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## Executive Summary

- Acreage under all major crops is likely to increase in the coming Rabi season
- Above normal rainfall in Central India and parts of West India is likely to bring acreage from fallow land in to cultivation
- Acreage under grains are expected to increase by 5-15%, acreage under Wheat is likely to reach normal level at 30.7 m ha
- Acreage under Barley is expected to cross 7.5 lakh ha after a span of 16 years. Good prices amid sufficient soil moisture is likely to increase the acreage
- Area under Pulses likely to gain around 13% on the back of good prices amid increase in MSP despite repeated crop failure seen in last 3-4 years
- Acreage under Chana is likely to increase across all states except Karnataka due to drought situation
- Acreage under Coriander is likely to see marginal increase. However, Jeera may see significant increase this season on the back of good prices
- Rabi production is expected significant increase y/y on the back of lower base during last season amid expectation of congenial weather
- Severe drought dragged the yield in previous season barring Mustard

### EAR Acreage Forecast of Rabi Crops At a Glance

Crops	Acreage (Lakh ha)				Production (Lakh tons)			
	2016-17f	2015-16	2014-15	% Devn	2016-17f	2015-16	2014-15	% Devn
Mustard	66.91	59.07	59.54	13.27%	67.73	58.73	66.50	15.32%
Groundnut	7.72	5.76	7.46	34.03%	14.40	10.20	12.33	41.18%
Maize	20.20	18.66	18.49	8.25%	74.55	65.77	69.45	13.35%
Rice	43.05	37.22	39.72	15.66%	132.82	109.64	119.32	21.14%
Wheat	307.12	292.97	305.93	4.83%	919.50	826.40	869.62	11.27%
Barley	7.64	6.97	7.32	9.61%	18.57	14.69	17.49	26.41%
Coriander	5.30	5.12	4.21	3.52%	5.50	5.25	3.20	4.76%
Jeera	6.75	6.20	8.35	8.87%	3.50	2.75	4.50	27.27%
Chana	97.19	85.48	83.97	13.70%	61.71	50.00	48.59	23.42%
Lentils	15.23	13.45	14.82	13.23%	5.71	4.74	3.35	20.46%
Yellow Pea	9.30	8.28	8.60	12.32%	7.53	6.62	5.35	13.75%



## Introduction

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Rabi Crop season holds importance in Indian agriculture as it grows some of important crops Viz. Wheat, Maize, Chana, Mustard, Barley and Lentils. Rabi crops are essentially cold loving; most crops except Wheat can be grown with minimal moisture. With introduction improved varieties of Paddy, Wheat, Barley, Mustard, Maize and Chana along with enhanced irrigation facilities, fertilizers and mechanization have significantly increased acreage and production of these crops and also contributed to national economy. The important Rabi crops growing states are Punjab, Haryana, Uttar Pradesh, Rajasthan, Madhya Pradesh, Maharashtra, Gujarat, Bihar, Andhra Pradesh and Telangana.

Rainfall during the current monsoon season has been 97% of the LPA which termed as normal rainfall. It helped to improve reservoir levels, ground water levels and good soil moisture and is likely to bring more uncultivated land under cultivation. The prices of Rabi commodities are also attractive (most of the crops made record high) which is likely to attract more area under cultivation. Last year witnessed very lower monsoon rainfall due to El Nino condition and had severe impact on Rabi crops. However, in this year after good Kharif season, Rabi is also likely to be good cropping season.

Over the years the percent contribution of Rabi has seen increasing trend. During 2003/04 Rabi crop contribution was at 45% this has now increased to 51.5% on the back of increased area under cultivation and increased yields. Edelweiss Agri Research (EAR) has tried to capture cropping pattern during this important Rabi season.

## Objectives of the Study

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Estimate the acreage based on:

- Return on Investment (ROI)
- Prices
- Farmer survey

## Methodology

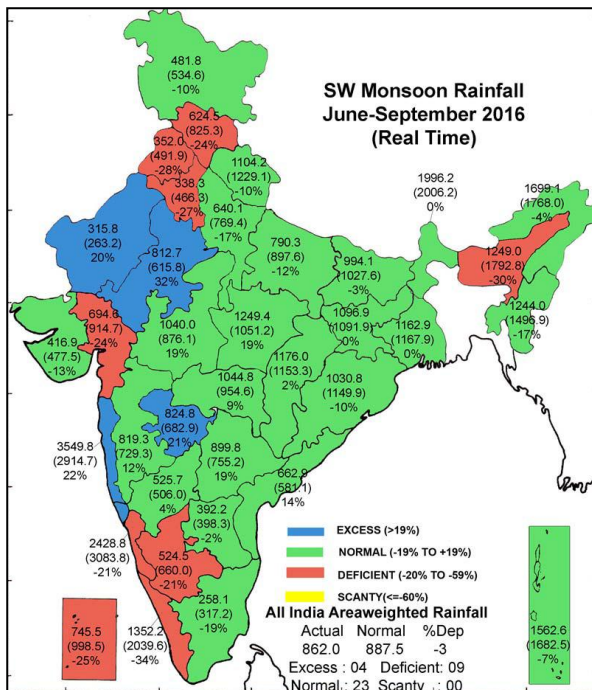
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Farmers switch acreage between the crops based on prices prevailed during arrival season and at the time of sowing. Ease of cultivation, duration of the crop, water & seed availability and expected rainfall during the season are other deciding factors. Edelweiss Agri Research has considered parameters like

- Farmer survey- EAR discussed farmers' intentions for Rabi crop sowing during its Kharif crop estimation survey in October. This was then followed up with telephonic survey.
- ROI: Net return from the crop after deducting the all the expenses like cost of seed, land preparation, weeding, fertilizer and pesticides, harvesting, interest on working capital, etc
- Prices of previous harvest season - Six month average of peak harvest season and existing price at the time of sowing
- Ease of cultivation



**South west Monsoon Performance:**



- The rainfall distribution during monsoon season has been fairly well distributed over all parts of the country leading to 3.5% higher crop sown area compared to last year with significant increase of crop sown area by 29.3% in pulses and 3.3% in cereals etc.

- However, Punjab, Haryana, Gujarat region and south interior Karnataka received deficient rainfall. Among these Punjab, Haryana and Gujarat region have good irrigation facilities and would have little impact on Rabi sowing. However South Karnataka has hit worst this year due to lower rainfall. Few districts of North Karnataka also hit due to deficit rainfall.

- The fairly good distribution of rainfall has resulted in substantial water storage which would serve irrigation requirement Rabi crops.

**Reservoir Status**

Reservoir Level Status 17th Nov, 2016 (in Billion Cubic Meter)					
Regions	Total	Current	% Total	% during LY	10 Year Avg
North Region	18.01	11.22	62%	72%	72%
East Region	18.83	15.59	83%	61%	73%
West Region	27.07	22.15	82%	53%	75%
Central Region	42.30	36.34	86%	67%	64%
Southern Region	51.59	22.15	43%	33%	69%
<b>ALL INDIA</b>	<b>157.80</b>	<b>107.45</b>	<b>68%</b>	<b>127%</b>	<b>98%</b>

Bountiful south west monsoon resulted in better storage than last year for corresponding period over Rajasthan, Jharkhand, Odisha, West Bengal, Gujarat, Maharashtra, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Andhra Pradesh and Telangana. Water storage in

the reservoirs of Karnataka is found to be equal as last year. Year on year, lower water storage is recorded in Himachal Pradesh, Tripura, Kerala and Tamil Nadu.

Apart from these reservoirs, wells, tube wells, check dams, bunds also supplies irrigation to the Rabi crops. Thus availability of sufficient irrigation water in the reservoir will serve the purpose to irrigating Rabi crops and will push farmers to bring more area under cultivation.

**Sources of Information**

**Acreage:** Ministry of Agriculture and 2016/17 forecast is of Edelweiss Agri Research

**Prices:** Agmarknet, Edelweiss Agri Research (EAR)

**Competing Crops:** Edelweiss Agri Research (EAR)

**ROI:** Edelweiss Agri Research (EAR)

**Farmers Survey:** Edelweiss Agri Research (EAR)



## Wheat

Wheat is Rabi crop majorly grown in North India. Wheat is second largest cereal crop grown in India after rice and accounts for 8% total food grain production. Six states viz. Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan and Bihar account for 92% of India’s wheat production and 86% of area under cultivation. Area under wheat is in increasing trend since last 10 years. Prevailing higher prices, increase in MSP and congenial weather is expected to keep Wheat sowing higher this season.

Indian wheat is largely a soft/medium hard, medium protein, white bread wheat, somewhat similar to U.S. hard white wheat. Wheat grown in central and western India is typically harder, with higher protein and gluten, compared to wheat grown in northern India. India also produces around one million tons of durum wheat, mostly in the states of Madhya Pradesh and Rajasthan. Farmers are increasingly shifting from durum wheat to higher yielding non-durum varieties as the durum yield is significantly lower than that of regular wheat.

