Maize Special Report
June 2016
Introduction

• Maize known as Queen of Cereals, also called corn is one of the most important cereal crops of the world. Maize distinguished botanically as Zea mays, belongs to the grains family Graminae.

• Maize ranks as the major grain crop worldwide. Maize, which is the only food cereal crop that can be grown in different seasons requires moderate climate for growth. It grows well in loamy soils but surplus or poor rains adversely affect yields as well as quality.

• Depending on colour and taste, maize is classified into two broad groups: yellow and white.
  • Yellow maize is traditionally used for animal feed. It comprises the total world maize production and is grown mostly in northern hemisphere countries.
  • White maize which is generally considered as a food crop requires more favourable climatic conditions. Thereby, it is produced only in limited countries.
  • As well, based on the size and composition of endosperm several hybrid of maize exist viz. dent corn, flint corn, popcorn, sweet corn, etc.

• Maize is an important staple food in many parts of the world. Maize is used as an important raw material in food processing, feed industry and in various other industrial applications.

World Maize, Rice and Wheat Production

Source: USDA
Introduction

- In India maize crop stand up as the third cash crop after wheat and rice.

- Maize; mainly a rain fed kharif crop is grown both in Kharif and Rabi season.

- In Kharif, it is sown in March-July till mid August and harvested from mid September. The arrivals extend from late September to February. The major states producing maize during the kharif season are Karnataka, Andhra Pradesh, Maharashtra, Madhya Pradesh, Uttar Pradesh, etc.

- In Rabi, it is sown in September-December in Bihar, Uttar Pradesh, Punjab and coastal region of Andhra Pradesh, Karnataka, etc. The arrivals start from late March and extend up to July.

- Every part of the maize plant has economic value; the grains, leaves, stalk, tassel, and cob can all be used to produce a variety of food and non-food products.

Source: ICAR

<table>
<thead>
<tr>
<th>Crop Calendar of Maize in India</th>
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<tbody>
<tr>
<td>Andhra Pradesh</td>
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<td>Bihar</td>
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<td>Gujarat</td>
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<td>Haryana</td>
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<td>Himachal Pradesh</td>
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<td>Karnataka</td>
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<td>Madhya Pradesh</td>
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<td>Maharashtra</td>
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<td>Orissa</td>
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<td>Punjab</td>
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<td>Rajasthan</td>
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<td>Uttar Pradesh</td>
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<tr>
<td>West Bengal</td>
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</tbody>
</table>

Source: ICAR
Global Scenario

- Maize has the highest production role among all the cereal crops throughout the world.

- For 2016/17, global maize production is marginally higher with best contribution from almost all the major maize producing countries.

![Global Acreage and Yield Diagram]

**Source: USDA**

- The area under the crop worldwide is estimated to be 179 million hectares, up from 177 million hectares last year.

- The yield is estimated at 5.7 metric tonnes per hectare, higher from 5.5 metric tonnes per hectare previous year and as well up from the 5 year average.
**Global Scenario**

**Global Maize Production**

- Maize output for 2016/17 as per the estimate made in June month is 10,11,768 million metric tonnes, supported by improving yields in the European Union and expanding plantings in the United States.

- Brazil maize production for 2016/17 is estimated at 82,000 thousand metric tonnes compared to 77,500 thousand last year. As well, the global maize producer; United States are projected to produce 3,66,539 thousand metric tonnes, up about 21,053 thousand metric tonnes 2015/16.

- At the same time, maize production is expected to fall in China for 2016/17 to 218000 thousand metric tonnes from 224580 thousand metric tonnes last year, due to drought and other adverse growing conditions.

- Whereas, maize production in Mexico for 2016/17 is estimated at 24,200 thousand metric tonnes compared to 23,500 thousand last month.

*Source: USDA*
Global Scenario

Major Maize Producing Countries - 2016/17 June (Proj.)

