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India

Grain and Feed Annual

2016

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Report Highlights:
India's MY 2016/17 wheat production is forecast at 88 million metric tons (MMT) on lower planting and expected 'lower than normal' yields due to moisture and temperature stress at the time of planting and early growth stage. Consequently, India is set to emerge as net importer of wheat in MY 2016/17 with imports forecast at 1 MMT and exports at 0.2 MMT. Post currently forecasts MY 2016/17 imports at 1 MMT. Assuming normal 2016 monsoon (June-September) and weather conditions, MY 2016/17 (October/September) rice production is forecast higher at 105 MMT and coarse grain production at 41.7 MMT.

Commodities:
Wheat

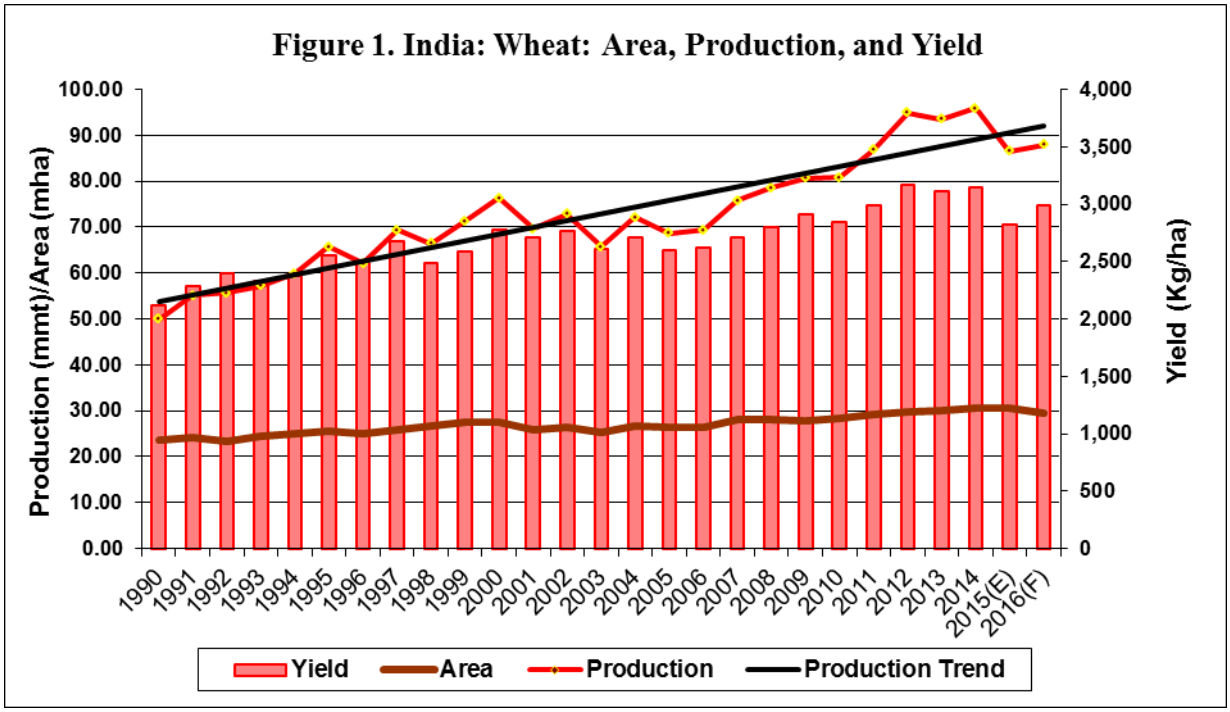
Production:

Post forecasts marketing year (MY) 2016/17 wheat production at 88 million metric tons (MMT), marginally higher than last year's 'late season rains'-affected harvest (86.5 MMT), but significantly lower than the MY 2014/15 record harvest (95.9 MMT). Upcoming wheat crop prospects have been adversely affected by lower planting and expected 'lower than normal' yields due to moisture and temperature stress at the time of planting and early vegetative growth stage. The government's preliminary estimate (2nd advance in Feb 2016) pegs 2016 wheat production optimistically at a near record 93.8 MMT, but trade sources are currently estimating the crop in the range of 82 to 88 MMT. Based on the GOI's final estimates, MY 2015/16 wheat production is revised lower to 86.5 MMT.

Despite India's wheat crop being largely (91 percent) irrigated, residual soil moisture from the previous *kharif* season (fall planted), winter rains and temperatures critically influence planting and yield prospects. Due to the deficient and early withdrawal of 2015 monsoon, sowing of the 2016 wheat crop commenced in October under 'poor' soil moisture conditions. Deficient to scanty rainfall across the major wheat growing areas (northwest and central India) during planting (October through December) affected the progress of planting, crop establishment and early crop growth due to antecedent soil moisture stress. Currently, the Ministry of Agriculture estimates MY 2016/17 wheat area at 29.4 million hectares, about 4 percent lower than last year's record planting.