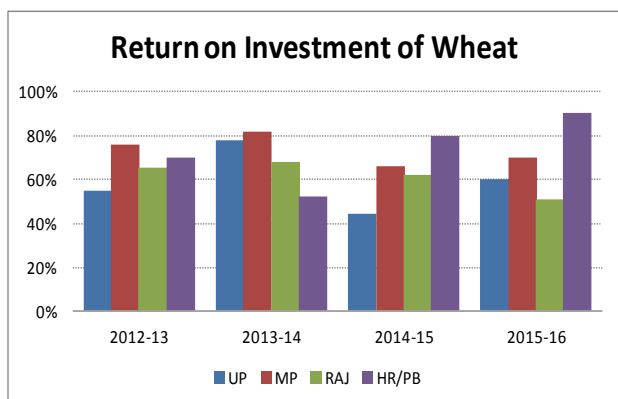
### Competing crop Analysis:

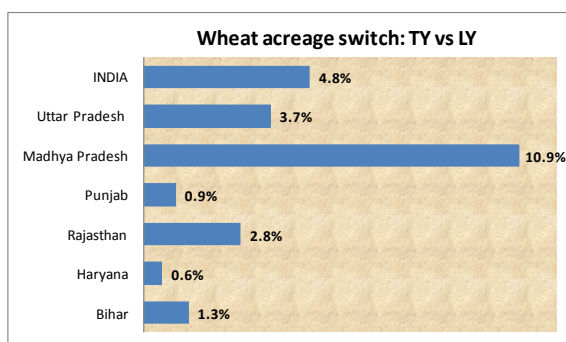
Major competing crops for Wheat	
States	Competing Crops
Madhya Pradesh	Chana/Lentil/Garlic/Coriander
Uttar Pradesh	Sugarcane/Mustard
Rajasthan	Mustard/Chana/Barley
Maharashtra	Chana
Gujarat	Mustard/Chana

Wheat competes with almost all crops across major producing region as it is cultivated in around 48% (30 mln ha) of net sown area for the Rabi season.

Major competing crops are common in most of the states: Mustard followed by Pulses. In Uttar Pradesh Wheat competes with Sugar cane as well.

Looking at return on investment Wheat has not given much benefit when compared to Chana and Mustard. Major reason for lower ROI is fall in productivity and steady prices during arrivals, whereas prices of Chana and Mustard witnessed exorbitant gains during arrivals period which gave better ROI.



**Acreage Switch:**

Despite lower ROI against other crops, EAR forecasts Wheat acreage to increase across all the states following higher prevailing Wheat prices and hike in MSP. Likely lower Onion (across India Onion prices have crashed) sowing and lower weather risk when compared to Chana and Mustard would boost Wheat sowing. Madhya Pradesh & Bihar are major onion growing states; acreage may shift from onion to Wheat and other crop in these

states. In other states Wheat may gain acreage from fallow land. Meanwhile, government has increased Wheat MSP by INR 100/qtl to INR 1,625/qtl against INR 1,525/qtl.

In Uttar Pradesh, Wheat is expected to gain at the cost of other crops as cane crushing is expected to get delayed due to demonetization of Indian currency. Moreover, Gur units are almost closed due to cash crunch as cane payment has hit badly due to demonetization of old notes and lack of easy access to new notes. Delayed cane crushing amid long sowing window of Wheat when compared to other crops will encourage farmers to plant more Wheat this season. We expect acreage in Uttar Pradesh to increase by 3.7% this season.

Acreage in Punjab and Haryana is expected to increase marginally due to increase in MSP amid higher prevailing prices. Moreover, acreage shift is negligible as 90-95% of the farmers prefer Wheat every year from total net sown area.

**Production estimates:****State Wise Indian Wheat Production**

States	Area (Lakh ha)			Yield (Kg/Ha)			Production (Lakh Tons)		
	2015/16	2016/17e	% Varn	2015/16	2016/17e	% Varn	2015/16	2016/17e	% Varn
Uttar Pradesh	94.99	98.50	3.7%	2,770	2,951	6.5%	263.1	290.7	10.5%
Madhya Pradesh	51.84	57.50	10.9%	2,050	2,289	11.6%	106.3	131.6	23.8%
Punjab	34.97	35.30	0.9%	4,370	4,660	6.6%	152.8	164.5	7.6%
Rajasthan	29.66	30.50	2.8%	2,720	2,988	9.8%	80.7	91.1	12.9%
Haryana	25.11	25.25	0.6%	4,300	4,521	5.1%	108.0	114.2	5.7%
Bihar	22.70	23.00	1.3%	2,226	2,246	0.9%	50.5	51.7	2.2%
Gujarat	9.00	10.50	16.7%	2,550	2,764	8.4%	23.0	29.0	26.5%
Maharashtra	6.20	8.00	29.0%	1,350	1,471	9.0%	8.4	11.8	40.6%
Others	18.50	18.57	0.4%	1,822	1,887	3.6%	33.7	35.0	4.0%
<b>INDIA</b>	<b>292.97</b>	<b>307.12</b>	<b>4.8%</b>	<b>2,821</b>	<b>3,004</b>	<b>6.5%</b>	<b>826.4</b>	<b>919.5</b>	<b>11.3%</b>

Considerable increase in acreage is likely in Madhya Pradesh, Gujarat and Maharashtra this season on the back good soil moisture due to good rainfall activity during the monsoon. Drought situation during last season had dented the acreage in these states and acreage in these states is expected to reach to normal levels this season.

EAR has calculated yield based on last five years average. Productivity is estimated at 3,004 Kg/ha against 2,821/ha, higher by 6.5% but much below the record level of 3,180 kg/ha. Productivity might



stay higher as weather department expects winter temperatures to remain congenial for whole year which is good for Wheat crop. Lower winter temperature increases number of tillers and thus the productivity. However, concern of rainfall activity during the harvesting period has to be watched with caution.

**Indian Wheat Balance Sheet:**

Indian Wheat balance Sheet - Lakh tons

	2015-16	2016-17E	2017-18F	Change
Area	305.9	293.0	307.1	4.8%
Yield	2.82	2.82	3.00	6.5%
Production	863.7	826.4	919.5	11.3%
Wheat C/I-Free Market	9.6	4.3	14.0	226.0%
Wheat C/I-Govt	172.2	145.4	81.4	-44.0%
Total Wheat C/I	181.8	149.7	95.4	-36.2%
FSR	172.7	169.4	183.9	8.6%
Farmer Selling	<b>691.0</b>	<b>657.0</b>	<b>735.6</b>	<b>12.0%</b>
Govt Procurement	282.3	233.0	330.0	41.6%
IMPORT	5.2	36.3	8.0	-77.9%
Supply-Free Market	423.4	464.5	427.6	-7.9%
Supply-Govt	454.5	378.4	411.4	8.7%
<b>Total Supply</b>	<b>877.9</b>	<b>842.9</b>	<b>839.0</b>	<b>-0.5%</b>
Export Demand	<b>7.2</b>	<b>2.1</b>	<b>2.6</b>	<b>24.3%</b>
Offtake Under Various Govt Schemes	<b>309.1</b>	<b>297.0</b>	<b>296.5</b>	<b>-0.2%</b>
Open Market Demand	411.9	448.5	418.0	-6.8%
<b>Total Open Market Demand</b>	<b>419.1</b>	<b>450.5</b>	<b>420.6</b>	<b>-6.7%</b>
<b>Total Demand</b>	<b>728.2</b>	<b>747.5</b>	<b>717.1</b>	<b>-4.1%</b>
Wheat C/O-Free Market	4.3	14.0	7.1	-49.5%
Wheat C/O-Govt Market	145.4	81.4	114.9	41.1%
Total Wheat C/O	149.7	95.4	122.0	27.8%
<b>Stocks to Use Ratio Free Market</b>	<b>1.0%</b>	<b>3.1%</b>	<b>1.7%</b>	
<b>Stocks to Use Ratio Govt</b>	<b>47.0%</b>	<b>27.4%</b>	<b>38.8%</b>	
<b>Total SUR</b>	<b>20.6%</b>	<b>12.8%</b>	<b>17.0%</b>	

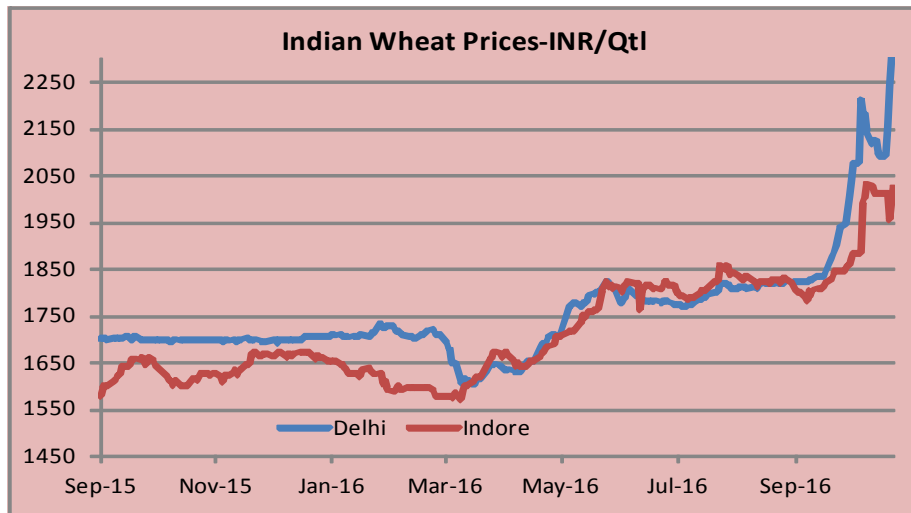
- EAR has projected Wheat production for 2017-18 at 91.95 million tons against 82.64 million tons produced during last year, higher by 11.3%. Madhya Pradesh, Uttar Pradesh and Punjab are expected to witness exorbitant rise in production.
- Despite increase in production over last year total supplies stays marginally lower over last year; annual SUR for 2017-18 is pegged 2<sup>nd</sup> lowest in a decade. Meanwhile, SUR with government would be second lowest in last 12 years for 2017-18.
- EAR expects lower imports towards 8.0 Lakh MT against 36.3 Lakh MT estimated imports for 2016-17. Government is expected to procure more Wheat for 2017-18 following lower stocks with them which would keep prices in open market higher. MSP of INR 1,625/qtl and cheaper international prices would force south Indian millers to imports premium quality Wheat from Australia.



