth rates of yields in most crops is a matter of great concern for policymakers. The yield gap analysis reveals that there are wide gaps between potential yield and actual yield in both pulses and oilseeds. Therefore, production can be increased significantly even with the existing technologies, if timely availability of seeds and other inputs is assured and farmers are trained to follow the best practices.

### Crop Residue Management

- 6.17 Central Sector Scheme, to address air pollution and to subsidize machinery required for in-situ management of crop residue, has been announced in the states of Punjab, Haryana, Uttar Pradesh and NCT of Delhi for the period 2018-19 to 2019-20 with a total outlay of ₹1151.80 crore. Under the Scheme, Farm Machinery Banks would be established for custom hiring of in-situ crop residue management machinery. Farmers would also be provided financial assistance of 50 percent for procurement of agriculture machinery and equipment for in-situ crop residue management. The Commission feels that along with the financial support extended to farmers for custom hiring of machineries, farmers, small and marginal in particular, may also be provided appropriate cash incentives for transporting crop residues to biomass production units which can possibly open up a new market for rural entrepreneurship. Also, cost of harvesting of stubble should be included in cost of cultivation for paddy.

### Promoting Agro-Industries for Processing and Value Addition

- 6.18 Government of India is promoting SAMPADA with the objective of supplementing agriculture, modernizing processing and reducing agri-waste. The Commission was apprised that for setting up any agro-processing unit on farm in Haryana, there is a requirement of seeking Change of Land Use (CLU) certificate, which is not approved in areas close to Delhi. Farmer can setup the processing unit only in industrial area, which defeats the very purpose of linking the processing unit with

## Price Policy for Kharif Crops



the farm gate and saving on transportation and time. To address this issue, small and marginal farmers may be allowed to establish units for processing and value addition on his farm without any CLU. In addition, to promote agro- industry, the rate of interest on small agro-industries should be lower than large agro-industries. The possibility of considering agricultural land as security for grant of loans should be explored by the banks.

### Pradhan Mantri Fasal Bima Yojna (PMFBY)

- 6.19 Farmers often do not get receipts of the premium deducted towards the crop insurance and copy of policy documents. This results in farmers not getting due benefit of the Scheme in case of any unforeseen incidents. Also, farmers are provided loans based on the crop value due to which some farmers, contrary to the actual crop grown by them, tend to declare high value crops for availing higher loans. As a result, farmers find it difficult to claim insurance and repay their loans in case of crop failure since crop in bank records differs from the actual crop. The Commission is of the considered opinion that loan should be provided to farmers on land value and not on crop value to prevent them from falling into debt trap. Apart from this, issue of crop losses due to wild animals also needs to be addressed.

### Fertilizer Use and Irrigation Management

- 6.20 Fertilizer consumption has reduced in 2016-17. This is led by a reduction in consumption of Nitrogen (N) based fertilisers which has resulted in a slight improvement in N, P, K ratio, which is an encouraging sign. Also, significant expansion in micro irrigation has been achieved since the launch of PMKSY in 2015. But, to overcome the challenges posed by a possible water crisis in future, it is essential to continue the efforts made under PMKSY along with adopting traditional methods for water harvesting.

### Local Level Storage

- 6.21 Small and marginal farmers owing to small land sizes do not have large outputs and as a result have minimal surplus. Moreover, they are compelled to sell their produce immediately after harvest owing to lack of storage facilities combined with immediate fund requirement. This leads to distress sale by small and marginal farmers. In this regard, a major push is required to build local storage system at gram panchayat level on cost sharing basis between farmers and state governments. Farmers can then deposit their produce in a local godown and obtain a receipt and can avail loan to an extent of 75 percent of the value of the crop deposited in the local godown against the receipt. This will allow farmers to take care of their immediate need of fund and also to sell their produce at a later



## Price Policy for Kharif Crops

date when the market recovers. This system will help in empowering small and marginal farmers in particular with the support of rural banks, cooperative banks and Primary Agricultural Co-operative Societies (PACS).

### Cluster-Based Model of Development

- 6.22 Since, majority of the farmers in the country are small and marginal, the cluster-based model of development should be implemented in agricultural sector and farmers should be motivated to form Farmer Producer Organisations (FPOs) and Village Producers Organisations (VPOs) for their own betterment. To facilitate this, FPOs have been exempted from payment of income tax in Union Budget 2018-19. This will also help in better marketing of produce and enhanced incomes to farmers.

### North-Eastern States – Issues and Concerns

- 6.23 North-Eastern states have high humidity in atmosphere which results in higher moisture content in paddy than the FAQ norms prescribed by FCI thus leading to lower procurement. In this regard, state governments should create facilities at gram panchayat level for drying farmer's produce so that it meets FAQ norms. In addition, state governments may also coordinate with the Ministry of Consumer Affairs, Food and Public Distribution for relaxation of FAQ norms for the region. Apart from this, local procurement may be strengthened so as to minimise imports from other states and save on transportation costs.

### Price Policy Recommendations

- 6.24 FCI apprised CACP that only 12 percent to 13 percent of paddy procured is of common variety and the rest is Grade A. In case of tur and urad, MSP in 2017-18 inclusive of bonus is 64 percent and 65 percent more than  $A_2+FL$ . All India weighted CoP  $A_2+FL$  covers 56 percent of production in case of paddy 33 percent in jowar, 79 percent in bajra, 65 percent in maize, 24 percent in ragi, 49 percent in arhar (tur), 82 percent in moong, 51 percent in urad, 27 percent in groundnut, 59 percent in soybean, 13 percent in sunflower, 53 percent in sesamum and 54 percent in cotton. Union Budget for 2018-19 has announced the pre-determined principle of offering to farmers a threshold MSP of at least one and half times the cost of production of all mandated kharif crops. Accordingly, after recommending MSPs at least 1.5 times of CoP  $A_2+FL$  (Table 6.1), share of production covered at MSP is 100 percent in case of jowar, ragi, tur, moong, groundnut, soybean, sunflower, sesamum and cotton, 97 percent in paddy and maize, 94 percent in urad and 93 percent in bajra.

# Price Policy for Kharif Crops



**Table 6.1: MSPs Recommended for KMS, 2018-19**

(₹/qtl)

Crops	Projected Costs for KMS, 2018-19		MSP, KMS 2017-18	Recommended MSP (atleast 1.5 times A <sub>2</sub> +FL) for KMS 2018-19	MSP as percent of A <sub>2</sub> +FL
	A <sub>2</sub>	A <sub>2</sub> +FL			
Paddy Common	865	1166	1550	1745 (12.58)	150
Paddy Grade A	-	-	1590	1770 (11.32)	152
Jowar- Hybrid	1241	1619	1700	2430 (42.94)	150
Jowar- Maldandi	-	-	1725	2450 (42.03)	151
Bajra	583	990	1425	1950 (36.84)	197
Ragi	1446	1931	1900	2895 (52.37)	150
Maize	806	1131	1425	1700 (19.30)	150
Tur	2488	3432	5450*	5675 (4.13)	165
Moong	2958	4650	5575*	6975 (25.11)	150
Urad	2420	3438	5400*	5600 (3.70)	163
Groundnut	2615	3260	4450*	4890 (9.89)	150
Sunflower Seed	3056	3592	4100@	5385 (31.34)	150
Soyabean (Yellow)	1879	2266	3050*	3390 (11.15)	150
Sesamum	2682	4166	5300@	6230 (17.55)	150
Nigerseed	1744	3918	4050@	5860 (44.69)	150
Cotton (Medium Staple)	2700	3433	4020	5150 (28.11)	150
Cotton (Long Staple)	-	-	4320	5450 (26.16)	159

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

*\* Including bonus of ₹200 per quintal*

*@Including bonus of ₹100 per quintal*

6.25 However, considering other factors like demand-supply situation, market prices, inter-crop price parity, etc. the Commission is of the view that recommended MSPs for many crops particularly water-intensive crop like paddy are higher. The main challenge would be to ensure that farmers receive at least the announced



## Price Policy for **Kharif Crops**

MSP and India is able to retain its competitiveness in world markets. Therefore, efforts are needed to create effective procurement system or alternative models like Bhavantar Bhugtan Yojana (BBY) in Madhya Pradesh and proposed Market Assurance Scheme. The role and participation of state governments and private sector is extremely important to make these interventions effective as well as ensure remunerative prices to farmers.

**(Vijay Paul Sharma)**  
Chairman

**(Shailja Sharma)**  
Member Secretary

31<sup>st</sup> March, 2018





# Annex Tables



## Price Policy for Kharif Crops

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

(Million hectares)

Sl. No.	Crops		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Rice	Kharif	38.05	40.14	38.91	39.45	39.83	39.66	39.85	38.81
		Rabi	4.81	3.87	3.84	4.69	4.28	3.84	4.15	4.14
		Total	42.86	44.01	42.75	44.14	44.11	43.50	43.99	42.95
2	Wheat	Rabi	29.07	29.86	30.00	30.47	31.47	30.42	30.79	30.05
3	Barley	Rabi	0.71	0.64	0.70	0.67	0.71	0.59	0.66	0.74
4	Jowar	Kharif	3.07	2.62	2.43	2.28	2.27	2.14	2.06	1.89
		Rabi	4.31	3.63	3.79	3.52	3.89	3.94	3.57	2.98
		Total	7.38	6.25	6.21	5.79	6.16	6.08	5.62	4.87
5	Bajra	Kharif	9.61	8.78	7.30	7.81	7.32	7.13	7.46	7.14
6	Maize	Kharif	7.28	7.38	7.21	7.31	7.56	7.18	7.84	7.67
		Rabi	1.27	1.40	1.46	1.76	1.62	1.63	1.79	1.63
		Total	8.55	8.78	8.67	9.07	9.19	8.81	9.63	9.30
7	Ragi	Kharif	1.29	1.18	1.13	1.19	1.21	1.14	1.02	1.20
	Coarse Cereals	Kharif	22.05	20.75	18.82	19.27	18.95	18.23	18.99	18.43
		Rabi	6.29	5.67	5.94	5.95	6.22	6.15	6.01	5.35
		Total	28.34	26.42	24.76	25.22	25.17	24.39	25.01	23.78
	Cereals	Kharif	60.10	60.89	57.73	58.72	58.78	57.89	58.84	57.24
		Rabi	40.17	39.40	39.78	41.11	41.97	40.42	40.95	39.54
		Total	100.27	100.29	97.52	99.83	100.75	98.31	99.79	96.78
8	Tur (Arhar)	Kharif	4.37	4.01	3.89	3.90	3.85	3.96	5.34	4.43
9	Moong	Kharif	2.85	2.61	1.97	2.34	2.03	2.76	3.37	3.24
		Rabi	0.76	0.78	0.74	1.04	0.99	1.07	0.96	0.58
		Total	3.51	3.39	2.72	3.38	3.02	3.83	4.33	3.82
10	Urad	Kharif	2.51	2.36	2.44	2.35	2.49	2.72	3.48	4.18
		Rabi	0.74	0.86	0.69	0.72	0.76	0.90	1.00	0.85
		Total	3.25	3.22	3.13	3.06	3.25	3.62	4.48	5.03
11	Gram	Rabi	9.19	8.30	8.52	9.93	8.25	8.40	9.63	10.43
12	Lentil (Masur)	Rabi	1.60	1.56	1.42	1.34	-			

(Contd.)



# Price Policy for Kharif Crops



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

(Million hectares)

Sl. No.	Crops		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Pulses	Kharif	12.32	11.19	9.95	10.33	9.99	11.31	14.36	13.73
		Rabi	14.08	13.27	13.30	14.88	13.56	13.60	15.08	15.10
		Total	26.40	24.46	23.26	25.21	23.55	24.91	29.45	28.83
	Foodgrains	Kharif	72.42	72.08	67.69	69.05	68.77	69.21	73.20	70.97
		Rabi	54.25	52.67	53.09	55.99	55.53	54.01	56.03	54.64
		Total	126.67	124.75	120.78	125.04	124.30	123.22	129.23	125.61
13	Groundnut	Kharif	4.98	4.32	3.93	4.65	4.01	3.84	4.58	4.07
		Rabi	0.88	0.95	0.79	0.86	0.76	0.76	0.76	0.84
		Total	5.86	5.26	4.72	5.51	4.77	4.60	5.34	4.91
14	Soybean	Kharif	9.60	10.11	10.84	11.72	10.91	11.60	11.18	10.45
15	Sunflower	Kharif	0.32	0.26	0.30	0.25	0.22	0.16	0.17	0.13
		Rabi	0.61	0.47	0.53	0.42	0.37	0.33	0.21	0.21
		Total	0.93	0.73	0.83	0.67	0.59	0.49	0.38	0.33
16	Sesamum	Kharif	2.08	1.90	1.71	1.68	1.75	1.95	1.67	1.54
17	Nigerseed	Kharif	0.37	0.36	0.31	0.30	0.23	0.25	0.26	0.22
18	Rapeseed/ Mustard	Rabi	6.90	5.89	6.36	6.65	5.80	5.75	6.07	5.85
19	Safflower	Rabi	0.24	0.25	0.18	0.18	0.17	0.13	0.17	0.13
	Nine Oilseeds	Kharif	18.23	18.42	18.32	19.65	18.21	18.86	18.67	17.23
		Rabi	9.00	7.89	8.16	8.40	7.39	7.22	7.51	7.30
		Total	27.22	26.31	26.48	28.05	25.60	26.09	26.18	24.54
20	Cotton		11.24	12.18	11.98	11.96	12.82	12.29	10.83	12.43
	Jute		0.77	0.81	0.78	0.76	0.75	0.73	0.71	0.71
	Mesta		0.10	0.10	0.09	0.08	0.06	0.05	0.06	0.05
21	Jute & Mesta		0.87	0.90	0.86	0.84	0.81	0.78	0.76	0.76
22	Sugarcane		4.88	5.04	5.00	4.99	5.07	4.93	4.44	4.81

Source : DES, DAC&FW





## Price Policy for Kharif Crops

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

(Million tonnes)

S. No.	Crops		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Rice	Kharif	80.65	92.78	92.37	91.50	91.39	91.41	96.30	96.48
		Rabi	15.33	12.52	12.87	15.15	14.09	13.00	13.40	14.53
		Total	95.98	105.30	105.24	106.65	105.48	104.41	109.70	111.01
2	Wheat	Rabi	86.87	94.88	93.51	95.85	86.53	92.29	98.51	97.11
3	Barley	Rabi	1.66	1.62	1.75	1.83	1.61	1.44	1.75	1.99
4	Jowar	Kharif	3.44	3.29	2.84	2.39	2.30	1.82	1.96	2.01
		Rabi	3.56	2.69	2.44	3.15	3.15	2.42	2.60	2.65
		Total	7.00	5.98	5.28	5.54	5.45	4.24	4.57	4.66
5	Bajra	Kharif	10.37	10.28	8.74	9.25	9.18	8.07	9.73	9.26
6	Maize	Kharif	16.64	16.49	16.20	17.14	17.01	16.05	18.92	19.51
		Rabi	5.09	5.27	6.05	7.11	7.16	6.51	6.98	7.63
		Total	21.73	21.76	22.26	24.26	24.17	22.57	25.90	27.14
7	Ragi	Kharif	2.19	1.93	1.57	1.98	2.06	1.82	1.39	1.96
	Coarse Cereals	Kharif	33.08	32.44	29.80	31.20	30.94	28.15	32.44	33.15
		Rabi	10.32	9.58	10.25	12.09	11.92	10.37	11.33	12.27
		Total	43.40	42.01	40.04	43.29	42.86	38.52	43.77	45.42
	Cereals	Kharif	113.77	125.22	122.16	122.70	122.34	119.56	128.74	129.63
		Rabi	112.48	116.98	116.63	123.09	112.53	115.66	123.24	123.91
		Total	226.24	242.20	238.78	245.79	234.87	235.22	251.98	253.54
8	Tur (Arhar)	Kharif	2.86	2.65	3.02	3.17	2.81	2.56	4.87	4.02
9	Moong	Kharif	1.53	1.24	0.79	0.96	0.87	1.00	1.64	1.42
		Rabi	0.27	0.40	0.40	0.65	0.64	0.59	0.52	0.32
		Total	1.80	1.63	1.19	1.61	1.50	1.59	2.17	1.74
10	Urad	Kharif	1.40	1.23	1.43	1.15	1.28	1.25	2.18	2.60
		Rabi	0.36	0.53	0.47	0.55	0.68	0.70	0.66	0.63
		Total	1.76	1.77	1.90	1.70	1.96	1.95	2.83	3.23
11	Gram	Rabi	8.22	7.70	8.83	9.53	7.33	7.06	9.38	11.10
12	Lentil (Masur)	Rabi	0.94	1.06	1.13	1.02	-	-	-	

(Contd.)