Agriculture experts report that 'higher than normal' day temperature during October through first week of January caused further stress to the plant affecting vegetative growth. Reports suggest that higher temperatures induced early panicle initiation in the early planted wheat (by first week of November) and reports of rust in some pockets, which is likely to affect the overall yield prospects. Rains and cooler temperature since second week of January is likely to benefit the standing crop and improve the yield prospects in the late planted (December) wheat. Assuming normal weather conditions from now through harvest (May), Post forecasts MY 2016/17 yields at 2.99 MT/hectare, higher compared to last year's rain-affected yield of 2.83 MT/hectare, but lower than the average yields (3.0 to 3.1 MT/hectare) over the last few years. The GOI's first official estimate (2nd advance estimate) optimistically estimates yield at 3.19 MT/hectare, even higher than the MY 2014/15 record yield of 3.15 MT/hectare. An early or sudden rise in temperature during flowering and grain filling stage (March) and heavy rains or hailstorm at the time of harvest (April/May) could potentially further affect the forecast yield and quality realization.

Indian wheat is largely 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 from northern India. India also produces about 1.0 MMT of durum wheat in the states of Madhya Pradesh, Rajasthan and Maharashtra. Most durum wheat is typically purchased by the private trade at a price premium for processing into higher value/branded bakery and confectionary products. However, due to government's policy of steady increase in minimum support price for wheat and relatively lower yields of durum wheat vis-à-vis normal wheat varieties, there has been an increasing shift from durum wheat to higher yielding non-durum varieties in the last decade.



Source: Ministry of Agriculture, GOI; and FAS/New Delhi (MY 2016/17)

India's wheat production in the last two years has declined below the rising trend line due to adverse weather conditions – untimely rains and hailstorms during harvest in MY 2015/16 and early moisture and temperature stress in MY 2016/17. Wheat area peaked in most wheat growing states by MY 2014/15, and the crop is likely to lose ground to other high value crops (horticultural and plantation crops) and non-agricultural use in future. Irrigated agricultural lands under rice-wheat cropping system are the prime target for high-value agriculture and to satisfy expanding urbanization and industrialization needs. The wheat growing areas in northwest India are also facing the problem of declining water table and soil salinity due to over-exploitation of ground water and unscientific irrigation practices (flood irrigation). Depletion of irrigation water resources is likely to put pressure on area under wheat cultivation in north India in the next few years, forcing farmers to explore less water intensive crops like fruits, vegetables, corn, pulses and oilseeds.

In the last decade, Indian wheat yields have ranged from 2.7 MT/hectare in MY 2007/08 to 3.2 MT/hectare. Wheat yields across major growing states during a given season show large variation depending on irrigation capacity and technology adoption levels. Wheat yields in largely irrigated growing areas of the north (Punjab, Haryana and Western U.P.) are above 4.5 tons per hectare, while yields in central and western states (Gujarat, Madhya Pradesh, Rajasthan, Bihar and most of Uttar Pradesh) are relatively low (1.5-2.8 tons per hectare) due to lack of assured irrigation facilities and low input use.

The National Agriculture Research System (NARS), which includes Indian Council of Agricultural Research (ICAR) institutes and various state agricultural universities (SAUs), focuses on developing new wheat varieties with higher yield potential, resistance to common diseases and better grain qualities, largely through traditional breeding methods. Given that seed production and marketing are

largely done by public sector institutions, the new wheat varieties have been slow to be adopted by farmers due to inadequate seed multiplication, distribution and extension facilities. Although Indian researchers acknowledge that biotechnology can be a valuable tool for meeting India's growing food security needs, biotechnology applications in wheat are limited to experimental marker-assisted breeding for resistance to biotic and abiotic stresses. Indian wheat crop research also focuses on two major future threats – global warming/climate change and the Ug99 rust disease.

Indian wheat crop is vulnerable to changing climatic conditions, particularly the 'earlier-than-normal' rise in temperatures (terminal heat stress) at the grain filling stage (March/April). Of the 30 million hectares under wheat cultivation, researchers estimate that about 10-12 million hectares are prone to terminal heat stress. According to some local research, a one-degree Celsius rise in temperature during the growing season can result in a 3-to-7 percent decrease in grain yields. The NARS is closely researching the potential climate risks to wheat to develop appropriate response mechanisms (like early planting) and technologies (like short duration varieties) to mitigate risks.