- Meanwhile, India would be out of the exports market for another year as prices during arrivals would trade much above the international prices. EAR expects India to exports through small containers which would be negligible.

**Price Outlook:**

Wheat Prices in Delhi market are trading at historical high level of INR 2,301/qtl, which is trading higher by 35.5% y/y. Rise in prices are attributable to lower than expected production and supply disruption due to currency demonetization in India.



- Weakness in INR against dollar is making imports costlier which are also supporting the prices of Wheat to trade higher.
- Slower release of Wheat through government would continue to support the prices moving ahead.
- B/w April to Oct 2016, govt has sold around 30.12 Lakh MT of Wheat through OMSS against 16.92 Lakh MT sold during same period LY.
- Imports to India are projected around 36.33 Lakh MT against 5.18 Lakh MT of last year imports. Imports could peak to 6-7 lakh tons per month till April.
- So far India has imported around 10.33 Lakh MT against 4.72 Lakh MT of LY same period. Expected aggressive imports would limit the price gains.

**Indian Wheat SUR with Govt for the 3<sup>rd</sup> quarter (Oct-Dec) is projected at 214% which is lowest since last 10 years. Total SUR for 3<sup>rd</sup> quarter is projected at 129.0% against 159.0% of last year same quarter SUR. Meanwhile, Annual SUR is projected to be lowest in last 8 years. Overall fundamental points to firm trade moving ahead, historical price analysis also indicates prices to trade above INR 2,500/qtl.**



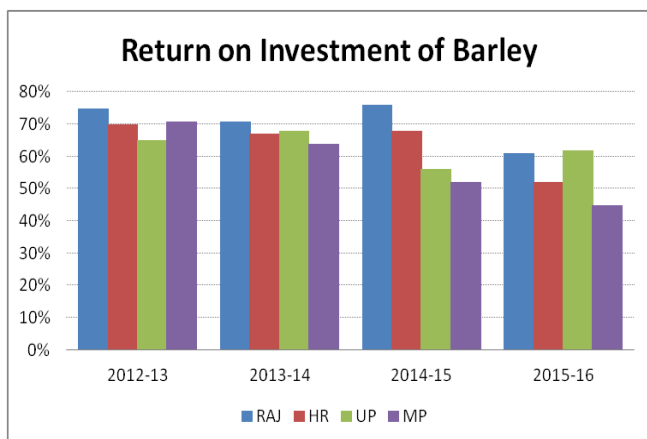


## Barley

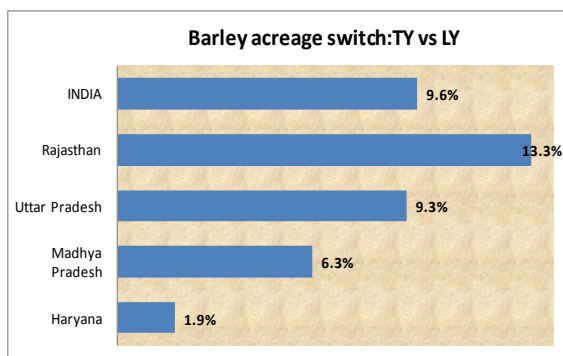
Barley is an annual cereal grain food crop that is also an important feed ingredient for the animals. Globally it is considered to be the fourth most important cereal crop after Wheat, Maize and Rice. It is considered to be one of the most valuable food crops that can survive almost every weather condition. Other than playing its part as a major food crop, it is also used in beverages. Barley in India is a Rabi crop. Production of barley has been increasing over a decade following increased use in liquor industry. Barley area under cultivation has seen increase of 2.39% over a decade. Barley is grown mainly in Rajasthan and Uttar Pradesh, which together account for around 70 per cent of total area and production in the country. The other states where barley is cultivated on a large scale are Madhya Pradesh, Haryana and Punjab.

### Competing Crop Analysis

Major competing crops for Barley	
States	Competing Crops
Rajasthan	Wheat/Mustard/Chana
Haryana	Mustard/Wheat/Chana
Uttar Pradesh	Mustard/Wheat
Madhya Pradesh	Chana/Mustard



Barley is grown in Rajasthan, Uttar Pradesh, Haryana and Madhya Pradesh. Barley mainly competes with Mustard and Wheat across all the states. Except in Uttar Pradesh, Barley ROI across all the states is lower than last year. Lower ROI is due to fall in productivity. ROI in Barley is higher than Wheat in Rajasthan, whereas it is lower than Mustard and Chana. Barley ROI is higher than Chana and Wheat in Uttar Pradesh which would boost the acreage in Uttar Pradesh.



Acreege under Barley is expected to cross 7.5 lakh ha after span of 16 years. Good rainfall activity over major Barley growing regions of Rajasthan is likely to bring the acreage under Barley from fallow land. Acreege in Rajasthan is expected to increase by 13.3% on the back of record prices in Barley this season. Reduction in production due to drought last season has helped to increase the Barley prices at record level and malsters to

become import dependent. Acreege is expected to increase across all major growing regions and mostly acreage is expected to gain from fallow land which was uncultivated during last season due to severe drought.

### Production estimates:

Indian Rabi Barley									
State	Area (Lakh ha)			Yield (kg/ha)			Production (Lakh tons)		
	2015-16	2016-17e	% Varn	2015-16	2016-17e	% Varn	2015-16	2016-17e	% Varn
Rajasthan	3.31	3.75	13.3%	2,126	2,641	24.2%	7.04	9.90	40.7%
Uttar Pradesh	1.51	1.65	9.3%	2,260	2,454	8.6%	3.41	4.05	18.7%
Haryana	0.54	0.55	1.9%	2,750	3,115	13.3%	1.49	1.71	15.4%
Madhya Pradesh	0.80	0.85	6.3%	1,530	1,612	5.4%	1.22	1.37	12.0%
Others	0.81	0.84	3.7%	1,889	1,821	-3.6%	1.53	1.53	0.0%
<b>INDIA</b>	<b>6.97</b>	<b>7.64</b>	<b>9.6%</b>	<b>2,108</b>	<b>2,430</b>	<b>15.3%</b>	<b>14.69</b>	<b>18.57</b>	<b>26.4%</b>

Acreege under Barley is expected to rise by 9.6% across India following likely rise in net sown area for the ongoing Rabi season. Last year due to dry weather most of the farmers cultivated Rabi crops in less area and left land fallow. This year farmers are expected to bring fallow land under cultivation.

Rajasthan is major Barley cultivating state. Jaipur and Sri Ganganagar region are considered as the major Barley producing belts within Rajasthan. In Jaipur around 90% of Barley is malt quality, whereas Sri Ganganagar produces around 50-60% of malt Barley. Higher production of malt Barley makes Rajasthan important price driver. EAR expects Barley acreage in Rajasthan at record of 3.75 Lakh ha against 3.31 Lakh ha of 2015-16, higher by 13.3%.

Uttar Pradesh is expected to increase the Barley planting by 9.3%. Around 80-90% of Barley planted in UP is of feed quality. Most of the Barley from Uttar Pradesh is either locally consumed or moved to Punjab and Jammu & Kashmir.

Madhya Pradesh produces negligible quantity of malt Barley. This year acreage is expected to increase by 6.3%. Acreege in Haryana would be higher by 1.9%.

All India Barley acreage for 2016-17 is projected at record level of 7.64 Lakh ha against 6.97 Lakh ha of last year acreage, higher by 9.6%.



**Indian Balance Sheet**

Indian Barley balance Sheet- Lakh tons				
In Lakh Tons	2015-16	2016-17	2017-18F	Change
Barley C/I	1.85	2.26	1.42	-37.2%
Production	17.49	14.69	18.56	26.4%
IMPORT	0.02	1.48	0.05	-96.5%
<b>Total Supply</b>	<b>19.36</b>	<b>18.42</b>	<b>20.03</b>	<b>8.7%</b>
Brewery Demand	8.25	8.28	8.47	2.3%
Feed and Huamn Consu	7.20	7.76	7.77	0.3%
Seed Demand	0.84	0.86	0.86	0.0%
Dom Demand	16.28	16.90	17.11	1.2%
EXPORT	0.82	0.11	0.35	223.2%
<b>Total Demand</b>	<b>17.10</b>	<b>17.01</b>	<b>17.45</b>	<b>2.6%</b>
C/O	2.26	1.42	2.58	82.2%
<b>Stocks to Use Ratio</b>	<b>13.2%</b>	<b>8.3%</b>	<b>14.8%</b>	

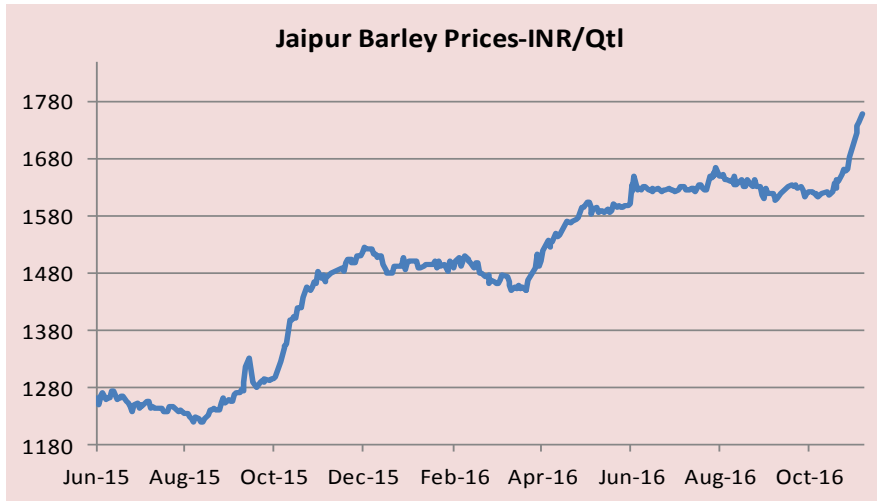
Sources: EAR, Govt and Trade Estimates

- Production for 2017-18 is projected at record 18.56 Lakh MT against 14.69 Lakh MT produced during 2016-17, lower by 26.4%.
- Whereas, beginning stocks for 2017-18 is projected at 1.42 Lakh MT, lowest since last 7 years. Lower beginning stocks are due to lower production during 2016-17. Last year production was lower due to lower planting and poor productivity.
- EAR expects imports to be negligible for 2017-18 as India is likely to harvest excess material for the upcoming season.
- Total supplies for 2017-18 is projected at 20.03 Lakh MT against 18.42 Lakh MT of 2016-17 supplies, higher by 8.7%.
- Total domestic demand is projected to increase by 1.2%. Exports demand is projected at 0.35 Lakh MT.
- Stocks to Use ration for 2017-18 is expected to be loosest in last 5 years which would keep Barley prices lower than last year.
- Government has increased the Barley MSP by INR 100/qtl to INR 1,325/qtl against INR 1,225/qtl of last year MSP.
- Increase in MSP would have little impact on the prices as government intervention in Barley is negligible.