# Price Policy for Kharif Crops



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

(Million tonnes)

S. No.	Crops		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Pulses	Kharif	7.12	6.06	5.92	5.99	5.73	5.53	9.58	8.83
		Rabi	11.12	11.03	12.43	13.25	11.42	10.82	13.55	15.11
		Total	18.24	17.09	18.34	19.25	17.15	16.35	23.13	23.95
	Foodgrains	Kharif	120.85	131.27	128.07	128.69	128.06	125.09	138.33	138.46
		Rabi	123.64	128.01	129.06	136.35	123.96	126.47	136.78	139.02
		Total	244.49	259.29	257.13	265.04	252.02	251.57	275.11	277.49
13	Groundnut	Kharif	6.64	5.13	3.19	8.06	5.93	5.37	6.05	6.62
		Rabi	1.62	1.84	1.51	1.66	1.47	1.37	1.41	1.60
		Total	8.26	6.96	4.69	9.71	7.40	6.73	7.46	8.22
14	Soybean	Kharif	12.74	12.21	14.67	11.86	10.37	8.57	13.16	11.39
15	Sunflower	Kharif	0.19	0.15	0.19	0.15	0.11	0.07	0.10	0.07
		Rabi	0.46	0.37	0.36	0.35	0.32	0.23	0.15	0.16
		Total	0.65	0.52	0.54	0.50	0.43	0.30	0.25	0.23
16	Sesamum	Kharif	0.89	0.81	0.69	0.71	0.83	0.85	0.75	0.72
17	Nigerseed	Kharif	0.11	0.10	0.10	0.10	0.08	0.07	0.09	0.07
18	Rapeseed/ Mustard	Rabi	8.18	6.60	8.03	7.88	6.28	6.80	7.92	7.54
19	Safflower	Rabi	0.15	0.15	0.11	0.11	0.09	0.05	0.09	0.04
	Nine Oilseeds	Kharif	21.92	20.69	20.79	22.61	19.19	16.68	21.51	20.36
		Rabi	10.56	9.11	10.15	10.14	8.32	8.57	9.76	9.52
		Total	32.48	29.80	30.94	32.75	27.51	25.25	31.28	29.88
20	Cotton\$		33.90	35.50	37.00	39.80	38.00	30.01	32.58	33.92
	Cotton\$\$		33.00	35.20	34.22	35.90	34.81			
	Jute#		10.01	10.74	10.34	11.08	10.62	9.94	10.43	9.98
	Mesta#		0.61	0.66	0.59	0.61	0.51	0.58	0.53	0.53
21	Jute & Mesta#		10.62	11.40	10.93	11.69	11.13	10.52	10.96	10.51
22	Sugarcane		342.38	361.04	341.20	352.14	362.33	348.45	306.07	353.23

Note: \$ : 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, DAC&FW, Cotton Advisory Board.



## Price Policy for Kharif Crops

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

(Kgs per hectare)

S. No.	Crops		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Rice	Kharif	2120	2311	2374	2319	2295	2305	2417	2486
		Rabi	3185	3238	3353	3232	3291	3382	3230	3513
		Total	2239	2393	2462	2416	2391	2400	2494	2585
2	Wheat	Rabi	2989	3177	3117	3145	2750	3034	3200	3232
3	Barley	Rabi	2357	2516	2521	2718	2280	2439	2663	2695
4	Jowar	Kharif	1119	1257	1171	1050	1014	849	954	1062
		Rabi	827	741	644	896	808	615	730	890
		Total	949	957	850	957	884	697	812	956
5	Bajra	Kharif	1079	1171	1198	1184	1255	1132	1305	1297
6	Maize	Kharif	2285	2234	2246	2346	2249	2236	2413	2543
		Rabi	4003	3765	4152	4050	4414	4006	3896	4674
		Total	2540	2478	2566	2676	2632	2563	2689	2917
7	Ragi	Kharif	1705	1641	1396	1661	1706	1601	1363	1630
	Coarse Cereals	Kharif	1500	1563	1583	1619	1633	1544	1708	1799
		Rabi	1641	1689	1725	2034	1915	1686	1885	2293
		Total	1531	1590	1617	1717	1703	1579	1750	1910
	Cereals	Kharif	1893	2056	2116	2089	2081	2065	2188	2265
		Rabi	2800	2969	2931	2995	2681	2862	3010	3134
		Total	2256	2415	2449	2462	2331	2393	2525	2620
8	Tur (Arhar)	Kharif	655	662	776	813	729	646	913	909
9	Moong	Kharif	538	475	398	410	428	363	488	438
		Rabi	354	508	539	620	640	554	546	551
		Total	514	483	436	475	498	416	500	455
10	Urad	Kharif	557	523	586	490	516	459	626	622
		Rabi	489	621	679	768	891	773	656	742
		Total	542	549	606	555	604	537	632	643
11	Gram	Rabi	895	928	1036	960	889	840	974	1064
12	Lentil (Masur)	Rabi	591	678	797	758	-			
	Pulses	Kharif	578	541	594	580	573	489	667	644
		Rabi	790	831	934	891	842	796	898	1001
		Total	691	699	789	763	728	656	786	831

(Contd.)



# Price Policy for Kharif Crops



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

(Kgs per hectare)

S. No.	Crops		2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Foodgrains	Kharif	1669	1821	1892	1864	1862	1808	1890	1951
		Rabi	2279	2430	2431	2435	2232	2342	2441	2544
		Total	1930	2078	2129	2120	2028	2042	2129	2209
13	Groundnut	Kharif	1335	1188	811	1735	1478	1399	1321	1626
		Rabi	1846	1938	1908	1926	1948	1801	1861	1909
		Total	1411	1323	994	1764	1552	1465	1398	1674
14	Soybean	Kharif	1327	1208	1353	1012	951	738	1177	1090
15	Sunflower	Kharif	608	566	622	621	512	420	567	543
		Rabi	748	783	674	826	866	698	737	778
		Total	701	706	655	750	736	608	660	688
16	Sesamum	Kharif	429	426	402	426	474	436	448	463
17	Nigerseed	Kharif	290	269	325	328	328	295	332	327
18	Rapeseed/ Mustard	Rabi	1185	1121	1262	1185	1083	1183	1304	1288
19	Safflower	Rabi	617	580	591	638	515	416	567	543
	Nine Oilseeds	Kharif	1203	1123	1135	1151	1054	884	1153	1181
		Rabi	1174	1155	1244	1207	1126	1186	1300	1303
		Total	1193	1133	1168	1168	1075	968	1195	1218
20	Cotton \$		513	496	525	566	504	415	512	464
	Cotton\$\$		499	491	486	510	462			
	Jute		2329	2389	2396	2639	2549	2457	2660	2543
	Mesta		1115	1248	1237	1338	1525	1945	1664	1866
21	Jute & Mesta		2192	2268	2281	2512	2473	2421	2585	2498
22	Sugarcane		70091	71667	68254	70520	71512	70720	69001	73394

Note: \$ : CAB estimates

\$\$ : E&S estimates

Source : DES, DAC&FW, Cotton Advisory Board.



## Price Policy for Kharif Crops

Annex Table 1.4 : Share of Kharif Crops (under MSP) in Total Production, TE 2017-18

(Percent)

S. 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	7.1	3.9	10.9	4.6	6.9	6.4	1.7	3.9	0.1	0.6	3.2	2.5	0.4	3.6	2.6	6.7	11.0	0.4	5.0	12.2	0.6	14.3	2.2	100
2	Jowar	6.1	1.7	7.8	0.0	0.0	0.1	2.8	0.7	0.0	0.0	0.0	21.4	0.0	9.8	38.0	0.1	0.0	7.3	8.4	3.5	0.0	0.0	0.1	100
3	Bajra	0.8	0.1	0.9	0.0	0.0	0.0	7.3	9.1	0.0	0.1	0.0	2.4	0.0	7.6	6.4	0.0	0.0	45.1	1.5	19.6	0.0	0.0	0.1	100
4	Maize	6.9	9.0	15.8	0.4	10.8	1.1	2.7	0.1	2.9	2.1	2.0	13.0	0.0	12.3	11.5	0.6	1.7	5.4	7.3	5.6	0.2	2.9	1.7	100
5	Ragi	2.0	0.1	2.1	0.0	0.4	0.1	1.0	0.0	0.1	0.1	0.9	64.4	0.0	0.0	5.8	1.8	0.0	0.0	0.0	13.6	0.0	8.7	0.2	100
6	Tur	3.5	4.5	8.6	0.1	0.9	1.1	8.5	0.2	0.0	0.0	5.5	16.4	0.0	19.3	26.5	3.2	0.1	0.3	1.3	7.4	0.1	0.1	0.3	100
7	Urad	11.8	0.9	12.8	1.3	0.4	1.1	2.7	0.0	0.1	0.0	3.9	1.2	0.0	29.2	4.7	1.1	0.0	8.3	9.1	10.1	0.4	1.9	11.7	100
8	Moong	5.4	3.5	9.2	0.4	4.1	0.4	3.9	0.9	0.0	0.0	1.2	4.4	0.0	10.3	9.0	5.6	1.0	39.7	5.2	2.8	0.0	1.5	0.2	100
9	Groundnut	10.8	3.8	14.6	0.0	0.0	0.5	39.7	0.1	0.0	0.0	0.4	5.5	0.0	4.6	5.0	0.7	0.0	14.8	10.5	1.1	0.0	2.4	0.2	100
10	Sesamum	1.8	1.1	2.8	1.1	0.3	0.9	8.5	0.1	0.1	0.3	0.5	2.8	0.0	22.7	0.7	0.6	0.2	12.1	2.8	14.1	0.1	28.2	1.2	100
11	Nigerseed	3.0	0.0	3.0	4.8	0.0	14.0	3.4	0.0	0.0	0.4	5.0	1.7	0.0	29.6	3.8	30.0	0.0	0.0	0.0	0.0	0.0	4.0	0.2	100
12	Soybean	0.0	2.4	2.5	0.0	0.0	0.7	0.7	0.0	0.0	0.0	0.0	1.7	0.0	51.4	32.8	0.0	0.0	9.6	0.0	0.1	0.1	0.0	0.4	100
13	Sunflower	6.7	5.3	10.5	0.0	4.9	0.1	0.0	4.0	0.0	0.0	0.4	48.7	0.0	0.9	7.2	10.1	2.7	0.0	2.3	1.5	0.0	5.9	0.7	100
14	Cotton	5.6	8.5	13.0	0.0	0.0	0.0	31.8	5.2	0.0	0.0	0.0	4.2	0.0	5.9	25.0	1.1	3.1	4.5	1.2	0.0	0.0	0.0	4.8	100

Source: Directorate of Economics & Statistics, Ministry of Agriculture and Farmers Welfare

# Price Policy for Kharif Crops



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

Sl. No.	Oil Content (%)	Oil Cake(%) {100-col(2)}	Realisation from oil cake on processing of 1 quintal of oilseeds, assuming price of cake/qrtl= ₹2050{col (3)*Price of Oilcake}/100	Cost of Oil Content i.e. oilseeds without cake (₹/qrtl.), assuming MSP/qrtl.=5385 MSP-Col (4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (₹/qrtl.) {col(5)/col(2)}*0.25	MSP at Oil Content (₹) Given in col.(2) [MSP+{Average of col. (6)* percent points of oil content that is over & above 35%}]/(0.25)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	35.00	65.00	1333	4053	28.95	5385
2	35.25	64.75	1327	4058	28.78	5410
3	35.50	64.50	1322	4063	28.61	5436
4	35.75	64.25	1317	4068	28.45	5461
5	36.00	64.00	1312	4073	28.28	5487
6	36.25	63.75	1307	4078	28.13	5512
7	36.50	63.50	1302	4083	27.97	5537
8	36.75	63.25	1297	4088	27.81	5563
9	37.00	63.00	1292	4094	27.66	5588
10	37.25	62.75	1286	4099	27.51	5613
11	37.50	62.50	1281	4104	27.36	5639
12	37.75	62.25	1276	4109	27.21	5664
13	38.00	62.00	1271	4114	27.07	5690
14	38.25	61.75	1266	4119	26.92	5715
15	38.50	61.50	1261	4124	26.78	5740
16	38.75	61.25	1256	4129	26.64	5766
17	39.00	61.00	1251	4135	26.50	5791
18	39.25	60.75	1245	4140	26.37	5817
19	39.50	60.50	1240	4145	26.23	5842
20	39.75	60.25	1235	4150	26.10	5867
21	40.00	60.00	1230	4155	25.97	5893
22	40.25	59.75	1225	4160	25.84	5918
23	40.50	59.50	1220	4165	25.71	5944
24	40.75	59.25	1215	4170	25.59	5969
25	41.00	59.00	1210	4176	25.46	5994
26	41.25	58.75	1204	4181	25.34	6020
27	41.50	58.50	1199	4186	25.22	6045
28	41.75	58.25	1194	4191	25.10	6070
29	42.00	58.00	1189	4196	24.98	6096
30	42.25	57.75	1184	4201	24.86	6121

(Contd.)





## Price Policy for Kharif Crops

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

Sl. No.	Oil Content (%)	Oil Cake(%) {100-col(2)}	Realisation from oil cake on processing of 1 quintal of oilseeds, assuming price of cake/ qtl= ₹2050{col (3)*Price of Oilcake}/100	Cost of Oil Content i.e. oilseeds without cake (₹/qtl.), assuming MSP/qtl.=5385 MSP-Col (4)	Cost of Oil Content i.e. oilseeds without cake for each 0.25 percent point of oil content (₹/qtl.) {col(5)/col(2)}*0.25	MSP at Oil Content (₹) Given in col.(2) [MSP+{Average of col. (6)* percent points of oil content that is over & above 35%}]/(0.25)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
31	42.50	57.50	1179	4206	24.74	6147
32	42.75	57.25	1174	4211	24.63	6172
33	43.00	57.00	1169	4217	24.51	6197
34	43.25	56.75	1163	4222	24.40	6223
35	43.50	56.50	1158	4227	24.29	6248
36	43.75	56.25	1153	4232	24.18	6274
37	44.00	56.00	1148	4237	24.07	6299
38	44.25	55.75	1143	4242	23.97	6324
39	44.50	55.50	1138	4247	23.86	6350
40	44.75	55.25	1133	4252	23.76	6375
41	45.00	55.00	1128	4258	23.65	6401
42	45.25	54.75	1122	4263	23.55	6426
43	45.50	54.50	1117	4268	23.45	6451
44	45.75	54.25	1112	4273	23.35	6477
45	46.00	54.00	1107	4278	23.25	6502
46	46.25	53.75	1102	4283	23.15	6527
47	46.50	53.50	1097	4288	23.06	6553
48	46.75	53.25	1092	4293	22.96	6578
49	47.00	53.00	1087	4299	22.86	6604
50	47.25	52.75	1081	4304	22.77	6629
51	47.50	52.50	1076	4309	22.68	6654
52	47.75	52.25	1071	4314	22.59	6680
53	48.00	52.00	1066	4319	22.49	6705
Average increase in MSP with 0.25 percent increase in oil content					25.39	

# Price Policy for Kharif Crops



**Table 4.1: Leading Exporters and Importers in World Merchandise Trade, 2016**

(Billion dollars and percentage)

Rank	Exporters	Value	Share	Annual percentage change from 2015	Rank	Importers	Value	Share	Annual percentage change from 2015
1	China	2098	13.2	-8	1	USA	2251	13.9	-3
2	USA	1455	9.1	-3	2	China	1587	9.8	-5
3	Germany	1340	8.4	1	3	Germany	1055	6.5	0
4	Japan	645	4.0	3	4	United Kingdom	636	3.9	1
5	Netherlands	570	3.6	-0	5	Japan	607	3.7	-6
6	Hong Kong, China	517	3.2	1	6	France	573	3.5	-0
	domestic exports	26	0.2	95					
	re-exports	491	3.1	-1					
7	France	501	3.1	-1	7	Hong Kong, China	547	3.4	-2
						retained imports a	121	0.7	-10
8	Korea, Republic of	495	3.1	-6	8	Netherlands	503	3.1	-2
9	Italy	462	2.9	1	9	Canada b	417	2.6	-5
10	United Kingdom	409	2.6	-11	10	Korea, Republic of	406	2.5	-7
11	Belgium	396	2.5	-0	11	Italy	404	2.5	-2
12	Canada	390	2.4	-5	12	Mexico	398	2.5	-2
13	Mexico	374	2.3	-2	13	Belgium	367	2.3	-2
14	Singapore	330	2.1	-5	14	India	359	2.2	-9
	domestic exports	154	1.0	-5					
	re-exports	176	1.1	-5					
15	Switzerland	303	1.9	5	15	Spain	309	1.9	-1
16	Spain	287	1.8	2	16	Singapore	283	1.7	-5
						retained imports	107	0.7	-4
17	Russian Federation	282	1.8	-17	17	Switzerland	269	1.7	6
18	Chinese Taipei	280	1.8	-2	18	Chinese Taipei	231	1.4	-3
19	United Arab Emirates a	266	1.7	-2	19	United Arab Emirates a	225	1.4	-2
20	India	264	1.7	-1	20	Turkey	199	1.2	-4
21	Thailand	215	1.3	0	21	Poland	197	1.2	0
22	Poland	203	1.3	2	22	Australia a	196	1.2	-6
23	Australia	190	1.2	1	23	Thailand	195	1.2	-4
24	Malaysia	189	1.2	-5	24	Russian Federation b	191	1.2	-1

(Contd.)