- United States: 38%
- China: 23%
- Others: 10%
- Brazil: 9%
- European Union: 7%
- Argentina: 4%
- Ukraine: 3%
- Mexico: 2%
- India: 2%
- Russia: 1%
- Canada: 1%
- Brazil: 4%

Source: USDA

Major Maize Consuming Countries - 2016/17 June (Proj.)

- United States: 31%
- China: 23%
- Others: 10%
- European Union: 7%
- Brazil: 6%
- Mexico: 4%
- India: 2%
- Russia: 2%
- Canada: 1%
- Japan: 1%

Source: USDA
• Even though maize represents over one-third of total cereal trade, international trade in maize in 2016/17 is accounted to decline due to better production prospects, sufficient stockpiles and modest demand growth in many importing countries.

• Global maize consumption in 2016/17 is anticipated to grow only modestly, rising by 26,123 thousand metric tonnes, according to very preliminary new estimates.

• Over the past few years, several countries improved their market share in international trade, whereas new countries entered the world market at a quick rate. Brazil, a major maize importing nation earlier becomes a main exporter of maize to world markets in recent years. For the year 2016/17, United States as usual is projected to be the world’s largest maize exporter, followed by Brazil, Argentina and Ukraine. Russia and European Union are among a few other countries which are major exporters.

• Meanwhile, most countries in Asia are net maize importers. Japan is projected to be the world’s leading importer for 2016/17. Mexico is anticipated to be the world’s second largest importer during 2016/17. Other major importers include European Union, South Korea and Egypt.

• The strong growth in the livestock industry, relax in trade barriers along with rising incomes are the major supporting factors behind the fast growth in Asian imports. African countries are also the major importers of maize.
• The production and consumption of maize have been rising frequently in India.

• Maize is not only used as human food and animal feed, but is as well commonly used in several other industries as a raw material.

• The uses of maize are projected to increase drastically in the coming years in-line with industries which are poised to grow largely in the future.

• India’s maize production depends on the southwest monsoon as more than three-fourth of the maize is produced in the Kharif season and only one-fourth in Rabi and summer seasons.

• Poor monsoon rainfall in 2015 has affected the yield of kharif maize mainly in Maharashtra, Rajasthan, Gujarat, Karnataka, Andhra Pradesh and Telangana. Dry soils and inadequate irrigation water availability also affected planting of Rabi maize.

• Maize production in the country has taken a hit in 2015-16 due to two continuous years of below normal monsoon rains, followed by drought. India received 14% below normal southwest monsoon rains in 2015, and rainfall was 12% below normal in 2014. Around 11 states have declared drought like situations in 266 districts during 2015-16.

Maize Harvested Area and Production

Source: Ministry of Agriculture, GOI
• Thereby, India had produced only 15.5 million tonnes maize in 2015-16 kharif season, down from 17.01 million tonnes a year ago, according to the farm ministry data. And according to the third advance estimate, India’s rabi maize output has fallen by nearly 23% on year to 5.53 million tonnes due to soil moisture stress.

• Subsequently, 2015-16 total maize production is estimated to have declined by more than 13 percent to 21000 thousand metric tonnes compared to the previous year. Based on the final official estimates by the Ministry of Agriculture, 2014-15 maize production is higher at 24170 thousand metric tonnes, but marginally lower than the record 24259 thousand metric tonnes 2013-14.

• However, maize production for 2016-17 is projected to increase to 23000 thousand metric tonnes. The acreage under maize in Karnataka, Andhra Pradesh, and Maharashtra are expected to increase if monsoon rains are ample. The India Meteorological Department has forecast Jun-Sep 2016 monsoon rains at 106% of the long-period average. Though rainfall in June is seen slightly below normal, in July, it has been forecast at 107% of normal and at 104% in August. Meanwhile, the crop could be susceptible to damage if rainfall is in excess just ahead of harvest.