**Price Outlook**

Last traded prices of barley in Jaipur market are INR 1,755/qtl which is at historical level. Rise in prices are attributed to acute shortage of malt quality material in domestic market and delay in imports from Argentina and Australia.

- SUR for 4<sup>th</sup> quarter (Dec-Feb) is pegged at 56.5% lowest since last 4 years. Annual SUR is pegged at 8.3% which is lowest since last 7 years.
- Tight balance sheet has kept Barley prices higher by 19.3% y/y.



- However, barley imports this season are expected to be record. So far India has imported around 0.91 Lakh MT of Barley v/s 0.02 Lakh MT imported during LY.
- Total imports to India are expected at 1.48 Lakh MT.

***EAR expects barley prices to trade higher moving ahead following tight balance sheet, however price gains would be capped by higher planting sentiments and influx of imported material.***



## Maize:

Maize (*Zea mays* L.) is an important cereal crop in world after wheat and rice. Importance of maize lies in its wide industrial applications besides serving as human food and animal feed. It is the most versatile crop with wider adaptability in varied agro-ecologies and has highest yield potential among the food grain crops.

Maize is called 'queen of cereal' as it is grown throughout the year due to its photo-thermo insensitive character and highest genetic yield potential among the cereals. In India, maize is cultivated throughout the year in most of states of the country for various purposes including grain, feed, fodder, green cobs, sweet corn, baby corn, pop corn and industrial products.

In India, current consumption pattern of maize is poultry, pig, fish feed 52%, human consumption 24%, cattle feed and starch 11% and seed and brewery industry 1%. In recent years, the maize production has significantly increased, which is largely associated with significant genetic enhancement from the area of open pollinated varieties, composites breeding to double and three way hybrids and recent development in single cross hybrids.

There are three distinct seasons for the cultivation of maize in India: Kharif, Rabi in Peninsular India and Bihar, and spring in Northern India. Maize is predominately a Kharif season crop but in past few years, Rabi maize has gained a significant place in total Maize production in India.

Rabi maize is grown on an area of 1.87 million ha with the grain production of 6.7million tonnes, with an average productivity of 3.57 t/ha. The predominant Rabi maize growing states are Andhra Pradesh (39.5%), Bihar (24.8%), Tamil Nadu (13%), Karnataka (6.2%), Maharashtra (6.8%), and West Bengal (5.3%).

## Competing Crop:

Major competing crops for Maize	
States	Competing Crops
Bihar	Wheat/Oal/Tobacco
Andhra	Paddy/Urad
Maharashtra	Wheat/Chana
Tamilnadu	Paddy

Amongst the various crops produced during the Rabi season, Maize is the considered to be one of the hardiest crops due to its adjustment to weather adversity. Maize mainly competes with Paddy in Southern Peninsula as water availability depletes during winter and with Urad in some extent. Since, winter maize is more assured and high yielding farmer with lesser water availability prefer Maize rather than Paddy during winter.

In coastal Peninsular India, rice-rice rotation is dominant system but during recent years double cropping of rice is becoming difficult due to shortage of irrigation water particularly during winters. Under such situations, possibility for alternate potential crops having economical competence and that can be taken under water scarcity situation having explored by the researchers and farmers. As an alternative, rice-pulses systems were tried by the farmer in the coastal district of Andhra Pradesh but due to lower productivity challenges, pulses could not sustain. Therefore possibility of maize in this non traditional maize growing region was explored that has shown some good results. Due to higher productivity and profitability and assured alternative winter crop after rice, the acreage of maize in coastal Andhra Pradesh has shown an increasing trend and the rice-maize has emerged as a

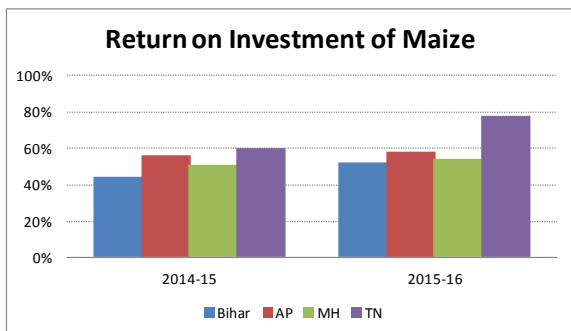


potential cropping system in coastal region of Andhra Pradesh concentrated in Guntur, Krishna, West and east Godavari and few pockets of Telangana.

In Bihar, Maize mainly competes with Wheat over major growing districts and to some extent with Oal (Yam) & Tobacco in Samastipur and with Banana in Bhagalpur District. In the recent years, Maize acreage is slowly gaining due to its high yield potential.

In Maharashtra, Maize grows in Buldhana, Solapur, Nagar, Pune, Sangli, Akola and Jalgaon districts and mainly competes with Wheat and Chana. Good prices and high yield potential during the winter is slowly increasing the acreage under Maize in recent years. During 2015-16, Acreage in Maharashtra is at 2.12 lakh ha versus 1.05 lakh ha in 2008-09.

**Return on Investment:**

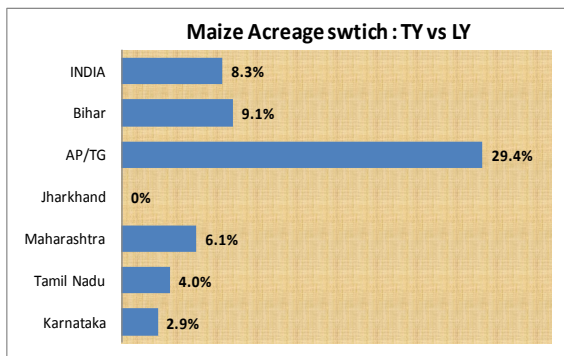


Adverse weather during the Rabi season 2015-16 caused severe yield loss in Andhra, Bihar and Maharashtra. But, yields were reported up in Tamilnadu on good rainfall activity.

Despite the lower yields, Return on Investment (ROI) was higher due to higher prices y/y on the back of robust demand amid failure of Kharif crop.

Though yields were lower farmers earned higher return as prices were ruling higher by 10-15% y/y during the harvest time. Higher prices during the harvesting season in last year and good prices currently amid higher MSP will aid to increase acreage this Rabi season. Moreover, good soil moisture in Andhra, Maharashtra and Bihar will also turn as boon to increase acreage under Maize.

**Acreage Switch:**



Acreage in Maharashtra and Andhra is expected to reach normal levels after 2 year on the back of good rainfall activity during the monsoon. Good rainfall activity has helped to restore the water levels in reservoirs and restore the soil moisture. Thus, EAR expects acreage is likely to increase significantly over Andhra and Maharashtra this season. Good prices during the last two years will bring more acreage under Maize in Bihar and Tamil

Nadu this season.

Meanwhile, GOI also increased MSP during last Kharif season to Rs 1,365 per Qtl from Rs 1,325 per Qtl. This will also encourage farmers to plant more Maize this Rabi season. Based on all the factors we believe that acreage under Maize is expected to increase by 8.3% at 20.2 lakh ha.

EAR forecasts, acreage in Bihar to stay higher by 9.1% y/y at 6.0 lakh ha. Acreage is expected to switch from Banana, Oal and Wheat due to its good return. Currently, prices are ruling at Rs 1,665 per Qtl higher by 3.5% which will also help farmers to plant more Maize.



In Andhra, below normal rainfall during last two seasons have led to lower acreage under Maize. Mostly farmers left the field fallow or cultivated pulses. However, good monsoon this season is likely to increase the acreage mainly from fallow. We believe that acreage in Andhra is likely to increase by 29.3%. Recent development of Rice - Maize system as part of crop rotation in Guntur, Krishna and west Godavari districts will also help to increase the acreage.

**Production:**

Sufficient soil moisture is expected to increase the acreage under Maize by 8.3%, mainly increase in acreage in Andhra, Bihar and Maharashtra. Yields are expected to increase by 8.6% majorly because of increase in yields to normal levels in Andhra and Maharashtra. Yields over these states were hit badly during last two seasons on the back of severe drought situation. However, yields are currently based last 5 year average and hence the production number is subject to revision based on the weather conditions during the growing period.