## Price Policy for Kharif Crops

Table 4.1: Leading Exporters and Importers in World Merchandise Trade, 2016

(Billion dollars and percentage)

Rank	Exporters	Value	Share	Annual percentage change from 2015	Rank	Importers	Value	Share	Annual percentage change from 2015
25	Brazil	185	1.2	-3	25	Viet Nam	174	1.1	5
26	Viet Nam	177	1.1	9	26	Malaysia	168	1.0	-4
27	Saudi Arabia, Kingdom of a	175	1.1	-14	27	Austria	157	1.0	1
28	Czech Republic	163	1.0	3	28	Brazil	143	0.9	-20
29	Austria	152	1.0	-0	29	Czech Republic	142	0.9	1
30	Indonesia	144	0.9	-4	30	Sweden	140	0.9	1
31	Turkey	143	0.9	-1	31	Saudi Arabia, Kingdom of a	139	0.9	-20
32	Sweden	140	0.9	-0	32	Indonesia	136	0.8	-5
33	Ireland	128	0.8	3	33	Hungary	94	0.6	2
34	Hungary	102	0.6	3	34	South Africa a	92	0.6	-13
35	Denmark	95	0.6	-0	35	Philippines a	86	0.5	23
36	Norway	89	0.6	-14	36	Denmark	86	0.5	-0
37	Slovak Republic	78	0.5	3	37	Slovak Republic	75	0.5	3
38	South Africa	75	0.5	-8	38	Ireland	75	0.5	-2
39	Iran a	66	0.4	5	39	Romania	75	0.5	7
40	Romania	64	0.4	5	40	Norway	72	0.4	-5
41	Israel a	60	0.4	-6	41	Israel a	69	0.4	6
42	Chile	60	0.4	-4	42	Portugal	68	0.4	1
43	Argentina	58	0.4	2	43	Finland	60	0.4	-0
44	Finland	58	0.4	-4	44	Chile	59	0.4	-6
45	Qatar	58	0.4	-25	45	Egypt	56	0.3	-12
46	Philippines	56	0.4	-4	46	Argentina	56	0.3	-7
47	Portugal	56	0.3	1	47	Greece	49	0.3	1
48	Kuwait, the State of a	46	0.3	-15	48	Iraq a	48	0.3	-8
49	Iraq a	44	0.3	-11	49	Pakistan	47	0.3	8
50	Peru	37	0.2	8	50	Algeria	47	0.3	-10
	<b>Total of above c</b>	<b>14968</b>	<b>93.8</b>	<b>-</b>		<b>Total of above c</b>	<b>14819</b>	<b>91.3</b>	<b>-</b>
	<b>World c</b>	<b>15955</b>	<b>100.0</b>	<b>-3</b>		<b>World c</b>	<b>16225</b>	<b>100.0</b>	<b>-3</b>

Note: a: Secretariat estimate

b: Imports are valued f.o.b.

c: Includes significant re-exports or re-imports for re-export.

Source: WTO





# Price Policy for Kharif Crops



**Table 4.2: Top 10 Exporters and Importers of Agricultural Products, 2016**

(Billion dollars and percentage)

	Value	Share in world exports/imports				Annual percentage change in value			
	2016	2000	2005	2010	2016	2010-16	2014	2015	2016
<b>Exporters</b>									
European Union (28)	598	41.9	44.2	39.3	37.7	2	1	-13	3
United States of America	165	13.0	9.7	10.5	10.4	2	4	-12	3
Brazil	77	2.8	4.1	5.0	4.9	2	-3	-9	-4
China	76	3.0	3.4	3.8	4.8	7	6	-3	5
Canada	63	6.3	4.8	3.8	4.0	3	4	-7	
Indonesia a	38	1.4	1.6	2.6	2.4	1	3	-10	-4
Argentina	37	2.2	2.2	2.5	2.3	1	10	-9	7
Thailand	37	2.2	2.1	2.6	2.3	1	-2	-8	1
Australia	34	3.0	2.5	2.0	2.1	4	3	-7	-6
<b>India</b>	34	1.1	1.2	1.7	2.1	6	-3	-19	-5
<b>Above 10</b>	<b>1159</b>	<b>76.9</b>	<b>75.9</b>	<b>73.9</b>	<b>73.0</b>	-	-	-	-
<b>Importers</b>									
European Union (28)	602	42.7	45.3	40.3	36.8	1	1	-12	2
United States of America	160	11.6	10.6	8.4	9.8	5	7	0	2
China	155	3.3	5	7.8	9.5	6	3	-6	-3
Japan	75	10.4	7.3	5.6	4.6		-5	-10	2
Canada b	38	2.6	2.4	2.3	2.3	3	4	-5	
Korea, republic of	32	2.2	1.9	1.9	2	3	5	-6	-3
<b>India</b>	29	0.7	0.8	1.3	<b>1.8</b>	8	12	1	5
Hong Kong, China	28					5	5	-6	3
retained imports a	18	1.1	0.8	1	1.1	5	6	-9	1
Mexico b	28	1.8	1.8	1.7	1.7	3	3	-8	1
Russian Federation b	26	1.3	1.9	2.6	1.6	-5	8	-33	-6
<b>Above 10</b>	<b>1162</b>	<b>77.5</b>	<b>77.9</b>	<b>72.8</b>	<b>71.1</b>	-	-	-	-

Note: European Union 28 (countries) are EU countries. The EU countries are: Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the UK.

a: Secretariat estimate

b: Imports are valued f.o.b.

Source: WTO



## Price Policy for Kharif Crops

**Table 4.3: India's Agricultural Exports of Major Commodities**

(₹ '000 Crore)

Sl. No.	Commodity	Apr-Dec, 2016	Apr-Dec, 2017(P)	Percent change over previous year	Share in Total Export
1	Marine products	30.8	38.0	23.3	21.6
2	Rice	26.9	35.6	32.1	20.2
3	Meat & Processed Meat	20.4	21.4	4.9	12.2
4	Spices	13.8	14.6	6.1	8.3
5	Cotton (raw)	5.6	6.7	18.8	3.8
6	Oilseeds	6.3	5.8	-8.8	3.3
7	Oil Meals	3.2	5.3	63.4	3.0
8	Cashew	3.8	4.8	25.3	2.7
9	Sugar	6.5	4.3	-33.7	2.5
10	Fresh Vegetables	4.6	3.7	-18.6	2.1
11	Guargum Meal	2.0	3.0	48.8	1.7
12	Others	30.6	32.6	6.5	18.6
	<b>Total</b>	<b>154.6</b>	<b>175.7</b>	<b>13.6</b>	<b>100.0</b>

Source: DGCIS

# Price Policy for Kharif Crops



**Table 4.4: India's Agricultural Imports of Major Commodities**

(₹ '000 Crore)

Sl. No.	Commodity	Apr-Dec 2016	Apr-Dec 2017(P)	Percent change over previous year	Share in Total Import
1	Vegetable Oils	54.1	58.1	7.4	44.1
2	Pulses	20.4	17.3	-15.2	13.1
3	Wood and Wood Products	11.5	12.4	7.8	9.4
4	Fresh Fruits	8.3	9.4	13.4	7.2
5	Cashew	6.8	7.5	10.1	5.7
6	Cotton (raw)	5.5	5.4	-2.3	4.1
7	Sugar	5.0	5.1	2.0	3.9
8	Spices	4.2	4.5	8.6	3.4
9	Wheat	2.8	2.2	-19.8	1.7
10	Others	9.6	9.8		7.4
	<b>Total</b>	<b>128.2</b>	<b>131.8</b>	<b>2.8</b>	<b>100.0</b>

Source: DGCIS





## Price Policy for Kharif Crops

Table 4.5: Quarterly Domestic and International Prices of Kharif Crops

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	2013 Q1	1300	1952	1377	1652	1960	1581	3593	3787	3934	3439	5511	5543	4305	4522
2	2013 Q2	1375	1906	1396	1629	2059	1454	3809	3985	3922	3645	5464	5546	4325	4815
3	2013 Q3	1442	1815	1496	1506	2038	1365	3720	3828	3994	3486	5233	4897	4765	5307
4	2013 Q4	1467	1700	1332	1237	2053	1294	4046	3837	4366	3661	5355	5755	4568	5023
5	2014 Q1	1482	1552	1311	1297	2110	1385	3929	3964	4679	4288	6141	6841	5033	5392
6	2014 Q2	1517	1408	1330	1280	2156	1312	4140	4277	4992	5430	6277	6801	4886	5144
7	2014 Q3	1497	1625	1369	1055	2185	1117	4761	4596	5802	6000	6423	6908	4796	4337
8	2014 Q4	1459	1669	1264	1074	2083	1245	4432	4671	5208	5471	7182	7380	4139	3953
9	2015 Q1	1424	1657	1332	1084	2167	1478	4955	6452	5499	5675	7288	7095	4090	3980
10	2015 Q2	1398	1583	1359	1068	2087	1366	6006	7184	6501	7607	7285	7615	4066	4263
11	2015 Q3	1352	1574	1382	1099	2020	1233	7696	9007	7397	7614	7057	7608	4150	4282
12	2015 Q4	1447	1586	1441	1102	2031	1162	8798	9802	9499	11828	7855	7442	4491	4259
13	2016 Q1	1432	1673	1447	1080	2136	1174	7591	8037	8521	9056	7009	6887	4569	4196
14	2016 Q2	1443	1827	1504	1145	2123	1163	7999	9285	9925	10691	6623	6421	4509	4425
15	2016 Q3	1539	1802	1546	1028	2289	1018	6816	7566	8855	8905	5463	5246	4788	4963
16	2016 Q4	1451	1635	1468	1026	2283	934	5570	5818	7009	7308	5130	4911	4887	4837
17	2017 Q1	1572	1637	1572	1076	2274	942	4330	4376	6049	5702	4944	5020	5493	5165
18	2017 Q2	1595	1535	1595	1016	2178	1019	3960	3785	5361	5233	5036	5608	4940	5085
19	2017 Q3	1604	1694	1604	972	2367	1077	3842	3670	4925	4340	4776	5340	5007	4757
20	2017 Q4	1633	1686	1633	963	2199	1107	3700	3693	4431	3917	4319	5425	4495	4791

(Contd.)



# Price Policy for Kharif Crops



Table 4.5: Quarterly Domestic and International Prices of Kharif Crops

S.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	2013 Q1	3263	2903	6857	5940	3124	2744	4563	3468	12468	10421	3281	3623	7082	6797
2	2013 Q2	3643	2994	6705	5489	3188	3089	4340	3326	11169	9883	3276	3100	6984	6817
3	2013 Q3	3386	3318	6524	5480	3142	3303	3675	3349	9259	11388	3215	2681	7384	6412
4	2013 Q4	3542	3349	6846	5658	3314	3278	3508	3518	8558	10720	3136	2981	6810	6138
5	2014 Q1	3699	3309	6642	5417	3478	3147	3481	3392	7707	8483	3213	3074	6296	5825
6	2014 Q2	4033	3137	6613	5223	4004	2697	3628	2984	7543	7610	3063	2851	5977	5606
7	2014 Q3	3551	2828	6218	4959	3467	2660	3726	2907	7869	8161	2934	2482	5699	5126
8	2014 Q4	3125	2767	6053	4777	2826	2680	3724	2861	8536	8227	2852	2738	5748	5452
9	2015 Q1	3285	2678	6152	4501	2859	2471	3977	3079	9718	7612	3067	2716	5902	5068
10	2015 Q2	3569	2314	5942	4389	3368	2262	4210	3097	9658	7731	2880	2649	6213	5630
11	2015 Q3	3235	2362	5767	4114	2980	2333	4511	3100	10387	8380	3104	2800	6387	5325
12	2015 Q4	3616	2322	6142	4439	3354	2146	4061	2628	9300	8443	3348	3110	6717	5706
13	2016 Q1	3590	2248	6153	4530	3348	2041	4071	2885	9616	8273	3345	3072	6759	5754
14	2016 Q2	3895	2715	6382	4794	3639	2650	4786	2870	11912	8784	3200	2863	6753	5744
15	2016 Q3	3456	2750	6446	4881	3168	2503	4954	2810	13474	9089	3068	2708	6623	5478
16	2016 Q4	2887	2602	6924	5438	2455	2250	4176	2789	10141	9866	3012	2823	6679	5628
17	2017 Q1	2866	2598	6847	5110	2325	2335	4163	2937	9770	9444	2981	2772	6414	5380
18	2017 Q2	2905	2293	6251	4671	2414	2002	4041	2791	9971	10261	2740	2576	5878	5073
19	2017 Q3	2888	2410	6528	4892	2517	2010	3666	2992	8768	10021	2723	2563	6160	5166
20	2017 Q4	2847	2410	6904	5004	2246	2121	3759	3356	8950	9306	2844	2541	6516	5113

Note : \* International Prices of Rice converted into paddy at the ratio of 0.67.

\*\* International Prices of Cotton (lint) converted into Kapas at the ratio of 0.41.

D: Domestic; I: International

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, Cotton\*\*, Soybean, Soybean Oil, Soybean Meal, Groundnut, Groundnut Oil, Sunflower seed and Sunflower Oil

4. NAFED for International Prices of Pulses viz. Arhar, Urad & Moong.



## Price Policy for Kharif Crops

**Annex Table 5.1: State-wise Average Gross Returns of Kharif Crops during TE2015-16**

Crop/State	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4- Col.2)	Percent (Col.5/ Col.2*100)	₹/ha (Col.4- Col.3)	Percent (Col.7/ Col.3*100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Paddy</b>							
Andhra Pradesh	42061	50661	84539	42478	101	33878	67
Assam	20360	35276	36138	15778	77	861	2
Bihar	20907	27416	37766	16859	81	10351	38
Chhatisgarh	23925	31250	44365	20440	85	13115	42
Gujarat	35352	40369	73113	37761	107	32744	81
Haryana	33942	44009	111456	77514	228	67447	153
Himachal Pradesh	9042	25733	40556	31514	349	14823	58
Jharkhand	17988	24047	33332	15343	85	9285	39
Kerala	50294	54128	93161	42866	85	39033	72
Karnataka	37153	46368	84854	47700	128	38486	83
Madhya Pradesh	20558	28534	41835	21277	103	13302	47
Maharashtra	41261	52320	54884	13623	33	2564	5
Odisha	25312	41144	42557	17245	68	1413	3
Punjab	34242	40152	103688	69446	203	63536	158
Tamilnadu	46272	55570	77142	30871	67	21573	39
Uttarakhand	21553	32053	61397	39844	185	29344	92
Uttar Pradesh	27757	37912	53131	25374	91	15218	40
West Bengal	35992	52415	59273	23281	65	6858	13
<b>ALL-INDIA</b>	<b>30247</b>	<b>40716</b>	<b>59144</b>	<b>28897</b>	<b>96</b>	<b>18428</b>	<b>45</b>

(Contd.)