<table>
<thead>
<tr>
<th>State</th>
<th>Area Covered 2016 (in Hectares)</th>
<th>Area Covered 2015 (in Hectares)</th>
<th>Yr-on-Yr Change (in Percentage)</th>
<th>Season Area (Last Five Years Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>1200</td>
<td>3300</td>
<td>(-) 63.6</td>
<td>8,31,000</td>
</tr>
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<td>Arunachal Pradesh</td>
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<td>39,300</td>
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<td>24000</td>
<td>(-) 8.3</td>
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<td>Bihar</td>
<td>1,34,000</td>
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<td>--</td>
<td>2,62,100</td>
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<td>500</td>
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<td>1,09,400</td>
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<td>Gujarat</td>
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<td>1,50,000</td>
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<td>11,93,000</td>
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<td>(-) 58.3</td>
<td>26,700</td>
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<td>West Bengal</td>
<td>6,000</td>
<td>5,000</td>
<td>20</td>
<td>39,200</td>
</tr>
<tr>
<td>Others</td>
<td>75,200</td>
<td>1,26,900</td>
<td>(-) 40.7</td>
<td>1,57,400</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11,52,300</strong></td>
<td><strong>13,08,700</strong></td>
<td>(-) 12.0</td>
<td><strong>73,50,000</strong></td>
</tr>
</tbody>
</table>

*Source: Ministry of Agriculture, GOI*
India's kharif maize acreage was at 1.15 million hectares as of 23rd June 2016, down 12% from a year-ago level, according to data from the agriculture ministry.

The current acreage is lower than the normal of 1.31 million hectares for the period last year. The normal acreage for the entire kharif season is 7.35 million hectares. Maize sowing lagged on year due to a late monsoon onset and delay in rains in major growing states. Sowing has not commenced in major growing regions in Madhya Pradesh, and Gujarat as of 23rd June 2015, the data showed. The cultivation will pick up as the monsoon progresses.

In the Jun-Sep monsoon season so far, India has received 111.1 mm rainfall, 16% below the normal weighted average of 132.2 mm, according to India Meteorological Department. In the years when monsoon rains delayed, some farmers take to sowing of extra early-maturing varieties or early maturing varieties of maize as the seed-to-seed period of these varieties is 80-85 days, which gives farmers the flexibility of delay in sowing.

Water level in the country’s 91 reservoirs was at 23.202 bcm as of 23rd June 2016, 15% of the total live storage capacity, according to data provided by the Central Water Commission. The current water level is down 46% from 42.906 bcm a year ago, and 25% from the average of 31.121 bcm for the last 10 years, according to the data. Water levels in reservoirs have fallen, as states have used water for irrigation and drinking purposes, following two consecutive drought years. Water levels get replenished during the Jun-Sep monsoon period.

However, the total area under maize for the year 2016-17 is estimated to be 9000 THA, higher compared to previous year but lower from 2014-15.
The growing Indian economy and changing consumer preferences, especially based on health consciousness are likely to fuel demand for maize by food, feed and other industrial users.

In the last few years, maize is increasingly being used for feed consumption. Thereby, assuming almost steady demand and reasonable price, the total maize consumption for 2016-17 for feed is likely to rise to 13000 thousand metric tonnes compared to 2015-16 estimated consumption of 12700 thousand metric tonnes. As well, based on latest market reports the poultry industry has been growing at 4-5 percent in the last few years. About 65-70% of maize produced in the country is used by the poultry, livestock, food and starch industries.

Demand of silage (fodder) from livestock industry has been rising. About 30-40% of silage in the country is made of maize.

Maize use for the Food, Seed and Industrial (FSI) purposes are also likely to grow in the coming years. 2016-17 maize use for FSI is forecast to increase from the previous year to 9800 thousand metric tonnes.

Consequently, India’s total maize consumption for the year 2016-17 is projected to recover to 22800 thousand metric tonnes from 22200 thousand metric tonnes estimated for 2015-16.
• As, the poultry industry alone consumes 47% of the country’s total maize output. The livestock sector accounts for around 13%, while 12% goes to starch millers and 8% is used by the food industry. So 80% of the total maize produced is consumed locally. Some quantum of the remaining 20% goes to exports and the rest is for carryover stocks.