State	Area (Lakh ha)			Yield (Kg/ha)			Production (Lakh tons)		
	2015-16	2016-17e	% Var	2015-16	2016-17e	% Var	2015-16	2016-17e	% Var
Bihar	5.50	6.00	9.1%	4,100	4,112	0.3%	22.55	24.67	9.4%
AP/TG	2.55	3.30	29.4%	5,900	6,358	7.8%	15.05	20.98	39.5%
Jharkhand	2.50	2.50	0.0%	1,339	1,371	2.4%	3.35	3.43	2.4%
Maharashtra	2.12	2.25	6.1%	1,989	2,055	3.3%	4.22	4.62	9.7%
Karnataka	1.02	1.05	2.9%	2,600	2,745	5.6%	2.65	2.88	8.7%
Tamil Nadu	2.02	2.10	4.0%	5,453	5,241	-3.9%	11.02	11.01	-0.1%
Others	2.95	3.00	1.7%	2,354	2,320	-1.5%	6.95	6.96	0.2%
<b>INDIA</b>	<b>18.66</b>	<b>20.20</b>	<b>8.3%</b>	<b>3,525</b>	<b>3,826</b>	<b>8.6%</b>	<b>65.77</b>	<b>74.55</b>	<b>13.3%</b>

**Balance Sheet:**

- India has begun with record low ending stocks of 2.42 Lakh MT for 2016-17 which has started from October.
- Lower beginning stocks are mainly due to drastic fall in production during 2015-16. Production in 2015-16 was lower by 15.7%.
- We were forced to import last year due to higher domestic prices and cheaper availability in Ukraine. This year we would be self sufficient as production in Kharif has improved and production in Rabi is expected to be record this season.
- Imports for the year 2016-17 will be negligible.
- Total demand is expected to post considerable growth of 9.4% on adequate supplies as feed and liquor industry would prefer Maize over Broken Rice as Maize is trading cheaper.
- Demand growth would be capped due to demonetization which would dent on demand of poultry products which would impact on the consumption for couple of months.
- Annual SUR has improved significantly over last year. SUR for 2016-17 is pegged at 5.09% against 1.28% of last year SUR.

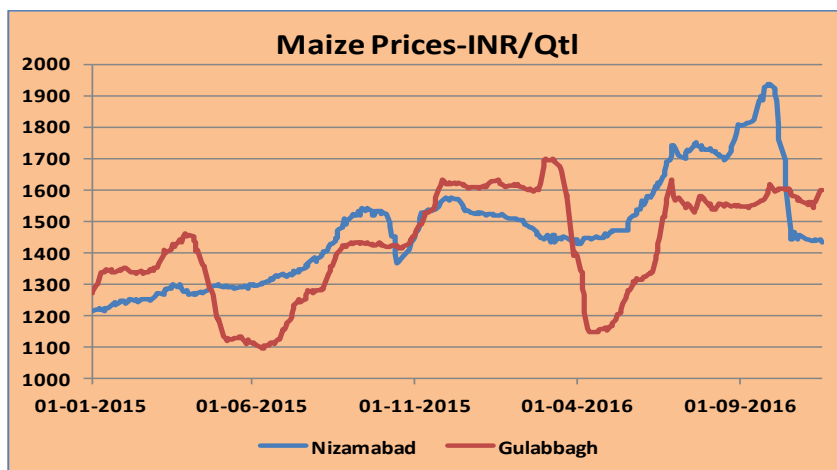


Indian Maize SnD- in Lakh MT

	2015-16	2016-17	2017-18F	Change
Maize C/I	9.01	2.42	10.55	-73%
BS With Govt Agencies	0.00	0.00	0.00	
Production	180.82	215.04	233.00	19%
IMPORT	2.05	0.37	0.00	-82%
<b>Total Supply</b>	<b>191.88</b>	<b>217.83</b>	<b>243.55</b>	<b>13.5%</b>
Poultry Feed-Layer	46.87	50.27	58.54	7.3%
Poultry Feed-Broiler	49.68	53.27	58.54	7.2%
Starch & Liquor Industry	38.27	39.99	33.15	4.5%
Human Consumption	34.44	34.64	34.99	0.6%
Compound Feed	12.50	15.00	18.00	20%
Aquaculture	0.25	0.30	0.32	20%
Feed & Residual	2.00	9.00	12.00	350%
Seed Demand	1.81	1.70	1.70	-6%
EXPORT	3.64	3.10	6.08	-15%
<b>Total Demand</b>	<b>189.46</b>	<b>207.28</b>	<b>223.31</b>	<b>9.4%</b>
<b>Stocks with Govt Agencies</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	
<b>C/O Free Market</b>	<b>2.42</b>	<b>10.55</b>	<b>20.24</b>	<b>336%</b>
Total C/O	2.42	10.55	20.24	336%
<b>Stocks to Use Ratio</b>	<b>1.28%</b>	<b>5.09%</b>	<b>9.06%</b>	

Price Outlook:

Maize Prices in Nizamabad are trading at INR 1,433/qtl and prices in Gulababagh are trading at INR 1,599/qtl. Prices in Nizamabad are trading lower by 6.4% y/y and in Gulababagh it is trading higher by 3.9%. Higher prices in Gulababagh are due to steady exports to Nepal.



- Kharif Maize production is estimated at 140 LT against 11.5 LT of LY, higher by 22%.
- However, crop is lower than earlier market projection. Downward revision is due to poor rainfall in KA and TG.
- Telangana and Madhya Pradesh govt is buying Maize at MSP at the places where prices are trading below MSP of INR 1,365/qtl.





- Last year TN farmers got higher realization in Maize. This year, Rabi sowing in TN is likely to be higher. Forecasted normal North East monsoon would keep production higher thus capping the price gains.
- SUR for 1<sup>st</sup> quarter is 124.7%, higher than last year SUR of 111.1% but second lowest in last 13 years.

**Lower SUR for 1<sup>st</sup> quarter and demonetization of currency are expected to keep Maize prices to trade firm on medium term basis.**



## Mustard:

Mustard seed is an important Rabi season crops and the largest oil seed produced, contributing to 74% of total acreage under Rabi Oil seeds. Mustard seed production is largely confined to northern states of India viz., Rajasthan, Madhya Pradesh, Uttar Pradesh and Haryana. The oil extracted from mustard seed is the second largest edible oil produced in India after soy oil. Mustard Cake and Meal is important source of protein in Cattle, Poultry and Aqua feed industry.

### Competing Crop:

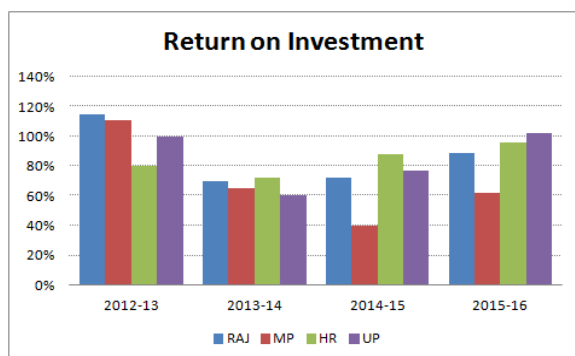
Major competing crops for Mustard	
States	Competing Crops
Rajasthan	Wheat/Chana/Barley
Madhya Pradesh	Chana/Lentil/Yellow pea
Uttar Pradesh	Wheat/Paddy
Gujarat	Wheat/Jeera/Potato
Haryana	Wheat/Barley/Chana

Amongst the various crops produced during the Rabi season, wheat is the considered to be the sturdiest and hence it shares large coverage of area 48% followed by Chana 14% and mustard 10%. These crops compete with mustard in most of the states. Mustard seed also shares acreage with Barley, Chana, Jeera and Potato, however in very few

regions. Mustard seed crop thrives well in wide range of soil. It requires less water as compared to pulses and grains. And as compared to competing crops like Chana, Mustard seed is less sensitive to adverse weather conditions. Further low cost of cultivation would increase farmer's preference towards mustard seed sowing this season.

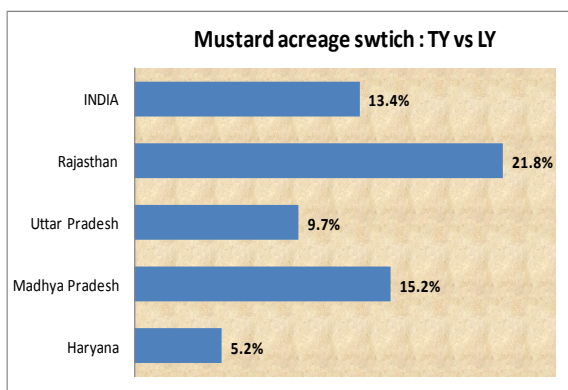
In Rajasthan, mustard seed is produced majorly in Eastern districts of, Alwar, Bharatpur, Sawai Madhopur and Tonk. In these districts mustard seed competes with, Wheat and Barley. In Ganganagar region and Hanumangarh mustard seed competes with Barley and Chana. In Madhya Pradesh, Bhind, Morena and Gwalior are major producing districts and here it competes with pulses.

### Return on Investment:



Adverse weather during the Rabi season 2015-16 caused severe quality as well as yield loss in most of the crops except Mustard. Thus prices of pulses, grains and oilseeds hit new record levels. However, despite record prices in most of the commodities, return on investment varied due to sharp decline in yields.

Mustard seed prices during the time of harvest were up by nearly 8-10% year on year. Mustard seed yield year on year increased by 14.7% in 2015-16 also as compared to competing crops viz, wheat, Chana and barley, yield per hectare was relatively higher. Thus resulting in higher return on investment to farmers in recent years also in comparison with competing crops. Farmers in Uttar Pradesh and Haryana enjoyed the highest returns over 102% and 96% respectively, highest since last 3 years. In Rajasthan and Madhya Pradesh, returns of 89% and 62% were fetched.