# Price Policy for Kharif Crops



**Annex Table 5.1: State-wise Average Gross Returns of Kharif Crops during TE2015-16**

Crop/State	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4-Col.2)	Percent (Col.5/Col.2*100)	₹/ha (Col.4-Col.3)	Percent (Col.7/Col.3*100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Maize</b>							
Andhra Pradesh	34396	41607	74507	40112	117	32900	79
Bihar	21029	28202	44103	23075	110	15902	56
Chhatisgarh	6088	16927	17923	11835	194	996	6
Gujarat	22783	34413	30267	7483	33	-4146	-12
Himachal Pradesh	9695	23518	23458	13763	142	-60	-0
Jharkhand	21195	31031	47706	26511	125	16674	54
Karnataka	26274	31222	42171	15897	61	10949	35
Madhya Pradesh	17989	24553	30619	12630	70	6065	25
Maharashtra	44821	58038	58563	13742	31	525	1
Odisha	23605	40023	41530	17925	76	1507	4
Punjab	31248	39091	49672	18423	59	10580	27
Rajasthan	16512	34710	38567	22055	134	3857	11
Tamilnadu	46228	56572	72534	26306	57	15962	28
Uttar Pradesh	13701	24463	28410	14709	107	3947	16
<b>ALL-INDIA</b>	<b>24854</b>	<b>34490</b>	<b>44543</b>	<b>19689</b>	<b>79</b>	<b>10053</b>	<b>29</b>
<b>Jowar</b>							
Andhra Pradesh	17608	23666	43421	25813	147	19755	83
Karnataka	13328	16642	25869	12541	94	9226	55
Madhya Pradesh	14853	20496	23813	8960	60	3317	16
Maharashtra	21468	27453	31247	9778	46	3794	14
Rajasthan	10207	17855	33619	23412	229	15764	88
Tamilnadu	15758	20608	37696	21938	139	17089	83
<b>ALL-INDIA</b>	<b>18669</b>	<b>24272</b>	<b>30363</b>	<b>11694</b>	<b>63</b>	<b>6091</b>	<b>25</b>

(Contd.)



# Price Policy for Kharif Crops

**Annex Table 5.1: State-wise Average Gross Returns of Kharif Crops during TE2015-16**

Crop/State	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4-Col.2)	Percent (Col.5/Col.2*100)	₹/ha (Col.4-Col.3)	Percent (Col.7/Col.3*100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Bajra</b>							
Gujarat	25845	33688	54352	28507	110	20664	61
Haryana	14279	26096	29028	14750	103	2932	11
Karnataka	10785	13376	15971	5186	48	2595	19
Maharashtra	25314	35136	27667	2353	9	-7469	-21
Rajasthan	7664	16651	22118	14453	189	5466	33
Tamilnadu	24222	29011	62019	37796	156	33008	114
Uttar Pradesh	13945	21808	32991	19046	137	11183	51
<b>ALL-INDIA</b>	<b>14858</b>	<b>24039</b>	<b>30130</b>	<b>15273</b>	<b>103</b>	<b>6091</b>	<b>25</b>
<b>Ragi</b>							
Andhra Pradesh	15733	39485	59556	43822	279	20071	51
Karnataka	28684	37248	34883	6199	22	-2365	-6
Maharashtra	24744	36471	26736	1993	8	-9734	-27
Tamilnadu	23163	29636	43441	20278	88	13805	47
Uttarakhand	5165	17851	31935	26769	518	14083	79
<b>ALL-INDIA</b>	<b>18691</b>	<b>30404</b>	<b>33860</b>	<b>15169</b>	<b>81</b>	<b>3456</b>	<b>11</b>
<b>Arhar (Tur)</b>							
Andhra Pradesh	20914	26618	39237	18324	88	12619	47
Bihar	8552	9156	42300	33748	395	33144	362
Gujarat	21479	29640	53820	32341	151	24180	82
Karnataka	18251	21768	46533	28282	155	24765	114
Madhya Pradesh	14393	21490	46083	31691	220	24594	114
Maharashtra	36220	47922	90749	54528	151	42827	89
Odisha	6266	13341	21545	15278	244	8203	61
Uttar Pradesh	12711	23263	49851	37140	292	26588	114
<b>ALL-INDIA</b>	<b>23946</b>	<b>32573</b>	<b>63081</b>	<b>39135</b>	<b>163</b>	<b>30508</b>	<b>94</b>

(Contd.)

# Price Policy for Kharif Crops



**Annex Table 5.1: State-wise Average Gross Returns of Kharif Crops during TE2015-16**

Crop/State	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4-Col.2)	Percent (Col.5/Col.2*100)	₹/ha (Col.4-Col.3)	Percent (Col.7/Col.3*100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Moong</b>							
Andhra Pradesh	14200	16913	29846	15646	110	12933	76
Gujarat	16809	21521	32306	15496	92	10785	50
Karnataka	13293	15997	28860	15567	117	12863	80
Maharashtra	20121	26041	23061	2940	15	-2980	-11
Odisha	6133	12945	18563	12430	203	5618	43
Rajasthan	7072	14243	23680	16608	235	9437	66
Tamilnadu	15702	18679	34899	19198	122	16220	87
<b>ALL-INDIA</b>	<b>12630</b>	<b>18248</b>	<b>25131</b>	<b>12500</b>	<b>99</b>	<b>6882</b>	<b>38</b>
<b>Urad</b>							
Andhra Pradesh	15231	16867	66510	51279	337	49643	294
Chhatisgarh	9366	19778	21301	11934	127	1523	8
Madhya Pradesh	12946	17716	31858	18912	146	14142	80
Maharashtra	16570	23553	25624	9054	55	2071	9
Odisha	5854	13518	21640	15785	270	8122	60
Rajasthan	7782	16412	14231	6449	83	-2181	-13
Tamilnadu	16448	19985	34519	18071	110	14534	73
Uttar Pradesh	8608	13537	20851	12242	142	7314	54
<b>ALL-INDIA</b>	<b>12627</b>	<b>17633</b>	<b>33717</b>	<b>21090</b>	<b>167</b>	<b>16084</b>	<b>91</b>

(Contd.)





## Price Policy for Kharif Crops

**Annex Table 5.1: State-wise Average Gross Returns of Kharif Crops during TE2015-16**

Crop/State	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4- Col.2)	Percent (Col.5/ Col.2*100)	₹/ha (Col.4- Col.3)	Percent (Col.7/ Col.3*100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Groundnut</b>							
Andhra Pradesh	36778	43658	59485	22707	62	15827	36
Gujarat	42783	52875	84600	41817	98	31724	60
Karnataka	28698	33423	42410	13712	48	8987	27
Maharashtra	40848	53243	56029	15181	37	2786	5
Odisha	23148	38632	51190	28042	121	12558	33
Rajasthan	26198	36109	101642	75443	288	65533	181
Tamilnadu	45541	58193	70063	24523	54	11871	20
<b>ALL-INDIA</b>	<b>39168</b>	<b>48271</b>	<b>70015</b>	<b>30847</b>	<b>79</b>	<b>21744</b>	<b>45</b>
<b>Soybean</b>							
Andhra Pradesh	25259	30542	28466	3207	13	-2076	-7
Chhatisgarh	13840	17667	20918	7078	51	3251	18
Madhya Pradesh	18459	22760	28173	9714	53	5413	24
Maharashtra	28924	33258	36144	7219	25	2886	9
Rajasthan	15792	20910	24123	8331	53	3213	15
<b>ALL-INDIA</b>	<b>21798</b>	<b>26193</b>	<b>30259</b>	<b>8461</b>	<b>39</b>	<b>4066</b>	<b>16</b>
<b>Sunflower</b>							
Andhra Pradesh	20446	27926	25769	5324	26	-2156	-8
Karnataka	14740	17145	22957	8216	56	5811	34
Maharashtra	18297	20079	14594	-3703	-20	-5485	-27
<b>ALL-INDIA</b>	<b>19339</b>	<b>24510</b>	<b>26182</b>	<b>6843</b>	<b>35</b>	<b>1672</b>	<b>7</b>
<b>Sesamum</b>							
Andhra Pradesh	16030	20147	27905	11876	74	7758	39
Gujarat	19037	26077	56603	37565	197	30526	117
Madhya Pradesh	10788	17013	42381	31593	293	25368	149
Odisha	8135	15033	25311	17176	211	10279	68
Rajasthan	4657	10557	20369	15712	337	9812	93
Tamilnadu	16158	23560	43146	26987	167	19586	83
Uttar Pradesh	8127	12611	24310	16183	199	11699	93
West Bengal	19878	27147	41933	22055	111	14786	54
<b>ALL-INDIA</b>	<b>12122</b>	<b>18095</b>	<b>35266</b>	<b>23144</b>	<b>191</b>	<b>17170</b>	<b>95</b>

(Contd.)

# Price Policy for Kharif Crops



**Annex Table 5.1: State-wise Average Gross Returns of Kharif Crops during TE2015-16**

Crop/State	Cost A <sub>2</sub>	Cost A <sub>2</sub> +FL	GVO	Gross Returns over A <sub>2</sub>		Gross Returns over A <sub>2</sub> +FL	
	₹/ha			₹/ha (Col.4-Col.2)	Percent (Col.5/Col.2*100)	₹/ha (Col.4-Col.3)	Percent (Col.7/Col.3*100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Nigerseed</b>							
Chhattisgarh	14052	20485	12800	-1252	-9	-7685	-38
Madhya Pradesh	10005	15295	17097	7091	71	1802	12
Odisha	5666	12805	13297	7632	135	493	4
<b>ALL-INDIA</b>	<b>7619</b>	<b>14029</b>	<b>14270</b>	<b>6651</b>	<b>87</b>	<b>241</b>	<b>2</b>
<b>Cotton</b>							
Andhra Pradesh	46914	55458	69335	22421	48	13877	25
Gujarat	42949	54273	88981	46032	107	34708	64
Haryana	28742	45270	56456	27714	96	11186	25
Karnataka	33307	39529	69809	36502	110	30280	77
Madhya Pradesh	34723	49692	55636	20912	60	5944	12
Maharashtra	46554	55927	70842	24289	52	14916	27
Odisha	24568	39864	42681	18112	74	2817	7
Punjab	40819	48819	69379	28560	70	20560	42
Rajasthan	27205	51358	96486	69281	255	45128	88
Tamilnadu	47608	68651	89950	42341	89	21298	31
<b>ALL-INDIA</b>	<b>43014</b>	<b>53704</b>	<b>73616</b>	<b>30602</b>	<b>71</b>	<b>19912</b>	<b>37</b>

Source: CACP, using CS data.



## Price Policy for Kharif Crops

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

Year/Month	AP	Asm	Bih	Guj	Har	HP	Kar	Ker	MP	MH	Odi	Pun	Raj	TN	UP	WB	All-India
<b>2014</b>																	
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
<b>2015</b>																	
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

(Contd.)



# Price Policy for Kharif Crops



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

Year/Month	AP	Asm	Bih	Guj	Har	HP	Kar	Ker	MP	MH	Odi	Pun	Raj	TN	UP	WB	All-India
<b>2016</b>																	
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
<b>2017</b>																	
January	286	259	249	225	362	417	303	675	204	255	222	321	272	412	226	265	271
February	286	261	251	227	363	387	302	675	207	259	220	318	281	413	229	264	273
March	290	256	250	227	363	417	300	675	208	262	223	318	293	413	231	264	276
April	291	257	251	229	361	408	300	682	210	269	227	326	283	413	270	232	280
May	288	256	251	229	363	406	301	687	214	275	229	335	266	413	232	265	275
June	269	256	251	229	363	404	300	687	215	280	227	335	281	410	233	264	276
July	281	252	255	230	373	425	301	687	217	277	235	327	288	415	241	268	280
August	276	258	258	230	365	423	305	687	216	271	231	327	290	412	247	268	280
September	280	272	260	234	365	429	306	687	215	265	227	345	287	416	248	270	281
October	277	282	259	234	367	399	306	687	211	265	226	348	279	416	246	275	279
November	282	281	261	234	367	423	310	687	208	269	222	342	289	417	244	277	281

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



# Price Policy for Kharif Crops

**Annex Table 5.3: Farm Inputs - Wholesale Price Index (Base 2011-12=100)**

Year/Month	High Speed Diesel (HSD)	Fertilizers and nitrogen compounds	Electricity	Agricultural tractors	Lube Oils	Cattle Feed	Fodder	Pesticides and other agrochemical products
<b>Annual Average (July - June)</b>								
2012-13	113	115	101	105	111	131	123	108
2013-14	130	117	104	105	115	143	143	114
2014-15	105	120	106	108	120	141	148	121
2015-16	68	121	104	112	121	152	168	121
2016-17	78	118	104	114	115	158	163	117
<b>2012</b>								
April	112	108	97	104	106	107	108	106
May	112	110	101	104	106	110	105	106
June	110	112	103	104	110	113	102	106
July	109	114	102	104	110	118	107	107
August	111	114	99	104	110	123	111	108
September	114	115	97	104	110	129	119	109
October	108	115	101	105	110	131	123	108
November	108	115	102	105	110	132	125	109
December	108	115	101	105	110	131	125	108
<b>2013</b>								
January	112	115	105	105	110	130	122	108
February	118	115	101	105	110	131	127	107
March	118	116	98	105	110	134	129	108
April	115	115	101	106	112	138	126	109
May	112	115	101	104	112	140	125	105
June	117	116	102	104	112	140	132	107
July	123	117	102	104	112	140	136	110
August	126	117	103	104	115	140	137	111
September	133	117	105	104	115	142	138	112
October	130	116	103	105	115	143	139	113
November	130	117	103	105	115	143	140	113
December	133	117	106	104	115	142	142	114
<b>2014</b>								
January	132	117	106	104	115	141	144	113
February	132	117	106	104	115	141	150	111
March	133	118	106	105	115	142	156	115
April	130	117	106	106	117	144	148	119
May	131	118	103	107	117	148	139	119
June	129	119	102	106	117	147	142	121
July	132	119	103	107	117	146	142	120
August	131	119	106	107	117	144	146	118
September	130	119	105	107	120	142	154	124
October	126	119	104	107	120	139	155	122
November	113	119	107	107	120	137	156	122
December	104	120	108	108	120	137	157	119

(Contd.)

# Price Policy for Kharif Crops



**Annex Table 5.3: Farm Inputs - Wholesale Price Index (Base 2011-12=100)**

Year/Month	High Speed Diesel (HSD)	Fertilizers and nitrogen compounds	Electricity	Agricultural tractors	Lube Oils	Cattle Feed	Fodder	Pesticides and other agrochemical products
<b>2015</b>								
January	88	119	109	108	120	138	156	123
February	79	120	108	108	120	139	151	123
March	87	120	108	108	120	139	143	120
April	83	121	108	111	121	141	140	122
May	92	121	106	111	121	144	138	123
June	93	121	106	111	121	145	143	123
July	87	121	107	111	121	145	151	125
August	73	122	105	111	121	147	166	123
September	71	122	106	111	121	149	167	124
October	74	122	103	112	121	151	169	124
November	74	121	105	112	121	150	173	123
December	72	121	105	112	121	150	176	122
<b>2016</b>								
January	57	122	106	112	121	151	173	123
February	50	122	104	112	121	154	170	122
March	55	121	103	112	121	154	172	120
April	59	121	101	114	121	155	167	117
May	67	121	102	113	121	156	161	119
June	75	121	103	113	121	159	170	118
July	75	120	103	113	121	161	170	117
August	67	119	103	114	115	162	163	116
September	71	118	104	114	115	161	163	117
October	73	118	104	114	115	159	165	115
November	77	118	106	114	115	159	164	115
December	77	117	106	114	115	158	164	116
<b>2017</b>								
January	83	117	108	114	115	157	163	118
February	85	117	107	114	115	158	166	117
March	85	117	103	113	115	155	160	117
April	82	117	103	114	115	156	160	117
May	81	117	103	114	114	156	157	117
June	80	116	102	114	113	155	157	117
July	79	116	102	114	113	155	162	115
August	81	117	101	114	113	155	163	115
September	83	117	106	115	113	155	160	114
October	85	117	106	114	113	154	155	113
November	85	117	106	114	113	153	144	114
December	87	117	106	114	113	152	133	115
% change of Oct.-Dec., 2017 over Oct.-Dec., 2016	13.5	-0.7	0.7	0.5	-1.7	-3.4	-12.4	-1.3

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





## Price Policy for Kharif Crops

**Annex Table 5.4: Projected Cost of Production ( $A_2$ ,  $A_2$ +FL &  $C_2$ ) for Kharif Crops during Marketing Season 2018-19 and Production Shares during TE2016-17**

States	Cost of Production (₹/qtl.)			Shares in Production(%)
	A <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>	
Paddy				
Andhra Pradesh	887	1067	1512	0.07
Assam	731	1259	1589	0.05
Bihar	816	1065	1398	0.07
Chhattisgarh	773	1002	1381	0.07
Gujarat	954	1080	1362	0.02
Haryana	825	1068	1720	0.04
Himachal Pradesh	381	1071	1424	0.00
Jharkhand	1029	1369	1824	0.03
Karnataka	880	1095	1457	0.03
Kerala	1251	1342	1732	0.01
Madhya Pradesh	944	1306	1711	0.04
Maharashtra	1663	2102	2481	0.03
Odisha	857	1382	1713	0.08
Punjab	599	702	1174	0.12
Tamil Nadu	977	1174	1507	0.05
Uttar Pradesh	824	1119	1530	0.13
Uttarakhand	671	1012	1325	0.01
West Bengal	954	1379	1720	0.15
All India Wtd. Avg.	865	1166	1560	
Jowar				
Andhra Pradesh	970	1302	1988	0.07
Karnataka	1554	1936	2611	0.23
Madhya Pradesh	1029	1412	1830	0.09
Maharashtra	1318	1685	2215	0.44
Rajasthan	655	1147	1570	0.09
Tamil Nadu	1078	1410	2051	0.09
All India Wtd. Avg.	1241	1619	2183	
Bajra				
Gujarat	756	982	1258	0.10
Haryana	594	1085	1534	0.09
Karnataka	1254	1555	1942	0.03
Maharashtra	1524	2119	2562	0.07
Rajasthan	400	867	1159	0.49

(Contd.)