• The government of India is likely to take a call on allowing import of maize under the tariff rate quota, as per reports. Maize currently attracts 50% customs duty, making imports unviable. The government used to allow import of 500,000 tonnes maize at a concessional import duty of 15% under the Tariff Rate Quota till the last financial year. The notification on the quota, however, expired on Mar 31, 2015, and has not been renewed since.

• If the government allows import of maize under the Tariff Rate Quota, there is a possibility that traders may import the grain during the non-harvest season. There is a 50% duty on maize imports at present. Jul-Sep, a lean supply season for maize, is seen facing a supply crunch this year due to a smaller crop in the 2015-16 rabi season. Also, even if acreage under the crop in the current kharif season is higher, fresh crop would only hit the markets since October:

• However, after a gap of several years, India commercially imported maize in 2015-16 due to domestic shortages and relatively cheap international maize.

• Maize import to India in 2015-16 is estimated at 250 thousand metric tonnes and for the year 2016-17 the imports are forecast at 200 thousand metric tonnes. India does not allow import of genetically modified food crops.

• Indian maize exports have declined due to uncompetitive prices in the international market. As well, even with a bigger crop, India may not be able to export much next season as global supplies are seen sufficient.

• The maize production in the world’s key maize exporters; US, Argentina, Brazil, and Ukraine is expected to increase in 2016-17. Even if a part of the higher produce is likely to be consumed locally, there could still be additional supply in the world market which is likely to keep global maize prices relatively benign. Among the key importers, demand from the European Union is likely to be subdued due to the harvesting of a larger crop in the region. Demand is seen sluggish in Japan and Vietnam as well, while China has already liquidated maize from its reserves. In such a scenario, it would be difficult for India to export any significant quantity of maize next season.

• As regards to no major changes in the export aspects of Indian maize in the international market, India’s maize exports for 2016-17 is projected to be 500 thousand metric tonnes, down compared to previous consecutive years.
• Maize rabi futures hit a record high of 1,693 rupees per 100 kg on the National Commodity and Derivatives Exchange due to rise in demand from key consuming sectors viz; poultry, starch, livestock and food coupled with depleting stocks.

• The trend was similar in wholesale markets as well. Low stocks and good demand in domestic markets have also led to a rise in global prices of maize to $255 per tonne free on board.

• On the bellwether Chicago Board of Trade, corn futures were trading in the red compared to same period a year ago, as favourable weather conditions in major growing regions in the U.S improved output prospects. The July corn contract was at around 384 cents per bushel (1bushel= 25.40 kg) on the CBOT electronic trade, down from around 446 cents per bushel a year ago period.

• The National Commodity and Derivatives Exchange has tightened the quality norms for kharif maize contracts expiring in November and thereafter, according to a release by the bourse. The maximum acceptable level of broken, damaged and immature maize kernels will now be 3% from 5% earlier. The exchange has also modified the quantity variation of the grain to 3.5% at the time of depositing in the warehouses, and 5% for outbound. Also, kharif maize can now be delivered up to the radius of 75 km from the municipal limits in Nizamabad, up from 50 km earlier. The modified contracts will be available for trading from Jul 1, the release said.

• Sentiment for maize is largely positive as demand is seen outpacing local supplies in the coming days. Prices are likely to trade higher until fresh kharif crops start arriving from October-November. As well, prices may fall if kharif sowing picks up with the progress of monsoon rains.
Maize Kharif NCDEX: If prices are able to trade above 1450 with good volume, prevailing positive sentiments may continue towards 1600/1650 or even towards 1700 levels. Conversely, if unable to do so could see profit booking towards 1400/1375 levels initially. However, the sentiments may turn negative if it fall below 1325.