**Acreage Switch:**

After 2 consecutive seasons of drought, above normal monsoon rains have revived the parched land. Water levels in reservoirs have improved substantially. Thus EAR believes like Kharif season, a large number of fallow lands will be sown in Rabi season resulting to increase in the net sown area year on year.

Government has raised the Minimum Support Price (MSP) for the mustard seed by Rs. 350/qtl to

Rs.3, 700/qtl.

Based on return on investment analysis and adequate water levels in reservoirs, area under mustard seed cultivation is likely to increase in all the major producing states. EAR forecasts acreage to increase by 13.4% year on year to 69.51 lakh ha. If these numbers materialize it would be highest acreage in last six years.

EAR forecasts acreage in Rajasthan to increase by 21.8% to 29.0 lakh hectares followed by increase of 15.2% in Madhya Pradesh to 7.2 lakh hectares, in Uttar Pradesh by 9.7% to 7.9 lakh ha.

**Production estimates:**

Timely sowing, expectation of increase in acreage by 13.3% and considering weather to remain tranquil throughout the growth stage mustard seed production is estimated to increase by 15.3% to 67.73 lakh tons amid 1.4% increase in yield. Mustard seed yield of all the states are computed considering past 5 year average hence it is subject to revision.

State	Area (Lakh ha)			Yield (kg/ha)			Production (Lakh tons)		
	2015-16	2016-17e	% Var	2015-16	2016-17e	% Var	2015-16	2016-17e	% Var
Rajasthan	23.80	29.00	21.8%	1,013	1,049	3.6%	24.11	30.42	26.2%
Uttar Pradesh	7.20	7.90	9.7%	1,142	1,240	8.5%	8.22	9.79	19.1%
Madhya Pradesh	6.25	7.20	15.2%	799	758	-5.1%	5.00	5.46	9.3%
Haryana	5.80	6.10	5.2%	1,098	1,180	7.4%	6.37	7.20	13.0%
West Bengal	4.76	4.76	0.0%	752	715	-4.9%	3.58	3.40	-4.9%
Others	6.75	6.75	0.0%	1,100	1,021	-7.1%	7.43	6.89	-7.1%
<b>INDIA</b>	<b>59.07</b>	<b>66.91</b>	<b>13.3%</b>	<b>994</b>	<b>1,008</b>	<b>1.4%</b>	<b>58.73</b>	<b>67.73</b>	<b>15.3%</b>

**Balance Sheet:**

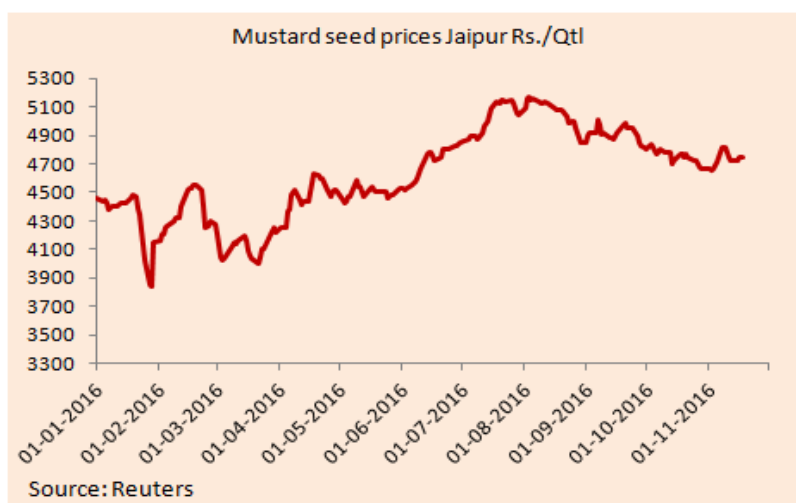
- The marketing season 2017-18 is likely to begin with record low opening stocks at 0.7 lakh tons year on year, down by 20%.
- Despite record low beginning stocks, expectation of 15.3% revival in production could improve the total supply for the season by 23% to 68.5 lakh tons. Total supply is likely to be at 3 year high.
- EAR estimates mustard seed crushing to increase by 23% to 63.9 lakh tons amid increase in seed availability and projected growth in demand of derivative products.



- With sharp revival in production anticipated mustard seed ending stocks for 2017-18 is forecasted at 1.2 lakh tons, year on year up by 69%. Year on year variation looks exaggerated due to low base.
- Stock to Usage is seen improving since last two years at 1.8%.

Mustard seed (March to Feb) in Lakh tons					
	14-15	15-16	16-17	17-18 F	% Change
<b>Area</b>	66.24	59.53	59.07	66.96	13%
<b>Production</b>	66.5	51.8	58.73	67.78	15%
Opening Stocks	3.6	1.5	0.9	0.7	-20%
Availability	66.5	51.8	54.8	67.8	24%
<b>Total supply</b>	70.1	53.3	55.6	68.5	23%
FSR	3.3	2.6	2.9	3.4	15%
Crush	65.3	49.8	52.0	63.9	23%
<b>Total Demand</b>	68.6	52.4	54.9	67.3	22%
Ending Stocks	1.5	0.9	0.7	1.2	69%
<b>S/C ratio</b>	2.2%	1.7%	1.3%	1.8%	

**Price Outlook:**



- Mustard seed prices at the benchmark Jaipur markets are trading near Rs.4741 per quintal. Prices have recovered from the 4 month lows set during last week on November amid revival in demand from processors.
- Mustard seed crushing demand is expected to remain firm in near term as seasonal demand for mustard oil and cake would pick up.
- Post demonetisation of high value currency liquidity crunch, would slow down immediate demand for oil and meal. However, extremely tight balance sheet for seed as well as its derivative products, prices are expected to rule firm.
- Mustard seed premium to soy bean during the month of November surged to record levels and tested 39.7%. Current premium over soy bean is at 36%. Considering diverse fundamentals of both oil seeds these premiums may continue to test new highs during coming days.
- Owing to record low ending stocks for the season at 0.7 lakh tons and uncertainty on yield of forthcoming crop, EAR expects mustard seed prices to remain bullish in near term.



## Rabi Pulses

Chana is grown in the Rabi season and is the largest pulse grown in India. Chana is grown in various states in India. Madhya Pradesh, Rajasthan and Maharashtra are the top three producing states which contributes 70% of the total annual production. It is also grown in Andhra Pradesh, Karnataka, Gujarat and Chhattisgarh. Though India produces nearly 60 lakh tons of Chana, it imports its balance requirement mainly from Australia and small quantities from Russia and Tanzania.

Among the other pulses grown in the rabi season includes Lentils and Peas. Both of these are largely concentrated in the states of Madhya Pradesh and Uttar Pradesh. However, Indian production for these pulses is between 5-7 lakh tons and hence almost 75% of the Indian demand is fed by imports. India imports majority of its lentils requirement from Canada. Canada is also the largest pea supplier to India. USA, France are other sourcing nations from which small quantities arrive almost throughout the year and recently small quantity has started to arrive from the Baltic Nations as well.

With the two consecutive years of poor monsoon, Indian pulses production had taken a hit. To promote higher pulses acreage, the government hiked the Minimum Support Price for both the rabi and the Kharif season. The Minimum Support Price for Chana stands at Rs 4,000 per quintal as against Rs 3,500 last year while for lentils it is announced at Rs 3,950 per quintal as against Rs 3,400 per quintal last year. Higher prices and ideal weather conditions is likely to result in higher acreage this season.

## Chana

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Madhya Pradesh is the largest producing state for Chana while Wheat is the biggest competing crop in this state. Considering that the return on investment in Chana has been the highest over the last four years, acreage in this state is likely to improve. Despite two years of crop failure and higher seed cost, acreage in Chana is expected to rise mainly from fallow land. Shift from Wheat towards Chana would be minimal due to the higher weather risk associated with Chana sowings. Farmers have lost hefty amounts in onions last year due to lower prices, acreage could shift towards Chana. However, further growth in acreage was limited after the government's decision of demonetization as many late farmers were not able to procure seeds which prompted them to switch part of their acreage to crops like lentils or coriander or pea.

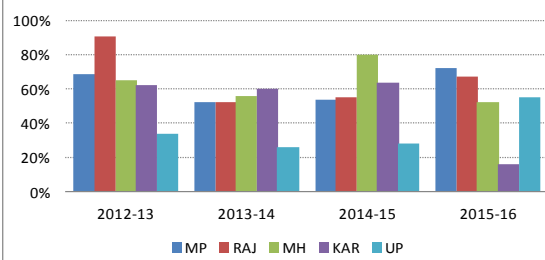
In Rajasthan, Chana competes with Wheat, Mustard and Barley for acreage. Prices of all the major crops grown here at record high levels. Hence crop switching is unlikely this year. Hence, acreage gains are mainly from the cultivation of fallow land on the back of good soil moisture levels.

In Maharashtra, Chana competes with Jowar mainly in the dry regions. In the regions where irrigation facilities are not adequate and where monsoon rainfall is lower, farmers opt for Jowar. This year with good monsoon, we could see farmers switching to Chana mainly in the Vidarbha belt from Jowar. Fallow land will also come under cultivation across the state.