# Price Policy for Kharif Crops



**Annex Table 5.4: Projected Cost of Production ( $A_2$ ,  $A_2+FL$  &  $C_2$ ) for Kharif Crops during Marketing Season 2018-19 and Production Shares during TE2016-17**

States	Cost of Production (₹/qtl.)			Shares in Production(%)
	$A_2$	$A_2+FL$	$C_2$	
Uttar Pradesh	519	811	1177	0.21
TamilNadu	830	995	1333	0.02
<b>All India Wtd. Avg.</b>	<b>583</b>	<b>990</b>	<b>1324</b>	
<b>Maize</b>				
Andhra Pradesh	664	803	1257	0.08
Bihar	610	814	1117	0.13
Gujarat	1207	1819	2160	0.03
Himachal Pradesh	637	1526	1972	0.04
Jharkhand	624	915	1146	0.02
Karnataka	849	1010	1319	0.18
Madhya Pradesh	743	1011	1341	0.13
Maharashtra	1093	1415	1777	0.12
Odisha	684	1159	1474	0.01
Punjab	768	961	1289	0.02
Rajasthan	764	1612	1977	0.07
Tamil Nadu	910	1111	1406	0.09
Uttar Pradesh	717	1279	1769	0.07
<b>All India Wtd. Avg.</b>	<b>806</b>	<b>1131</b>	<b>1480</b>	
<b>Ragi</b>				
Karnataka	1673	2139	2643	0.69
Maharashtra	1422	2097	2455	0.07
Tamil Nadu	1150	1471	1797	0.15
Uttarakhand	306	1050	1262	0.10
<b>All India Wtd. Avg.</b>	<b>1446</b>	<b>1931</b>	<b>2370</b>	
<b>Arhar (Tur)</b>				
Andhra Pradesh	3569	4552	6470	0.04
Gujarat	2772	3772	4883	0.10
Karnataka	2747	3276	4531	0.19
Madhya Pradesh	1819	2704	4380	0.22
Maharashtra	2807	3693	5211	0.32
Odisha	2035	4304	6293	0.04
Uttar Pradesh	1818	3320	5463	0.08
<b>All India Wtd. Avg.</b>	<b>2488</b>	<b>3432</b>	<b>4981</b>	

(Contd.)



## Price Policy for Kharif Crops

**Annex Table 5.4: Projected Cost of Production ( $A_2$ ,  $A_2$ +FL &  $C_2$ ) for Kharif Crops during Marketing Season 2018-19 and Production Shares during TE2016-17**

States	Cost of Production (₹/qtl.)			Shares in Production(%)
	A <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>	
Moong				
Andhra Pradesh	2881	3411	5219	0.10
Karnataka	3920	4724	6544	0.06
Maharashtra	5174	6688	8257	0.12
Odisha	2147	4497	6209	0.09
Rajasthan	2448	4587	6025	0.53
TamilNadu	3295	3921	5101	0.10
All India Wtd. Avg.	2958	4650	6161	
Urad				
Andhra Pradesh	1693	1860	3865	0.18
Chhatisgarh	1238	2567	3271	0.02
Madhya Pradesh	2073	2812	4090	0.31
Maharashtra	4027	5697	7008	0.06
Odisha	2056	4700	6691	0.02
Rajasthan	2335	4927	5714	0.09
Tamil Nadu	3416	4152	5631	0.16
Uttar Pradesh	2564	4004	6222	0.16
All India Wtd. Avg.	2420	3438	4989	
Groundnut				
Andhra Pradesh	2332	2757	3863	0.10
Gujarat	2727	3364	4201	0.46
Karnataka	4129	4767	6063	0.07
Maharashtra	3279	4253	5245	0.06
Odisha	2140	3543	4733	0.01
Rajasthan	1127	1554	2389	0.17
Tamil Nadu	3317	4240	5213	0.13
All India Wtd. Avg.	2615	3260	4186	
Soybean				
Chhattisgarh	2108	2679	3476	0.01
Madhya Pradesh	1616	1984	2690	0.59
Maharashtra	2419	2777	3521	0.30
Rajasthan	1809	2378	2963	0.10
All India Wtd. Avg.	1879	2266	2972	

(Contd.)



# Price Policy for Kharif Crops



**Annex Table 5.4: Projected Cost of Production ( $A_2$ ,  $A_2+FL$  &  $C_2$ ) for Kharif Crops during Marketing Season 2018-19 and Production Shares during TE2016-17**

States	Cost of Production (₹/qtl.)			Shares in Production(%)
	A <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>	
Sunflower				
Andhra Pradesh	2738	3667	4654	0.14
Karnataka	3171	3682	4664	0.74
Maharashtra	2721	2988	3386	0.13
All India Wtd. Avg.	3056	3592	4501	
Sesamum				
A.P.	4577	5752	8319	0.03
Gujarat	4338	5912	7756	0.11
M.P.	2340	3685	5888	0.24
Odisha	3008	5427	7720	0.01
Rajasthan	2293	5205	7174	0.15
Tamil Nadu	3993	5825	7592	0.04
West Bengal	2070	2823	3789	0.29
Uttar Pradesh	2908	4516	7610	0.14
All India Wtd. Avg.	2682	4166	6053	
Nigerseed				
Odisha	1744	3918	5135	1.00
All India Wtd. Avg.	1744	3918	5135	
Cotton				
Andhra Pradesh	3007	3562	4927	0.07
Gujarat	2392	3018	3894	0.33
Haryana	1975	3114	4863	0.06
Karnataka	2765	3272	4461	0.06
Madhya Pradesh	2636	3653	4908	0.07
Maharashtra	3321	3990	5063	0.29
Odisha	2535	4056	5066	0.01
Punjab	2763	3304	4419	0.04
Rajasthan	1403	2656	3574	0.05
Tamil Nadu	3033	4342	5271	0.02
All India Wtd. Avg.	2700	3433	4514	

Note: Production Shares are related to production of projected states only

Source: CACP, using CS data



# Price Policy for Kharif Crops

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

Cost Items	Andhra Pradesh		Assam		Bihar		Chhattisgarh		Gujarat		Haryana		Himachal Pradesh		Jharkhand	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	52678.42	51820.70	36195.91	36000.00	29205.41	26307.57	34056.80	30848.13	41083.72	41447.35	47092.31	45716.71	27549.81	26323.44	24843.31	23875.23
Human Labour																
Casual	16001.31	16200.16	4793.25	4808.76	9285.03	8606.71	6697.89	6060.27	14553.97	14101.57	11704.63	11800.25	1159.56	1594.00	6923.56	6655.86
Attached	599.18	301.84	167.16	128.80	40.56	32.03	16.15	10.47	108.41	114.09	401.14	492.07	0.00	13.02	1.18	0.00
Family	10047.05	9277.85	15777.49	15639.74	6726.21	6642.78	8331.80	7111.22	4971.96	5291.64	11938.68	10850.03	18275.32	17441.64	7226.58	6686.78
Total	26647.54	25779.85	20737.90	20577.30	16051.80	15281.52	15045.84	13181.96	19634.34	19507.30	24044.45	23142.35	19434.88	19048.66	14151.32	13342.64
Bullock Labour																
Hired	191.14	160.20	120.82	130.04	0.00	19.35	303.86	335.70	27.11	37.13	0.00	0.00	351.31	538.00	31.26	69.50
Owned	308.32	397.36	8246.89	7975.67	80.85	222.63	2999.10	2197.32	229.28	216.25	11.64	34.39	1991.48	1415.54	1696.34	2285.07
Total	499.46	557.56	8367.71	8105.71	80.85	241.98	3302.96	2533.02	256.39	253.38	11.64	34.39	2342.79	1953.54	1727.60	2354.57
Machine Labour																
Hired	9399.22	9301.06	2788.70	2660.56	3776.56	3537.57	5948.45	5949.43	4495.19	4338.03	4572.81	4341.94	1811.24	1781.37	2996.09	2442.26
Owned	106.15	101.17	655.35	797.47	24.47	52.04	187.29	111.32	841.03	1166.11	988.46	1424.47	53.39	38.66	42.81	67.01
Total	9505.37	9402.23	3444.05	3458.03	3801.03	3589.61	6135.74	6060.75	5336.22	5504.14	5561.27	5766.41	1864.63	1820.03	3038.90	2509.27
Seed	2004.99	2265.17	1096.93	1086.88	1802.55	1783.69	1809.04	1800.08	4651.27	5403.88	1207.57	1208.09	2066.39	1682.03	2094.84	1992.20
Fertilisers and Manure																
Fertilisers	7289.75	7399.47	740.93	807.99	2820.69	2892.82	3453.37	3451.55	5188.29	4902.04	4579.24	4583.37	390.43	411.75	2728.64	2458.09
Manure	928.40	970.44	685.01	670.75	304.48	200.54	1407.62	1255.25	598.95	881.99	2.64	0.00	582.78	488.74	483.30	692.14
Total	8218.15	8369.91	1425.94	1478.74	3125.17	3093.36	4860.99	4706.80	5787.24	5784.03	4581.88	4583.37	973.21	900.49	3211.94	3150.23
Other Inputs																
Insecticides	3102.19	2708.08	36.38	25.26	38.00	18.93	1008.24	1031.30	772.73	803.87	2564.32	2420.21	403.50	522.29	0.00	0.00
Irrigation charges	1312.95	1432.22	468.26	651.09	3624.82	1702.58	723.76	485.82	3543.43	3082.63	8050.50	7505.32	183.37	127.25	84.87	5.46
Interest on working capital	1291.86	1289.18	618.74	616.99	681.19	595.90	779.55	719.30	1094.30	1095.63	1065.26	1056.57	281.04	269.15	533.84	520.86
Miscellaneous	95.91	16.50	0.00	0.00	0.00	0.00	390.68	329.10	7.80	12.49	5.42	0.00	0.00	0.00	0.00	0.00
<b>Fixed Cost</b>	29132.98	27147.63	13601.32	13886.91	13480.44	13789.16	15258.54	14926.94	15137.04	14350.71	35334.64	33230.87	11838.05	10747.07	12174.53	14972.30
Rental value of owned land	26348.62	25118.45	8764.60	8539.58	10484.52	10994.13	11131.36	11325.79	10626.38	10493.10	29079.05	28844.76	9096.85	8201.90	9389.68	12016.61
Rent paid for leased-in land	121.23	59.36	348.08	462.91	0.00	0.00	0.00	0.00	1849.30	1679.08	0.00	0.00	231.03	98.41	210.22	97.86
Land revenue, cesses & taxes	2.35	1.00	49.74	49.91	65.03	48.02	2.64	3.75	8.37	8.23	0.00	0.00	7.36	6.57	55.55	54.90
Depreciation on implements & farm buildings	306.28	211.39	836.58	901.89	520.73	506.75	1100.12	829.10	187.07	168.86	618.44	316.25	520.48	465.01	839.02	969.58
Interest on fixed capital	2354.50	1757.43	3602.32	3932.62	2410.16	2240.26	3024.42	2768.30	2465.92	2001.44	5637.15	4069.86	1982.33	1975.18	1680.06	1833.35
Total Cost	81811.40	78968.33	49797.23	49886.91	42685.85	40096.73	49315.34	45775.07	56220.76	55798.06	82426.95	78947.58	39387.86	37070.51	37017.84	38847.53

(Contd.)



# Price Policy for Kharif Crops



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

Cost Items	Kerala		Madhya Pradesh		Maharashtra		Odisha		Punjab		Tamil Nadu		Uttar Pradesh		Uttarakhand		West Bengal	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	58767.16	52904.87	30620.93	28415.16	57681.26	54417.34	43863.39	42301.82	34807.69	34041.18	54944.90	55251.95	40095.90	39481.03	31485.63	30396.29	54122.24	54259.48
Human Labour																		
Casual	29209.19	25851.33	3509.03	4079.49	20526.09	18348.30	11572.62	11346.29	7255.78	7127.39	14740.30	14450.53	8463.63	8861.94	3228.30	3574.40	16917.97	17570.95
Attached	0.00	0.00	77.93	51.54	134.47	266.72	39.10	107.94	1754.20	1728.01	116.28	264.02	13.21	24.71	22.37	30.58	0.82	1.10
Family	4826.64	3480.49	9610.99	8318.51	11011.98	11840.64	17635.55	16891.75	6518.79	5863.17	7919.02	9374.48	11415.79	11243.62	11878.12	10670.28	17469.22	17842.29
Total	34035.83	29331.82	13197.95	12449.54	31672.54	30455.66	29247.27	28345.98	15528.77	14718.57	22775.60	24089.03	19892.63	20130.27	15128.79	14275.26	34388.01	35414.34
Bullock Labour																		
Hired	70.94	163.49	178.75	385.95	3381.93	3813.73	538.49	352.88	0.45	0.23	104.50	99.95	100.23	63.31	0.00	104.92	291.17	355.02
Owned	0.00	0.00	3961.38	3637.56	3802.21	5016.37	2617.85	2855.26	41.37	40.64	58.22	96.28	893.87	296.80	3015.45	3110.07	1486.87	1285.82
Total	70.94	163.49	4140.13	4023.51	7184.14	8830.10	3156.34	3208.14	41.82	40.87	162.72	196.23	994.10	360.11	3015.45	3214.99	1778.04	1640.84
Machine Labour																		
Hired	10534.28	10331.22	4566.39	3510.15	4241.57	3278.99	4412.16	3539.59	3777.23	4081.26	9635.54	9700.23	4081.26	4307.33	3267.69	3128.82	4205.49	3878.39
Owned	77.77	39.79	183.69	267.53	609.47	176.14	66.33	128.25	2242.81	2290.18	981.71	456.02	232.86	300.03	1097.55	774.04	14.41	25.17
Total	10612.05	10371.01	4750.08	3777.68	4851.04	3455.13	4478.49	3667.84	6020.04	6371.44	10617.25	10156.25	4314.12	4607.36	4365.24	3902.86	4219.90	3903.56
Seed	3342.47	3118.49	2051.77	2014.48	2777.47	2270.70	1195.62	1144.50	1838.03	1771.16	6968.77	6751.07	3919.33	3592.87	3040.14	3290.56	2055.04	1810.01
Fertilisers and Manure																		
Fertilisers	5464.29	5612.53	2715.34	2566.84	2304.93	2431.78	2953.37	3258.63	3223.42	3349.03	6023.73	6319.99	4636.31	4265.80	3259.49	2906.56	4831.02	4963.39
Manure	2236.63	1590.02	1154.00	1636.91	3945.06	3235.15	1449.50	1509.03	424.97	355.77	2428.05	2645.20	109.02	59.52	539.70	726.31	1271.55	1070.26
Total	7700.92	7202.55	3869.34	4203.75	6249.99	5666.93	4402.87	4767.66	3648.39	3704.80	8451.78	8965.19	4745.33	4325.32	3799.19	3632.87	6102.57	6033.65
Other Inputs																		
Insecticides	1279.43	1214.90	745.15	917.22	392.16	312.33	298.80	268.86	4458.79	3928.25	1558.70	1490.79	300.38	183.79	849.30	896.70	1500.40	1385.89
Irrigation charges	88.71	4.90	1062.36	329.97	2230.55	1706.63	164.45	128.84	2399.72	2623.08	2977.63	2181.09	5060.65	5424.35	693.35	585.29	2941.82	2912.35
Interest on working capital	1634.56	1497.71	636.67	608.99	1414.22	1290.20	794.78	770.00	857.24	853.88	1425.03	1390.23	869.09	855.68	594.17	597.76	1110.70	1103.55
Miscellaneous	2.25	0.00	167.48	90.02	909.15	429.66	124.77	0.00	14.89	29.13	7.42	32.07	0.27	1.28	0.00	0.00	25.76	55.29
<b>Fixed Cost</b>	20178.66	19066.73	12318.11	12965.61	15217.12	13845.11	13580.29	14612.17	39814.01	39213.30	19727.12	18824.96	19320.54	19501.30	15818.13	15238.10	18113.20	17580.94
Rental value of owned land	19144.58	17985.39	8472.29	9372.98	9184.98	8127.94	10823.49	11669.66	29900.67	30200.60	14564.96	13646.75	12408.20	12742.73	13926.31	13569.56	14692.45	14130.98
Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00	0.00	155.94	138.50	5993.03	5283.62	151.58	191.63	681.93	595.92	0.00	0.00	554.08	582.76
Land revenue, cesses & taxes	218.00	162.63	3.40	4.10	22.86	24.23	21.09	23.96	0.00	0.00	7.00	7.15	2.84	3.34	3.41	3.04	65.69	59.83
Depreciation on imple-ments & Farm buildings	341.75	324.49	1063.90	861.81	745.36	820.57	669.78	687.66	336.66	306.23	347.44	327.83	996.42	897.09	228.87	335.78	971.48	844.64
Interest on fixed capital	474.33	594.22	2778.52	2726.72	5263.92	4873.37	1909.99	2092.39	3583.65	3422.85	4656.14	4651.60	5231.15	5262.22	1659.54	1329.72	1829.50	1962.73
<b>Total Cost</b>	78945.82	71971.60	42939.04	41380.77	72898.38	68262.45	57443.68	56913.99	74621.70	73254.48	74672.02	74076.91	59416.44	58982.33	47303.76	45634.39	72235.44	71840.42

Source: DES, DAC & FW





## Price Policy for Kharif Crops

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

(₹/ha)

Cost Items	Andhra Pradesh		Madhya Pradesh		Maharashtra	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	19908.79	22887.68	19685.82	22821.53	23499.28	31944.81
Human Labour						
Casual	3631.23	5633.38	4218.96	2911.29	5994.38	9847.93
Attached	0.00	414.64	0.00	0.00	344.52	268.63
Family	3187.54	8184.94	7094.06	5839.47	6388.52	6926.94
Total	6818.77	14232.96	11313.02	8750.76	12727.42	17043.50
Bullock Labour						
Hired	470.47	609.05	16.57	1071.26	1671.52	762.62
Owned	836.40	1525.71	0.00	0.00	1878.01	2690.63
Total	1306.87	2134.76	16.57	1071.26	3549.53	3453.25
Machine Labour						
Hired	6506.64	2762.00	3276.24	5027.76	3227.21	5178.53
Owned	78.68	50.95	174.80	30.21	442.31	389.21
Total	6585.32	2812.95	3451.04	5057.97	3669.52	5567.74
Seed	765.92	783.10	1360.99	1466.75	518.22	711.55
Fertilisers and Manure						
Fertilisers	2144.96	2161.46	1628.91	1950.79	1766.86	2077.61
Manure	574.21	0.00	507.17	3556.92	77.83	646.38
Total	2719.17	2161.46	2136.08	5507.71	1844.69	2723.99
Other Inputs						
Insecticides	1149.88	9.05	0.00	439.49	1.92	41.40
Irrigation charges	56.16	307.86	928.59	0.00	641.79	1551.90
Interest on working capital	506.70	445.54	381.57	514.61	518.51	755.20
Miscellaneous	0.00	0.00	97.96	12.98	27.68	0.00
<b>Fixed Cost</b>	15376.88	14289.62	13848.70	5719.72	9385.55	12916.26
Rental value of owned land	12237.28	11987.08	9382.58	3843.01	4090.88	6060.58
Rent paid for leased-in land	0.00	177.17	0.00	0.00	0.00	0.00
Land revenue, cesses & taxes	0.47	2.33	3.35	0.71	22.97	26.37
Depreciation on implements & Farm buildings	762.26	242.59	280.37	978.00	653.52	859.65
Interest on fixed capital	2376.87	1880.45	4182.40	898.00	4618.18	5969.66
<b>Total Cost</b>	35285.67	37177.30	33534.52	28541.25	32884.83	44861.07

Source: DES, DAC & FW

# Price Policy for Kharif Crops



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

(₹/ha)

Cost Items	Gujarat		Haryana		Maharashtra	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	36750.78	35545.20	27035.60	25832.25	32625.16	34892.16
Human Labour						
Casual	8312.73	9515.64	3893.55	3951.59	4873.65	6668.23
Attached	77.39	33.36	57.12	18.61	120.59	156.56
Family	9063.13	7951.94	12593.63	12264.65	12538.07	11007.56
Total	17453.25	17500.94	16544.30	16234.85	17532.31	17832.35
Bullock Labour						
Hired	368.06	351.90	68.43	1.53	1062.63	908.42
Owned	348.22	450.73	26.09	36.03	2383.98	3332.92
Total	716.28	802.63	94.52	37.56	3446.61	4241.34
Machine Labour						
Hired	3914.97	4031.81	5133.29	5211.02	5704.93	5398.00
Owned	1035.57	768.65	765.38	668.99	538.29	294.15
Total	4950.54	4800.46	5898.67	5880.01	6243.22	5692.15
Seed	1944.69	1897.91	911.97	798.49	998.77	965.65
Fertilisers and Manure						
Fertilisers	3317.13	3673.48	1646.12	1207.43	1493.08	1795.04
Manure	1801.51	638.56	0.00	0.00	239.19	2640.46
Total	5118.64	4312.04	1646.12	1207.43	1732.27	4435.50
Other Inputs						
Insecticides	18.15	23.32	16.59	72.86	0.00	0.00
Irrigation charges	5710.20	5371.73	1485.79	1189.91	2057.22	1001.39
Interest on working capital	839.03	836.17	437.64	411.14	608.70	723.78
Miscellaneous	0.00	0.00	0.00	0.00	6.06	0.00
<b>Fixed Cost</b>	11731.03	11267.50	11885.32	11783.30	9177.23	8481.10
Rental value of owned land	9322.80	9065.58	8082.38	8644.73	4185.50	4157.40
Rent paid for leased-in land	563.71	261.24	0.00	0.00	0.00	0.00
Land revenue, cesses & taxes	2.13	3.64	0.00	0.00	23.00	18.61
Depreciation on implements & Farm buildings	108.98	110.55	521.30	375.93	730.89	712.17
Interest on fixed capital	1733.41	1826.49	3281.64	2762.64	4237.84	3592.92
<b>Total Cost</b>	48481.81	46812.70	38920.92	37615.55	41802.39	43373.26

Source: DES, DAC & FW



## Price Policy for Kharif Crops

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

Cost Items	Andhra Pradesh		Bihar		Gujarat		Himachal Pradesh		Jharkhand	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	42634.46	41175.25	29563.31	29537.69	36171.74	35581.64	26759.06	21913.20	28803.46	31273.60
Human Labour										
Casual	10482.21	9564.02	4821.62	5139.23	7980.12	7719.13	424.42	357.10	5118.18	6694.40
Attached	741.07	443.91	43.08	44.30	0.00	0.00	161.47	196.88	521.58	0.00
Family	7181.06	9254.81	8555.74	7900.35	11808.62	12510.57	15766.55	12998.47	8734.44	10938.15
Total	18404.34	19262.74	13420.44	13083.88	19788.74	20229.70	16352.44	13552.45	14374.20	17632.55
Bullock Labour										
Hired	1102.69	648.30	0.00	0.00	1273.33	1335.57	451.94	154.05	0.00	0.00
Owned	2782.74	1606.45	0.00	0.00	3014.86	2123.70	1318.9	1207.22	2423.20	3804.60
Total	3885.43	2254.75	0.00	0.00	4288.19	3459.27	1770.84	1361.27	2423.20	3804.60
Machine Labour										
Hired	5783.81	5368.37	3848.41	3975.40	3084.64	3223.48	2294.42	1885.89	388.64	434.75
Owned	179.84	52.00	9.26	14.89	305.71	364.21	158.26	96.23	1280.56	0.00
Total	5963.65	5420.37	3857.67	3990.29	3390.35	3587.69	2452.68	1982.12	1669.20	434.75
Seed	4387.04	5099.21	2195.27	3100.02	1874.60	1646.43	1296.17	1016.99	5636.98	5582.58
Fertilisers and Manure										
Fertilisers	7174.50	6321.77	3996.15	4715.14	2366.10	2816.41	810.94	577.60	2533.32	1775.57
Manure	353.13	561.75	857.68	426.52	1216.37	1096.83	3524.52	3020.84	0.00	0.00
Total	7527.63	6883.52	4853.83	5141.66	3582.47	3913.24	4335.46	3598.44	2533.32	1775.57
Other Inputs										
Insecticides	789.05	700.07	0.00	0.00	108.10	97.68	218.36	131.79	0.00	0.00
Irrigation charges	574.75	587.30	4599.51	3566.16	2401.02	1948.51	0.00	0.00	1558.41	1427.32
Interest on working capital	1074.35	967.29	636.59	655.68	738.27	699.12	333.11	270.14	608.15	616.23
Miscellaneous	28.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fixed Cost</b>	26970.74	24741.07	13382.14	13940.60	6804.34	7708.17	9982.80	8544.63	11402.36	8613.32
Rental value of owned land	23644.64	22498.79	10867.34	10640.04	4529.86	6058.64	5952.06	5328.84	8848.72	4934.43
Rent paid for leased-in land	0.00	14.86	0.00	0.00	5.90	0.00	19.24	35.60	0.00	0.00
Land revenue, cesses & taxes	1.06	5.92	50.84	52.40	5.82	10.93	6.30	6.00	42.08	24.79
Depreciation on implements & Farm buildings	389.82	313.57	638.54	823.71	267.95	267.39	536.23	470.68	614.88	1303.72
Interest on fixed capital	2935.22	1907.93	1825.42	2424.45	1994.81	1371.21	3468.97	2703.51	1896.68	2350.38
<b>Total Cost</b>	69605.20	65916.32	42945.45	43478.29	42976.08	43289.81	36741.86	30457.83	40205.82	39886.92

(Contd.)





# Price Policy for Kharif Crops



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

Cost Items	Madhya Pradesh		Maharashtra		Odisha		Punjab		Uttar Pradesh	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>										
Human Labour	27044.39	24518.82	56378.08	58654.32	39671.47	39245.63	36738.98	35225.18	27848.47	19648.12
Casual	4050.99	4834.10	10024.94	11571.75	5269.64	7933.81	7136.67	6211.70	3563.46	2034.18
Attached	260.04	470.48	1034.09	96.14	24.92	19.06	454.42	2108.14	0.00	0.00
Family	8025.12	6100.56	11173.76	15260.30	17634.80	15201.58	8327.29	7358.77	11978.92	9329.92
Total	12336.15	11405.14	22232.79	26928.19	22929.36	23154.45	15918.38	15678.61	15542.38	11364.10
Bullock Labour										
Hired	421.70	342.34	504.85	890.71	355.21	334.42	271.95	156.33	227.40	32.97
Owned	2432.92	1731.79	8594.79	3651.68	3580.63	2486.34	65.22	33.01	875.37	549.63
Total	2854.62	2074.13	9099.64	4542.39	3935.84	2820.76	337.17	189.34	1102.77	582.60
Machine Labour										
Hired	3990.82	3933.52	4969.94	9155.70	1993.09	3368.65	4859.32	5783.11	3928.44	3323.50
Owned	221.11	453.09	1198.06	1372.35	0.00	0.00	1769.84	1318.37	73.89	79.08
Total	4211.93	4386.61	6168.00	10528.05	1993.09	3368.65	6629.16	7101.48	4002.33	3402.58
Seed	2757.91	2571.43	4479.76	4557.66	3696.90	2691.41	4014.98	3232.58	2400.47	1430.86
Fertilisers and Manure										
Fertilisers	1889.70	2155.17	7626.07	5990.41	4030.16	3691.47	4503.04	4612.73	1908.41	1909.10
Manure	2035.45	943.50	612.31	231.74	1928.29	1879.41	2218.84	1555.18	373.55	0.00
Total	3925.15	3098.67	8238.38	6222.15	5958.45	5570.88	6721.88	6167.91	2281.96	1909.10
Other Inputs										
Insecticides	145.62	187.90	294.83	547.27	307.98	421.22	1449.13	1178.88	74.22	67.79
Irrigation charges	194.07	154.85	4494.85	4013.64	182.07	489.65	807.32	787.18	1963.44	578.42
Interest on working capital	576.34	558.13	1369.83	1314.97	667.78	728.61	860.96	844.44	480.90	312.67
Miscellaneous	42.60	81.96	0.00	0.00	0.00	0.00	0.00	44.76	0.00	0.00
<b>Fixed Cost</b>	9198.02	10272.95	15969.04	15502.36	13447.83	12056.87	17139.86	16524.02	11754.02	9122.34
Rental value of owned land	7368.36	8716.74	9820.27	9704.71	11124.17	9640.94	10999.73	10623.25	9143.17	6213.37
Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00	0.00	2546.85	2722.90	128.84	0.00
Land revenue, cesses & taxes	2.69	3.04	27.75	11.49	24.34	25.56	0.00	0.00	4.14	4.20
Depreciation on implements & Farm buildings	462.84	281.37	439.64	565.14	558.33	521.07	470.13	478.67	571.72	830.09
Interest on fixed capital	1364.13	1271.80	5681.38	5221.02	1740.99	1869.30	3123.15	2699.20	1906.15	2074.68
<b>Total Cost</b>	36242.41	34791.77	72347.12	74156.68	53119.30	51302.50	53878.84	51749.20	39602.49	28770.46

Source: DES, DAC & FW



## Price Policy for Kharif Crops

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

(₹/ha)

Cost Items	Uttarakhand	
	2015-16	2014-15
<b>Operational Cost</b>	21619.03	14844.65
Human Labour		
Casual	200.37	216.37
Attached	0.00	0.00
Family	16544.44	10508.97
Total	16744.81	10725.34
Bullock Labour		
Hired	0.00	0.00
Owned	3357.27	2682.36
Total	3357.27	2682.36
Machine Labour		
Hired	0.00	0.00
Owned	0.00	0.00
Total	0.00	0.00
Seed	368.74	311.40
Fertilisers and Manure		
Fertilisers	0.00	0.00
Manure	994.43	994.16
Total	994.43	994.16
Other Inputs		
Insecticides	0.00	0.00
Irrigation charges	0.00	0.00
Interest on working capital	153.78	131.39
Miscellaneous	0.00	0.00
<b>Fixed Cost</b>	5519.35	4982.35
Rental value of owned land	5066.12	4481.10
Rent paid for leased-in land	0.00	0.00
Land revenue, cesses & taxes	0.89	0.57
Depreciation on implements & Farm buildings	48.39	103.70
Interest on fixed capital	403.95	396.98
<b>Total Cost</b>	27138.38	19827.00