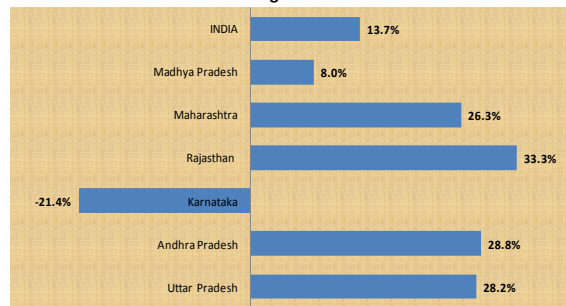
## Major competing crops for Chana

States	Competing Crops
Madhya Pradesh	Wheat/Lentil/ Onion/Garlic
Rajasthan	Wheat/Mustard/Barley
Maharashtra	Jowar/Moong/Urad
Uttar Pradesh	Lentil/Yellow pea
Karnataka	Jowar/Moong/Urd
Andhra/Telangana	Groudnut/Jowar/Moong
Gujarat	Wheat/Mustard

## Return on investment of Chana



## Chana Acreage Switch: TY vs LY



The total acreage under Chana for the year 2016-17 is expected to rise by 13.7% year on year. Acreage in all the states is expected to rise except for Karnataka. Acreage in Karnataka is hit this year due to lower rainfall. Acreage in the largest growing state of Madhya Pradesh is expected to rise by 8% while in Rajasthan acreage could rise by as much as 33.3% over last year. Acreage in smaller states like Uttar

Pradesh, Haryana and Gujarat is also likely to witness higher acreage this year.

## Production Estimates:

CHANA State	Area ( Lakh ha)			Yield (kg/ha)			Production ( Lakh tons)		
	2015-16	2016-17e	% Var	2015-16	2016-17e	% Var	2015-16	2016-17e	% Var
Madhya Pradesh	27.32	29.50	8.0%	725	708	-2.4%	19.81	20.88	5.4%
Rajasthan	12.38	16.50	33.3%	560	582	3.9%	6.93	9.60	38.5%
Maharashtra	14.25	18.00	26.3%	554	678	22.3%	7.90	12.21	54.5%
Andhra Pradesh	5.59	7.20	28.8%	510	558	9.5%	2.85	4.02	41.0%
Uttar Pradesh	3.90	5.00	28.2%	550	512	-6.9%	2.15	2.56	19.3%
Karnataka	14.00	11.00	-21.4%	377	560	48.4%	5.28	6.16	16.6%
Others	8.04	9.99	24.3%	632	629	-0.5%	5.08	6.29	23.6%
<b>INDIA</b>	<b>85.48</b>	<b>97.19</b>	<b>13.7%</b>	<b>585</b>	<b>632</b>	<b>8.1%</b>	<b>50.00</b>	<b>61.71</b>	<b>23.4%</b>

- Acreage under Chana is expected to rise by 14% this year with most of the states witnessing rise in acreage except for Karnataka. Acreage in Karnataka is expected to drop due to inadequate rainfall in many of the growing regions.
- Currently the yields are estimated as last five year average. The overall yields are expected to increase by 8.1% year on year and are subject to change as the crop progresses.
- As per the current yields, crop is estimated to be at 6.17 million tons as against 5.0 million tons last year, rising by as much as 30.3%.

## Balance Sheet

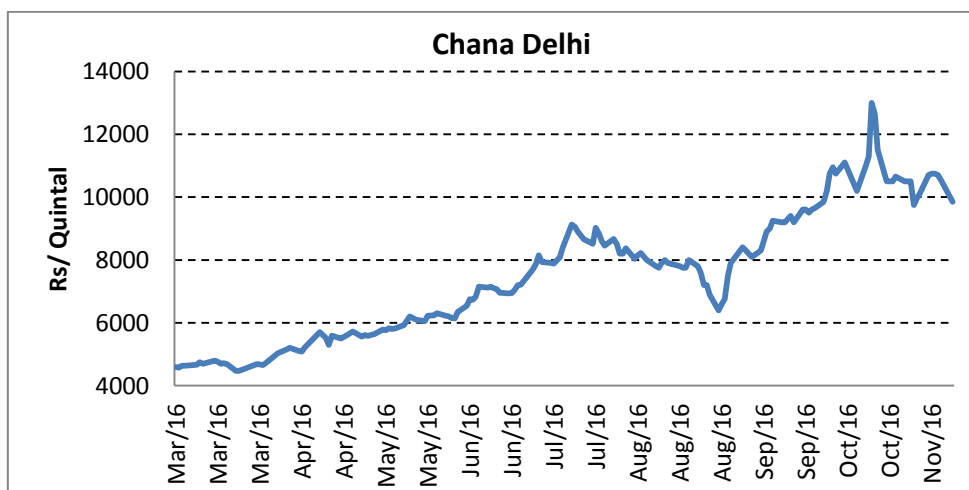
- Beginning stocks are pegged at 0.1 million tons as against 0.12 million tons last year, lower by 17% year on year.
- Production is expected to rise by 30% year on year and touch 6.17 million ton. We saw similar production in 2014-15 at 6.5 million tons.



- As domestic production is expected to improve, import dependency reduces. Hence imports are pegged at 0.75 million tons, down almost 22% from the ongoing year.
- Ending Stocks are expected to improve to 0.18 million tons. Hence the SUR is also seen rising from 1.94% to 3%

MY (March-Feb) (Mln Tons)	2015-16	2016-17	2017-18 (F)	YOY
Opening Stocks	0.21	0.12	0.10	-17%
Production	4.94	5.00	6.17	23%
Imports	0.95	0.96	0.75	-22%
FSR	0.78	0.79	0.82	4%
<b>Total Supply</b>	<b>5.32</b>	<b>5.30</b>	<b>6.20</b>	<b>17%</b>
Domestic Consumption	5.07	5.05	5.84	16%
Exports	0.14	0.15	0.18	24%
Total Demand	5.20	5.20	6.02	16%
<b>Ending Stocks</b>	<b>0.12</b>	<b>0.10</b>	<b>0.18</b>	<b>80%</b>
<b>Stock to Use</b>	<b>2.33%</b>	<b>1.94%</b>	<b>3.00%</b>	

**Price Outlook:**



Chana prices in the Delhi market are trading at Rs 9,500-10,000 per quintal as against Rs 5,400 per quintal last year during the same time. Going forward the following factors will govern the prices in the short term

- Supply in the domestic market is expected to improve with the arrival of imports from Australia
- Almost 0.6 million tons is expected to arrive in the last quarter, improving the supply in the market considerably
- Rabi sowing progress and crop development will be closely monitored. So far the crop is expected to be higher by 30% from last year.
- Weather shall remain a big risk till the new crop is harvested

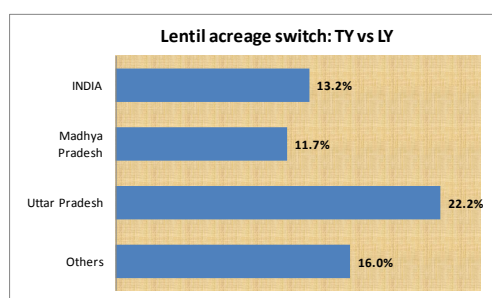
Since the pipelines are dry, the import arrivals will see good demand and hence keep prices firm. However, the bias will slowly change to bearish as the market will start discounting the new crop prospects which are promising so far.

## LENTILS

Madhya Pradesh and Uttar Pradesh are two largest growing states. Of the total acreage sown under lentils, over 75% of the acreage is attributed to these states. In Madhya Pradesh, the belts of Tikamgarh, Chhatarpur and Sagar we could higher acreage under lentils as many farmers were not able to buy Chana seeds due to higher prices and demonetization. In the west MP, the belts of Shajapur and Rajgarh, acreage under lentils will rise as farmers opt to shift from Chana due to two consecutive crop failures. Acreage from fallow land will also result in higher acreage in Madhya

Major competing crops for Lentil	
States	Competing Crops
Rajasthan	Wheat/Chana
Uttar Pradesh	Wheat/Chana
Madhya Pradesh	Wheat/Chana

Pradesh. In Uttar Pradesh, acreage expansion can be attributed to fallow lands. Due to lower rainfall last year, large cultivable area was left unsown. This year adequate rainfall and good soil moisture will bring this region into cultivation.



The total acreage under lentils is expected to increase by 13.2%. Acreage in Madhya Pradesh is expected to rise by 11.7% from last year while acreage in Uttar Pradesh is expected to rise by 22.2%. Acreage is also expected to rise in other states like Bihar and West Bengal. The gain in acreage is mainly from fallow land and in mainly places eating away the acreage of Chana. The total acreage for the year 2016-17 is estimated at 1.5 million

hectares as against 1.3 million last year.