Source: DES, DAC & FW

# Price Policy for Kharif Crops



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

Cost Items	Andhra Pradesh		Gujarat		Madhya Pradesh		Maharashtra		Odisha		Uttar Pradesh	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	25786.10	25152.44	31925.45	31328.89	24012.78	18896.55	55949.03	40912.80	13772.18	12422.55	23565.82	20942.88
Human Labour												
Casual	6328.20	5075.21	6602.34	7016.10	3404.76	2393.89	9411.88	8205.30	1310.46	1437.76	4921.93	4918.67
Attached	620.00	524.12	0.00	0.00	229.09	387.08	659.36	536.56	0.00	0.00	44.50	26.82
Family	4992.70	4860.85	10500.18	8422.89	8074.42	7401.38	16313.08	8972.08	7962.58	7151.87	9207.02	10905.96
Total	11940.90	10460.18	17102.52	15438.99	11708.27	10182.35	26384.32	17713.94	9273.04	8589.63	14173.45	15851.45
Bullock Labour												
Hired	1283.38	780.24	351.75	125.78	24.22	78.95	1626.94	1326.05	49.79	0.00	0.00	0.00
Owmed	2570.86	2875.99	2372.63	2005.89	4191.57	2734.62	4712.92	3679.67	2025.56	1904.75	2225.07	338.98
Total	3854.24	3656.23	2724.38	2131.67	4215.79	2813.57	6339.86	5005.72	2075.35	1904.75	2225.07	338.98
Machine Labour												
Hired	3703.41	3241.70	3795.65	4468.28	1358.10	1682.90	7032.81	6266.42	860.13	578.91	2767.50	2340.71
Owmed	71.40	197.66	940.81	656.87	275.70	503.66	362.77	249.59	0.00	0.00	709.59	55.48
Total	3774.81	3439.36	4736.46	5125.15	1633.80	2186.56	7395.58	6516.01	860.13	578.91	3477.09	2396.19
Seed	1334.74	1125.08	825.35	594.94	2850.13	1694.65	2262.69	1171.24	1387.61	1189.54	2214.36	1543.37
Fertilisers and Manure												
Fertilisers	2051.08	3134.02	2052.24	2502.25	1081.64	773.46	3939.93	4175.35	0.00	0.00	15.18	184.11
Manure	331.96	1080.85	537.72	1589.75	753.44	134.39	727.52	505.62	0.00	0.00	0.00	0.00
Total	2383.04	4214.87	2589.96	4092.00	1835.08	907.85	4667.45	4680.97	0.00	0.00	15.18	184.11
Other Inputs												
Insecticides	1630.21	1622.05	1864.90	1704.88	1067.76	727.34	5166.65	3887.62	0.00	0.00	0.00	0.84
Irrigation charges	158.26	3.70	1316.72	1547.14	216.68	35.50	2384.52	733.64	0.00	0.00	1025.55	323.79
Interest on working capital	630.10	614.90	649.25	694.12	482.98	348.34	1201.09	967.90	176.05	159.72	435.12	304.15
Miscellaneous	79.80	16.07	115.91	0.00	2.29	0.39	146.87	235.76	0.00	0.00	0.00	0.00
<b>Fixed Cost</b>	19234.94	11306.11	16039.87	10562.63	18443.92	14536.90	30294.16	18488.70	9053.28	8475.40	28816.68	19769.71
Rental value of owned land	15977.34	9297.14	10667.32	7029.66	14166.70	9057.68	21912.45	9380.44	5833.87	5692.83	21274.30	14504.57
Rent paid for leased-in land	0.00	0.00	1991.02	772.22	0.00	0.00	0.00	0.00	0.00	0.00	604.92	0.00
Land revenue, cesses & taxes	0.12	0.49	53.66	52.66	7.09	7.80	43.44	42.70	15.87	16.84	21.54	9.97
Depreciation on implements & Farm buildings	450.36	386.10	263.73	353.95	1085.98	1398.47	978.62	1357.64	759.61	569.43	1248.01	997.77
Interest on fixed capital	2807.12	1622.38	3064.14	2354.14	3184.15	4072.95	7359.65	7707.92	2443.93	2196.30	5667.91	4257.40
<b>Total Cost</b>	45021.04	36458.55	47965.32	41891.52	42456.70	33433.45	86243.19	59401.50	22825.46	20897.95	52382.50	40712.59

Source: DES, DAC & FW





# Price Policy for Kharif Crops

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

(₹/ha)

Cost Items	Andhra Pradesh		Gujarat		Maharashtra		Odisha	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	20138.31	14999.74	21791.59	17451.68	26897.22	23988.22	13499.51	12849.41
Human Labour								
Casual	5374.33	3142.79	5807.24	4199.19	5996.04	5708.99	671.47	1732.11
Attached	28.38	937.67	20.61	0.00	192.41	567.22	8.92	18.95
Family	2214.59	3033.39	5659.03	3763.88	7255.79	5585.38	7799.29	6912.14
Total	7617.30	7113.85	11486.88	7963.07	13444.24	11861.59	8479.68	8663.20
Bullock Labour								
Hired	1673.55	254.82	608.36	170.10	721.20	672.86	179.61	137.54
Owned	286.68	515.88	260.47	382.43	2874.02	3940.40	1358.09	1007.22
Total	1960.23	770.70	868.83	552.53	3595.22	4613.26	1537.70	1144.76
Machine Labour								
Hired	4154.20	2147.04	3699.40	2845.41	4107.87	2044.79	1513.19	1322.51
Owned	0.00	32.05	775.31	1100.61	233.09	125.52	8.98	9.91
Total	4154.20	2179.09	4474.71	3946.02	4340.96	2170.31	1522.17	1332.42
Seed	2382.44	1982.28	2014.75	1602.48	2146.06	1381.52	1704.76	1504.44
Fertilisers and Manure								
Fertilisers	2162.80	1782.89	762.67	1012.96	1940.50	1993.91	3.62	3.87
Manure	0.00	471.76	204.98	11.18	205.77	1149.58	0.00	3.83
Total	2162.80	2254.65	967.65	1024.14	2146.27	3143.49	3.62	7.70
Other Inputs								
Insecticides	1318.20	90.06	698.51	416.68	422.62	185.37	0.93	0.00
Irrigation charges	0.00	246.49	791.39	1531.98	206.65	75.02	77.92	16.97
Interest on working capital	543.14	362.62	488.87	414.78	595.20	557.66	172.73	179.92
Miscellaneous	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fixed Cost</b>	7948.16	10132.83	8661.02	6326.50	8659.62	8013.65	6318.69	6407.66
Rental value of owned land	7631.81	9135.38	7456.52	1803.27	4093.13	4056.45	4702.01	4997.43
Rent paid for leased-in land	0.00	0.00	290.90	3194.07	0.00	0.00	45.35	75.77
Land revenue, cesses & taxes	0.00	39.85	6.67	6.02	26.34	18.67	8.89	12.76
Depreciation on implements & Farm buildings	99.15	145.54	128.88	171.96	600.66	594.50	436.78	336.47
Interest on fixed capital	217.20	812.06	778.05	1151.18	3939.49	3344.03	1125.66	985.23
<b>Total Cost</b>	28086.47	25132.57	30452.61	23778.18	35556.84	32001.87	19818.20	19257.07

Source: DES, DAC & FW

# Price Policy for Kharif Crops



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

Cost items	Andhra Pradesh		Chhattisgarh		Madhya Pradesh		Maharashtra		Odisha		Uttar Pradesh	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>												
Human Labour												
Casual	7686.18	6830.13	67.84	55.88	3143.05	2689.44	3599.63	2813.84	543.06	1227.84	2124.88	1614.30
Attached	372.69	368.64	0.00	0.00	57.75	85.58	111.84	98.62	47.40	291.04	0.00	0.00
Family	1496.32	1534.68	8772.29	13312.98	5759.37	4938.59	10256.10	7216.78	8203.16	8366.88	4991.64	6024.72
Total	9555.19	8733.45	8840.13	13368.86	8960.17	7713.61	13967.57	10129.24	8793.62	9885.76	7116.52	7639.02
Bullock Labour												
Hired	91.30	29.16	0.00	0.00	8.27	27.04	357.92	427.20	171.55	261.90	8.56	1.88
Owmed	186.69	255.08	7402.76	7787.92	1052.43	583.42	3699.50	3504.73	1711.67	1698.35	90.57	7.63
Total	277.99	284.24	7402.76	7787.92	1060.70	610.46	4057.42	3931.93	1883.22	1960.25	99.13	9.51
Machine Labour												
Hired	1378.87	826.46	0.00	0.00	4045.61	3970.16	3530.53	2236.38	472.45	716.39	2897.27	3520.72
Owmed	37.65	44.24	0.00	0.00	102.96	174.58	344.99	1124.68	15.76	0.00	435.76	176.99
Total	1416.52	870.70	0.00	0.00	4148.57	4144.74	3875.52	3361.06	488.21	716.39	3333.03	3697.71
Seed	4638.96	2880.01	3414.78	1061.47	2683.30	1633.10	1884.80	1394.16	2249.91	1721.27	1899.10	1299.14
Fertilisers and Manure												
Fertilisers	376.21	252.59	0.00	594.38	1520.00	1443.33	1680.73	1194.82	0.00	0.00	0.00	18.90
Manure	25.41	15.35	0.00	0.00	1127.04	301.79	0.00	0.00	0.00	0.00	0.00	0.00
Total	401.62	267.94	0.00	594.38	2647.04	1745.12	1680.73	1194.82	0.00	0.00	0.00	18.90
Other Inputs												
Insecticides	748.42	904.99	0.00	0.00	880.49	681.97	624.55	295.40	0.00	0.00	515.03	361.99
Irrigation charges	0.00	52.60	0.00	0.00	0.00	0.00	73.99	0.00	0.00	0.00	569.55	850.42
Interest on working capital	486.49	389.35	340.17	296.86	457.15	362.41	499.15	409.05	162.87	184.90	267.20	245.37
Miscellaneous	25.37	0.00	0.00	0.00	7.81	6.76	64.32	0.00	0.00	0.00	9.71	0.00
<b>Fixed Cost</b>	28863.34	19143.83	4867.90	8540.94	12877.82	8740.58	7918.98	7408.00	9065.23	7489.04	10911.75	8619.92
Rental value of owned land	28325.21	17747.31	3644.38	6588.92	11457.21	7427.27	5249.51	3692.12	7018.06	5792.00	8048.50	6619.29
Rent paid for leased-in land	152.80	137.15	0.00	0.00	0.00	0.00	0.00	0.00	23.58	0.00	0.00	0.00
Land revenue, cesses & taxes	0.21	1.54	2.72	9.26	3.03	2.81	22.17	20.97	10.40	14.30	4.37	2.61
Depreciation on implements & Farm buildings	93.05	86.68	365.00	536.68	473.51	284.28	452.57	455.93	454.34	374.43	341.01	314.05
Interest on fixed capital	292.07	1171.15	855.80	1406.08	944.07	1026.22	2194.73	3238.98	1558.85	1308.31	2517.87	1683.97
<b>Total Cost</b>	46413.90	33527.11	24865.74	31650.43	33723.05	25638.75	34647.03	28123.66	22643.06	21957.61	24721.02	22741.98

Source: DES, DAC & FW

# Price Policy for Kharif Crops

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

(₹/ha)

Cost Items	Andhra Pradesh		Gujarat		Maharashtra		Odisha		Tamil Nadu	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	41908.80	36803.49	56707.44	54324.72	70721.43	43744.28	39125.16	41485.11	57624.94	56989.19
Human Labour										
Casual	9709.94	10552.75	10531.49	11195.76	13006.48	8884.58	6952.43	8539.73	18422.32	16695.42
Attached	0.00	536.57	22.01	0.00	288.98	419.38	485.80	435.61	11.40	84.12
Family	6602.38	5191.21	10541.69	10223.45	14375.29	9438.29	15684.82	16899.06	11007.21	11460.29
Total	16312.32	16280.53	21095.19	21419.21	27670.75	18742.25	23123.05	25874.40	29440.93	28239.83
Bullock Labour										
Hired	640.22	1050.59	649.44	806.39	548.79	603.33	695.50	789.48	604.30	455.03
Owned	779.49	675.37	2851.15	3009.80	2355.57	4268.71	1989.07	1394.52	203.33	338.97
Total	1419.71	1725.96	3500.59	3816.19	2904.36	4872.04	2684.57	2184.00	807.63	794.00
Machine Labour										
Hired	3954.58	2249.72	4969.15	4761.60	9207.67	2820.74	1575.47	1787.16	4084.73	4906.28
Owned	134.93	20.90	1723.19	1537.26	2284.65	1114.98	73.66	82.43	79.93	317.45
Total	4089.51	2270.62	6692.34	6298.86	11492.32	3935.72	1649.13	1869.59	4164.66	5223.73
Seed	10773.83	8601.85	10735.25	9277.02	7585.39	8175.83	8496.94	7765.27	8690.00	9414.86
Fertilisers and Manure										
Fertilisers	4539.81	2918.96	2759.52	2821.08	2222.25	2447.33	2162.33	2754.94	3945.45	3918.09
Manure	1708.57	3096.30	4062.52	4151.50	15121.89	1844.94	175.67	156.71	5297.48	4539.09
Total	6248.38	6015.26	6822.04	6972.58	17344.14	4292.27	2338.00	2911.65	9242.93	8457.18
Other Inputs										
Insecticides	1019.07	387.83	3574.82	2825.87	458.33	309.66	0.00	0.00	664.31	673.35
Irrigation charges	812.50	561.13	2807.99	2378.60	1558.68	2376.93	123.16	135.17	3201.82	2806.58
Interest on working capital	1069.89	957.95	1398.96	1336.39	1707.46	1039.58	710.31	745.03	1412.66	1379.66
Miscellaneous	163.59	2.36	80.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fixed Cost</b>	20262.60	16950.39	18559.31	16503.02	14171.81	13335.13	14439.69	17770.40	19935.90	18460.49
Rental value of owned land	17126.77	15191.32	13840.49	13144.35	9974.62	7721.05	11729.53	15067.88	15134.07	13603.81
Rent paid for leased-in land	795.68	0.00	1460.93	298.75	0.00	0.00	0.00	0.00	55.20	0.00
Land revenue, cesses & taxes	0.00	2.88	7.71	6.27	22.09	21.17	17.22	14.94	8.36	9.46
Depreciation on implements & Farm buildings	231.34	133.21	197.52	212.12	387.20	704.68	492.66	489.51	463.05	325.57
Interest on fixed capital	2108.81	1622.98	3052.66	2841.53	3787.90	4888.23	2200.28	2198.07	4275.22	4521.65
<b>Total Cost</b>	62171.40	53753.88	75266.75	70827.74	84893.24	57079.41	53564.85	59255.51	77560.84	75449.68

Source: DES, DAC & FW



# Price Policy for Kharif Crops



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

(₹/ha)

Cost Items	Andhra Pradesh		Chhattisgarh		Madhya Pradesh		Maharashtra	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	32559.47	27650.92	20388.21	15593.14	24119.25	23545.09	31677.48	35324.19
Human Labour								
Casual	3519.87	3779.12	3256.25	2530.87	2818.06	2850.95	6308.45	6999.31
Attached	1063.03	1241.67	0.00	0.00	79.96	90.93	402.09	345.66
Family	6515.66	4049.74	5988.07	3524.68	4907.61	4407.28	5150.35	4333.31
Total	11098.56	9070.53	9244.32	6055.55	7805.63	7349.16	11860.89	11678.28
Bullock Labour								
Hired	112.73	118.59	71.19	0.00	66.01	78.54	1045.22	1183.84
Owned	2849.38	1750.66	1001.84	200.67	621.03	614.56	2668.12	2970.56
Total	2962.11	1869.25	1073.03	200.67	687.04	693.10	3713.34	4154.40
Machine Labour								
Hired	3906.11	4257.14	3830.27	3964.46	4528.22	4321.91	4535.80	5652.01
Owned	398.49	81.72	0.00	308.70	337.89	486.06	682.35	277.37
Total	4304.60	4338.86	3830.27	4273.16	4866.11	4807.97	5218.15	5929.38
Seed	3853.61	3550.80	4319.51	4247.38	4425.95	4991.50	4636.33	6230.86
Fertilisers and Manure								
Fertilisers	6565.00	3560.92	573.06	315.94	1922.99	1745.97	2713.43	2943.42
Manure	374.66	2546.51	0.00	0.00	1490.85	1213.10	1259.72	1976.32
Total	6939.66	6107.43	573.06	315.94	3413.84	2959.07	3973.15	4919.74
Other Inputs								
Insecticides	2565.21	1956.10	911.65	134.73	1772.87	1741.18	825.35	1265.73
Irrigation charges	46.51	41.26	0.00	0.00	85.13	0.22	527.88	202.78
Interest on working capital	789.21	715.19	436.37	365.71	582.17	579.93	803.85	939.12
Miscellaneous	0.00	1.50	0.00	0.00	480.51	422.96	118.54	3.90
<b>Fixed Cost</b>	9722.41	12670.36	5818.20	8353.27	6818.31	11440.29	11564.08	9836.04
Rental value of owned land	6934.63	10144.82	4443.58	6854.53	4439.29	9548.75	5520.54	5356.65
Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Land revenue, cesses & taxes	1.18	0.06	2.26	2.12	3.40	3.50	26.76	21.91
Depreciation on implements & Farm buildings	498.43	373.30	407.61	345.04	552.69	423.05	623.36	708.73
Interest on fixed capital	2288.17	2152.18	964.75	1151.58	1822.93	1464.99	5393.42	3748.75
<b>Total Cost</b>	42281.88	40321.28	26206.41	23946.41	30937.56	34985.38	43241.56	45160.23

Source: DES, DAC & FW



## Price Policy for Kharif Crops

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

(₹/ha)

Cost Items	Andhra Pradesh	
	2015-16	2014-15
Operational Cost	32886.34	23462.97
Human Labour		
Casual	6820.77	5345.92
Attached	0.00	0.00
Family	8908.34	2215.35
Total	15729.11	7561.27
Bullock Labour		
Hired	333.60	784.50
Owned	3230.82	1862.20
Total	3564.42	2646.70
Machine Labour		
Hired	3216.80	4120.15
Owned	23.79	131.77
Total	3240.59	4251.92
Seed	3665.99	2572.80
Fertilisers and Manure		
Fertilisers	4644.39	3907.29
Manure	602.61	1142.99
Total	5247.00	5050.28
Other Inputs		
Insecticides	388.40	624.40
Irrigation charges	252.48	0.00
Interest on working capital	726.61	643.87
Miscellaneous	71.74	111.73
Fixed Cost	12844.17	8907.98
Rental value of owned land	6824.09	6188.79
Rent paid for leased-in land	2760.81	0.00
Land revenue, cesses & taxes	0.00	0.00
Depreciation on implements & Farm buildings	102.35	384.44
Interest on fixed capital	3156.92	2334.75
Total Cost	45730.51	32370.95

Source: DES, DAC & FW

# Price Policy for Kharif Crops



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

Cost Items	Andhra Pradesh		Gujarat		Madhya Pradesh		Odisha		Uttar Pradesh		West Bengal	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	23211.36	19146.40	25441.30	28683.54	18653.09	16594.54	18146.48	16221.96	9056.99	13290.56	26274.58	28704.69
Human Labour												
Casual	8206.08	5124.67	5866.98	8884.53	5070.12	3308.06	4301.59	2567.03	2494.11	3904.13	8850.53	10618.11
Attached	0.00	10.48	0.00	0.00	12.10	0.00	0.00	0.00	0.00	44.50	4.52	0.00
Family	3150.08	4210.73	7838.12	6567.32	5073.59	6989.98	7919.03	9144.57	3447.06	5520.89	7942.82	7854.25
Total	11356.16	9345.88	13705.10	15451.85	10155.81	10298.04	12220.62	11711.60	5941.17	9469.52	16797.87	18472.36
Bullock Labour												
Hired	353.47	782.20	121.75	169.62	22.89	16.02	0.00	13.23	0.00	0.00	350.00	611.08
Owined	169.58	1218.55	494.21	294.64	61.41	54.08	1859.80	946.64	0.78	76.73	298.37	873.20
Total	523.05	2000.75	615.96	464.26	84.30	70.10	1859.80	959.87	0.78	76.73	648.37	1484.28
Machine Labour												
Hired	3931.56	3271.12	1419.93	2037.60	4085.81	3018.20	1521.85	1747.71	1875.89	2695.30	3670.87	1958.03
Owined	107.35	95.93	1578.89	979.58	122.53	164.55	0.00	0.00	361.72	157.13	23.06	106.38
Total	4038.91	3367.05	2998.82	3017.18	4208.34	3182.75	1521.85	1747.71	2237.61	2852.43	3693.93	2064.41
Seed	1165.08	1019.81	1087.47	1179.29	1375.11	1041.68	779.68	789.92	356.90	488.79	457.72	499.18
Fertilisers and Manure												
Fertilisers	3420.15	1386.24	2611.67	2949.30	1772.47	1431.52	220.62	213.38	43.15	74.39	2922.85	3786.56
Manure	587.97	428.69	1107.32	834.03	417.00	0.00	0.00	0.00	0.00	0.00	358.99	37.50
Total	4008.12	1814.93	3718.99	3783.33	2189.47	1431.52	220.62	213.38	43.15	74.39	3281.84	3824.06
Other Inputs												
Insecticides	1150.44	1011.70	1077.90	1613.42	72.90	0.00	0.00	0.00	37.02	73.53	190.63	234.93
Irrigation charges	291.58	133.68	1703.62	2504.03	0.00	0.00	1233.99	585.02	268.97	19.73	648.71	1493.64
Interest on working capital	607.92	452.60	533.44	670.18	411.50	291.05	309.92	214.46	170.00	235.44	555.51	631.83
Miscellaneous	70.10	0.00	0.00	0.00	155.66	279.40	0.00	0.00	1.39	0.00	0.00	0.00
<b>Fixed Cost</b>	8051.85	10492.55	12343.44	10675.72	8459.05	12547.03	9101.27	8472.33	9210.42	13056.41	10319.58	12796.41
Rental value of owned land	7386.48	9884.50	9177.78	8765.05	7215.87	11816.12	7185.81	6802.44	5147.27	9239.25	8577.99	10750.61
Rent paid for leased-in land	0.00	0.00	1286.31	250.55	0.00	0.00	136.55	0.00	1971.72	0.00	0.00	0.00
Land revenue, cesses & taxes	0.00	0.00	3.42	3.96	7.36	3.84	8.66	13.10	3.74	4.47	42.51	55.87
Depreciation on implements & Farm buildings	152.87	135.60	93.71	117.85	243.22	127.30	332.89	325.35	340.73	553.42	539.38	508.63
Interest on fixed capital	512.50	472.45	1782.22	1538.31	992.60	599.77	1437.36	1331.44	1746.96	3259.27	1159.70	1481.30
<b>Total Cost</b>	31263.21	29638.95	37784.74	39359.26	27112.14	29141.57	27247.75	24694.29	18267.41	26346.97	36594.16	41501.10

Source: DES, DAC & FW





## Price Policy for Kharif Crops

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

(₹/ha)

Cost Items	Chhattisgarh	Madhya Pradesh		Odisha	
	2015-16	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	19891.39	16494.07	13129.13	13720.67	11662.53
Human Labour					
Casual	0.00	1851.31	1164.00	0.00	0.00
Attached	0.00	577.83	0.00	0.00	0.00
Family	6433.58	5623.96	4955.14	8052.05	6661.54
Total	6433.58	8053.10	6119.14	8052.05	6661.54
Bullock Labour					
Hired	0.00	449.54	768.00	0.00	0.00
Owned	11250.00	2713.52	3936.69	4896.84	4349.44
Total	11250.00	3163.06	4704.69	4896.84	4349.44
Machine Labour					
Hired	0.00	2752.04	400.00	0.00	0.00
Owned	0.00	0.00	0.00	0.00	0.00
Total	0.00	2752.04	400.00	0.00	0.00
Seed	1800.00	551.16	268.80	600.00	500.00
Fertilisers and Manure					
Fertilisers	0.00	397.67	268.80	0.00	0.00
Manure	0.00	1247.64	1120.00	0.00	0.00
Total	0.00	1645.31	1388.80	0.00	0.00
Other Inputs					
Insecticides	0.00	0.00	0.00	0.00	0.00
Irrigation charges	0.00	0.00	0.00	0.00	0.00
Interest on working capital	407.81	329.40	247.70	171.78	151.55
Miscellaneous	0.00	0.00	0.00	0.00	0.00
<b>Fixed Cost</b>	5401.11	6661.02	4849.02	5860.15	4361.24
Rental value of owned land	3200.00	5932.34	2616.00	3543.62	2542.61
Rent paid for leased-in land	0.00	0.00	0.00	0.00	0.00
Land revenue, cesses & taxes	0.00	1.23	1.54	10.00	10.00
Depreciation on implements & Farm buildings	593.83	270.23	693.64	422.82	669.30
Interest on fixed capital	1607.28	457.22	1537.84	1883.71	1139.33
<b>Total Cost</b>	25292.50	23155.09	17978.15	19580.82	16023.77

Source: DES, DAC & FW

# Price Policy for Kharif Crops



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

Cost Items	Andhra Pradesh		Gujarat		Haryana		Madhya Pradesh		Maharashtra		Odisha		Punjab		Tamil Nadu	
	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15
<b>Operational Cost</b>	52279.97	56038.71	53472.88	55323.05	42392.66	44783.67	61398.05	58298.76	56863.51	53896.51	46874.77	34986.34	42691.03	45242.55	77233.58	69443.06
Human Labour																
Casual	18157.96	19015.94	15488.84	15532.50	5256.79	8351.49	9121.26	8502.08	14492.86	13995.05	8045.56	5862.24	7593.87	12668.07	31073.93	24279.80
Attached	516.24	372.71	142.35	139.83	538.82	422.08	793.64	795.65	688.45	724.23	0.00	1129.35	1691.73	1760.15	7.35	11.38
Family	7325.88	11081.44	11059.91	11518.21	17019.06	15252.58	19843.92	16642.78	10783.92	8945.20	21555.54	13552.99	8550.11	8863.22	19827.67	21646.56
Total	26000.08	30470.09	26691.10	27190.54	22814.67	24026.15	29758.82	25940.51	25965.23	23664.48	29601.10	20544.58	17835.71	23291.44	50908.95	45937.74
Bullock Labour																
Hired	1938.91	1625.89	572.84	600.55	28.63	22.76	314.38	449.90	1431.74	1479.19	143.04	82.47	0.00	1.84	110.50	104.60
Owned	4839.98	2429.12	1154.14	1147.29	878.92	491.51	7371.16	6352.25	5396.58	5829.48	3302.02	2022.41	218.68	197.29	933.29	37.22
Total	6778.89	4055.01	1726.98	1747.84	907.55	514.27	7685.54	6802.15	6828.32	7308.67	3445.06	2104.88	218.68	199.13	1043.79	141.82
Machine Labour																
Hired	3919.02	4303.35	4135.07	4192.73	1633.27	2199.05	1887.33	2237.36	3658.45	3604.41	2171.57	1891.58	1273.08	1640.30	4077.74	4048.52
Owned	157.80	442.07	1626.29	1904.96	2386.55	2581.26	168.36	188.81	718.77	412.35	0.00	140.23	4358.16	4103.10	50.90	93.19
Total	4076.82	4745.42	5761.36	6097.69	4019.82	4780.31	2055.69	2426.17	4377.22	4016.76	2171.57	2031.81	5631.24	5743.40	4128.64	4141.71
Seed	4193.44	4106.40	3365.75	3375.28	4221.40	4626.60	2424.44	2388.31	3982.20	3789.36	3096.56	2853.82	5754.13	5692.80	4040.12	3616.80
Fertilisers and Manure																
Fertilisers	6251.83	6701.88	5137.41	5319.66	3246.86	3206.48	3818.47	4459.93	6301.37	6661.57	5322.80	5503.71	3659.45	3059.11	8408.69	7876.38
Manure	608.62	643.05	2681.63	3365.17	0.00	0.00	4681.87	6065.35	2302.19	2588.03	1479.86	1092.43	104.43	31.29	3073.33	2627.17
Total	6860.45	7344.93	7819.04	8684.83	3246.86	3206.48	8500.34	10525.28	8603.56	9249.60	6802.66	6596.14	3763.88	3090.40	11482.02	10503.55
Other Inputs																
Insecticides	2806.99	3451.85	3428.20	3541.82	2763.31	2360.10	5943.60	4828.61	2455.87	2152.27	990.57	205.61	7696.37	5122.63	3118.13	2733.68
Irrigation charges	187.10	501.03	3367.76	3357.62	3637.59	4273.53	1518.99	1656.81	2801.58	2318.86	0.00	0.00	610.75	615.46	622.33	850.69
Interest on working capital	1362.25	1362.34	1285.24	1327.43	768.90	894.88	1259.22	1262.30	1396.35	1362.16	767.25	649.50	1034.57	1102.40	1739.57	1448.38
Miscellaneous	13.95	1.64	27.45	0.00	12.56	101.35	2251.41	2468.62	453.18	34.35	0.00	0.00	145.70	384.89	150.03	68.69
<b>Fixed Cost</b>	21381.75	23798.91	17775.46	17948.67	20641.70	20121.24	20415.29	18533.26	18998.19	18494.67	15152.16	9360.98	15599.23	31535.06	20520.57	19549.64
Rental value of owned land	18023.71	19513.84	12072.81	12008.96	11697.56	15358.71	14081.63	12733.59	11341.08	10238.60	12825.47	7122.60	9600.14	21124.76	14892.05	14354.03
Rent paid for leased-in land	38.33	179.66	1343.35	1464.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3120.04	7452.86	0.00	0.00
Land revenue, cesses & taxes	0.05	0.31	15.52	12.66	0.00	0.00	2.58	2.79	30.43	31.67	17.24	17.02	0.00	0.00	7.09	8.86
Depreciation on implements & Farm buildings	470.04	512.29	250.01	270.15	784.58	311.68	1397.03	973.11	755.90	959.39	731.03	651.42	237.51	227.66	777.85	460.71
Interest on fixed capital	2849.62	3592.81	4093.77	4192.62	8159.56	4450.85	4934.05	4823.77	6870.78	7265.01	1578.42	1569.94	2641.54	2729.78	4843.58	4726.04
<b>Total Cost</b>	73661.72	79837.62	71248.34	73271.72	63034.36	64904.91	81813.34	76832.02	75861.70	72391.18	62026.93	44347.32	58290.26	76777.61	97754.15	88992.70

Source: DES, DAC & FW

# Price Policy for Kharif Crops

**Annex Table 5.6 : Comparison of Cost Projections (C<sub>2</sub>) of Kharif Crops during Marketing Season 2018-19**

Crop/State	State Projections*		CACP Projections on the basis of CS data	
	Yield (qtl/ha)	Cost of Production (₹/qtl)	Yield (qtl/ha)	Cost of Production (₹/qtl)
<b>Paddy</b>				
Bihar	38	1605	28	1398
Chattisgarh	36	1110	32	1381
Odisha	36	2344	34	1713
Punjab	59	2490	67	1174
<b>Bajra</b>				
Rajasthan	-	1188	11	1159
<b>Maize</b>				
Bihar	32	1568	32	1117
Rajasthan	-	1558	20	1977
Chattisgarh	30	715	NP	NP
<b>Tur</b>				
Chattisgarh	8	3078	NP	NP
<b>Moong</b>				
Rajasthan	-	5316	4	6025
Tamil Nadu	8	5928	6	5101
<b>Urad</b>				
Rajasthan	-	2875	NP	NP
<b>Groundnut</b>				
Chattisgarh	15	2061	NP	NP
<b>Soyabean</b>				
Rajasthan	-	2219	9	2963
Chattisgarh	10 10	2155	7	3476
<b>Sesamum</b>				
Rajasthan	-	6101	2	7174
<b>Cotton</b>				
Punjab	19	6745	17	4419
Rajasthan	-	3173	20	3574

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

\*Data compiled from state replies



# Price Policy for Kharif Crops



**Annex Table 5.7: All-India Projected Costs of Production of Kharif Crops for Marketing Season 2018-19 over Marketing Season 2017-18**

Crops	Cost of Production (₹/qtl)				Percentage Change in Projected Cost (2018-19 over 2017-18)	
	2017-18		2018-19			
	A <sub>2</sub> +FL	C <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>	A <sub>2</sub> +FL	C <sub>2</sub>
Paddy	1117	1484	1166	1560	4.4	5.1
Jowar	1556	2089	1619	2183	4.0	4.5
Bajra	949	1278	990	1324	4.3	3.6
Maize	1044	1396	1131	1480	8.3	6.0
Ragi	1861	2351	1931	2370	3.8	0.8
Arhar (Tur)	3318	4612	3432	4981	3.4	8.0
Moong	4286	5700	4650	6161	8.5	8.1
Urad	3265	4517	3438	4989	5.3	10.4
Groundnut	3159	4089	3260	4186	3.2	2.4
Soybean	2121	2921	2266	2972	6.8	1.8
Sunflower	3481	4526	3592	4501	3.2	-0.6
Sesamum	4067	5706	4166	6053	2.4	6.1
Nigerseed	3912	5108	3918	5135	0.2	0.5
Cotton	3276	4376	3433	4514	4.8	3.1

Source: CACP calculations using CS data



## Price Policy for **Kharif Crops**

# **Commission for Agricultural Costs and Prices**

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