### Production estimates:

LENTIL State	Area ('000 ha)			Yield (kg/ha)			Production (kmt)		
	2015/16	2016/17e	% Var	2015/16	2016/17e	% Var	2015/16	2016/17e	% Var
Madhya Pradesh	546	610	11.7%	413	430	4.1%	225	262	16.3%
Uttar Pradesh	450	550	22.2%	296	310	4.7%	133	171	28.0%
Others	349	405	16.0%	330	340	3.0%	115	138	19.6%
<b>INDIA</b>	<b>1,345</b>	<b>1,523</b>	<b>13.2%</b>	<b>352</b>	<b>375</b>	<b>6.3%</b>	<b>474</b>	<b>571</b>	<b>20.4%</b>

- Acreage under Lentils is expected to rise by 13.2% in the year 2016-17 and expected to touch 1.5 million hectares
- Yields are based on last five years average and is estimated to improve by 6% year on year
- Based on the current assumptions, production is estimated at 5.7 lakh tons as against 4.74 lakh tons last year. Hence production is expected to be higher by 20.4% year on year

### Balance Sheet

- Beginning Stocks are expected to be at record levels of 235,000 tons as against 216,000 tons, up 9% from last year
- Production this year is expected to be the highest seen in the last five years and is estimated at 570,000 tons as against 474,000 tons
- Imports in the coming season will shrink due to improved domestic availability. Import are expected to be lower by 10% year on year at 820,000 tons

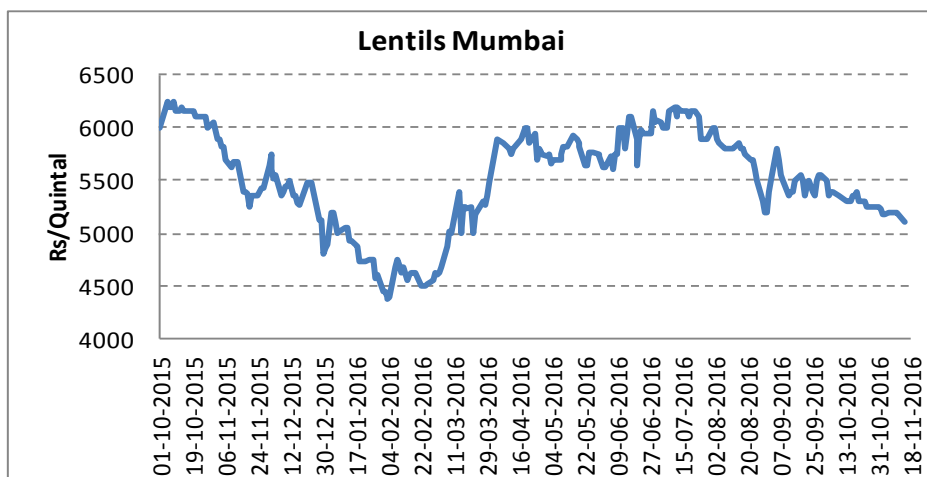




Annual ('000 Tons)	2015-16	2016-17	2017-18	YOY
Opening Stock	73	216	235	9%
Production	362	474	571	20%
FSR	85	88	88	0%
Imports	1126	913	820	-10%
<b>Total Supply</b>	<b>1476</b>	<b>1515</b>	<b>1538</b>	<b>2%</b>
Domestic Consumption	1260	1280	1290	1%
Exports	0	0	0	
<b>Total Demand</b>	<b>1260</b>	<b>1280</b>	<b>1290</b>	<b>1%</b>
Ending Stocks	216	235	248	6%
<b>SUR</b>	<b>17.14%</b>	<b>18.36%</b>	<b>19.22%</b>	

- With improved availability of all pulses, the gain in domestic consumption is expected to be limited.
- Ending stocks are expected to be 248,000 tons surpassing the record this year. The SUR is expected to rise to 19.2% from 18.3% last year.

Price Outlook



Lentil prices in the Mumbai market are trading at Rs 5,150 per quintal as against Rs 6,200 per quintal during the same time last year. Going forward the following factors are likely to weigh on the prices-

- In the coming quarter, supplies are expected to improve on the back of higher imports expected during this period
- As Canadian stocks in the Indian markets is very small, there could be good demand for the early import shipments as pipelines are empty
- Despite the rise in demand, the overall supply scenario is expected to be comfortable. Supply for other pulses is also expected to be robust which will be a crucial factor in the coming year
- Falling prices of other dals like Tur will keep prices under check
- Record production in Canada will ensure good availability throughout the year

We expect Masoor prices to remain under pressure in the coming times owing to higher supplies. Two factors could negate the current price view. One, if imports are sharply lower than our estimates we could see a turnaround. Second would be the weather risk for the standing crops.

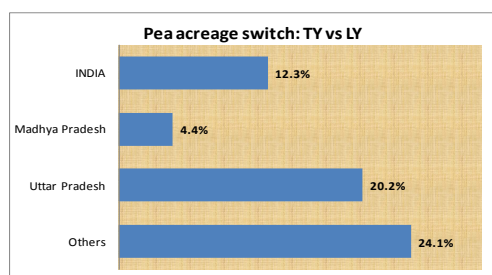
## PEAS

Madhya Pradesh and Uttar Pradesh are two largest growing states. Of the total acreage sown under lentils, over 80% of the acreage is attributed to these states. Acreage in Madhya Pradesh is expected to rise by 4% year on year. Sharp rise in acreage is restricted owing to lower prices versus other crops. Pea competes with Wheat and Chana in this state. In some parts of Madhya Pradesh namely

Major competing crops for Peas	
States	Competing Crops
Rajasthan	Wheat/Chana
Uttar Pradesh	Wheat/Chana
Madhya Pradesh	Wheat/Chana

Gwalior, Datia, Chattarpur and Tikamgarh we could see some farmers who were late in procuring Chana seeds is likely to allot some portion of their land to peas. Even in Uttar Pradesh, pea competes with Wheat and Chana.

The gain in acreage in this state is not likely due to any major crop shift but rise in cultivation from fallow land. Lower rainfall last year had resulted in lower net sown area. With higher rainfall and higher soil moisture levels, farmers will bring the barren land into cultivation



The total acreage under peas is expected to be 0.9 million hectares as against 0.82 million tons. The acreage in Madhya Pradesh is expected to rise by 4.5% while acreage in Uttar Pradesh is expected to rise by 20%. The total acreage is expected to rise by 12.3% year on year.

### Production estimates:

PEA State	Area ('000 ha)			Yield (kg/ha)			Production (kmt)		
	2015/16	2016/17e	% Var	2015/16	2016/17e	% Var	2015/16	2016/17e	% Var
Madhya Pradesh	450	470	4.4%	840	850	1.2%	378	400	5.7%
Uttar Pradesh	233	280	20.2%	778	800	2.8%	181	224	23.6%
Others	145	180	24.1%	710	720	1.4%	103	130	25.9%
<b>INDIA</b>	<b>828</b>	<b>930</b>	<b>12.3%</b>	<b>800</b>	<b>810</b>	<b>1.3%</b>	<b>662</b>	<b>753</b>	<b>13.7%</b>

- Acreage under peas is expected to rise by 12.3% in the year 2016-17 and expected to touch 0.93 million hectares
- Yields are based on last five years average and is estimated to improve by 1.3% year on year
- Based on the current assumptions, production is estimated at 7.53 lakh tons as against 6.62 lakh tons last year. Hence production is expected to be higher by 13.7% year on year

### Balance Sheet:

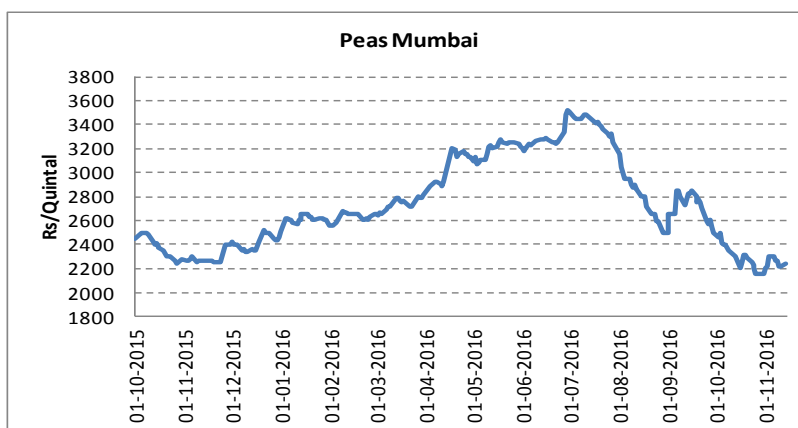
- Beginning Stocks are expected to be at record levels of 0.71 million tons as against 0.38 million tons, up 89% from last year
- Production this year is expected to be the highest seen in the last five years and is estimated at 750,000 tons as against 660,000 tons
- Imports in the coming season will shrink due to improved domestic availability. Import are expected to be lower by 22% year on year at 1.85 million tons



MY (Mar-Feb) (Mln Tons)	2015-16	2016-17	2017-18(F)	YOY
Opening Stocks	0.49	0.38	0.71	89%
Production	0.52	0.66	0.75	14%
Imports	1.86	2.37	1.85	-22%
FSR	0.09	0.09	0.09	0%
<b>Total Supply</b>	<b>2.78</b>	<b>3.31</b>	<b>3.22</b>	<b>-3%</b>
Domestic Consumption	2.40	2.60	2.66	2%
Exports	0.00	0.00	0.00	
Total Demand	2.40	2.60	2.66	2%
<b>Ending Stocks</b>	<b>0.38</b>	<b>0.71</b>	<b>0.56</b>	<b>-21%</b>
<b>Stock to Use</b>	<b>15.63%</b>	<b>27.23%</b>	<b>20.94%</b>	

- Lower prices in the first half of the year will increase consumption and hence annual consumption is expected to rise to 2.66 million tons.
- Ending stocks are expected to be 0.56 million tons, which would be the second highest in the last many years. The SUR is expected to shrink from the record high of to 27.23% to 20.94%.

**Price Outlook:**



Pea prices in the Mumbai market are trading at Rs 2,200 per quintal. Prices during the same time last year were at similar price levels. Prices have remained stagnant over the last one week owing to lacklustre in trade after the government demonetized the Rs 500 and Rs 1,000 currency notes. The following factors are likely to govern the prices in the short term-

- Import numbers for the months of Nov-Jan are expected to remain robust
- Supply in the domestic market is expected to rise sharply with higher imports
- The SUR for the last quarter is expected to be record high
- Production of rabi pulses is expected to improve after a good Kharif harvest keeping the overall supply in the market heavy than last year, thereby dampening sentiments
- Production in Canada is at record high this year and hence will ensure adequate supply round the year

We expect pea prices to come down in the coming times considering that higher imports will swell the domestic pipelines and the SUR is expected to be at record high levels at 27.2%. Weather threat to the Rabi crop remains a threat.

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