Although agricultural scientists claim that the agro-climatic conditions in the major wheat belt of northern India are not conducive to the spread of Ug99, the highly mutative nature of the Ug99 strain could make India's wheat growing belt vulnerable to this rust. Reports suggest that three-fourths of wheat acreage is currently planted to varieties susceptible to the disease. The NARS continuously survey and monitor the wheat crop for various rusts, including Ug99. The NARS has also been screening existing varieties for resistance to Ug99, and encouraging farmers to replace susceptible varieties with Ug99-resistant varieties in the major wheat growing area. In the recent years, the government's aggressive promotion of wheat varieties resistant to Ug99 has led to adoption of these varieties through higher seed replacement, especially ones with higher yield potential.

Consumption:

India's MY 2016/17 wheat consumption (FSI) is forecast to recover to 87.5 MMT after declining in MY 2015/16 to feed the growing (about 1.6 percent per annum) population. MY 2015/16 consumption estimate is revised lower to 86 MMT due to tight domestic supplies, particularly open market wheat supplies and the likelihood of higher consumption of rice instead of wheat as staple food on price considerations. Despite relatively tight domestic supplies, the government is likely to continue sale of wheat at subsidized prices through public distribution system (PDS), but the sale of wheat to local millers through the Open Market Sales Scheme (OMSS) are likely to come down from last year's level on relatively tight government stocks. Due to the steady demand from the dairy sector, MY 2016/17 wheat use for feed consumption and residual is forecast to recover to 4.5 MMT after declining to 4.2 MMT in MY 2015/16.

Wheat is the staple food for Indians consumed in the form of homemade *chapattis* or *rotis* (unleavened flat bread) using custom milled *atta* (whole wheat flour). With growth in the economy, Indian households are diversifying their consumption patterns with an expanding share of high-value and high-protein items (fruits, dairy products, meat, and processed foods) at the cost of cereals (rice, wheat and coarse grains). Informed sources report that per capita consumption of wheat at household level has been stagnant or marginally declined in the last few years although sample surveys are not available beyond 2009/10 (see IN2026). Some wheat is also used for wheat-based processed products like raised breads, "biscuits" (cookies) and other bakery items.

Typically, whole wheat is distributed through the open market and public distribution system to be subsequently custom milled by the household for home use. Most wheat retained by farmers (40-45 percent), after saving some quantities for seed use for the next season, is also custom milled, mostly in the *chakkies* (small flour mills) for home consumption and small quantities for feed use (mostly lactating cows and buffaloes). Some of the open market wheat and government wheat is procured by the organized milling sector for producing wheat flour for the hotels, restaurants and institutional sector and a small share for branded and packaged wheat flour and *atta*.

The organized milling sector is relatively small with about 1,000 to 1,100 medium to large flourmills in India, with aggregate milling capacity of about 25 MMT, mostly milling *maida* (flour) and semolina to cater to institutional demand, and bye-product bran flakes used as filler in the cattle feed industry. However, the average capacity utilization by these mills is only around 45-50 percent, processing about 12-13 MMT wheat every year.

Wheat for feed use largely caters to demand for dairy feed (unorganized household level) and smaller extent for use as filler in poultry and aquaculture feed. Most of the commercial feed caters to poultry and aquaculture industry, which largely uses corn, oil meals and lower priced coarse grains including small quantity of spoiled/inferior quality wheat. With the average dairy herd size estimated around 2-3 animals per farmer, dairy feed use is typically restricted to lactating animal and made up of some oil cakes, household food waste and small quantity of lower priced grain mixes, including wheat. Some quantity of open market and government-held wheat (mostly spoiled or of inferior quality) is also used for animal feed.

Government Procurement and Offtake for Programs

Bumper domestic harvest and a steady increase in the MSP over the last few years or government relaxation on quality standards for procurement of wheat (MY 2015/16) has buoyed government procurement of wheat under the minimum support price (MSP) program in the last few years. Last year, unseasonal rains affected the quality of wheat harvest forcing the government to relax quality norms for procurement of wheat to support farmers. Market sources report that of the total 28 MMT procurement, about 26 MMT procurement was under the relaxed standards. Forecast tight domestic production and relatively modest increase in the MSP is likely to lower the MY 2016/17 wheat procurement to 26 MMT, unless the government announces additional bonus over the MSP. Like in the past years, most of the procurement is likely to come from the states of Punjab, Haryana, Madhya Pradesh, Uttar Pradesh and Rajasthan.

Table 1. India: Government Wheat Procurement and PDS Operation

Marketing Year	Production	GOI Procurement[1]	MSP	GOI Total Cost	Offtake from GOI Stocks	PDS Issue Price			Food Subsidy
(Apr–Mar)	(Million Tons)	(Million Tons)	Rs. per ton	Rs. Per ton	(Million Tons)	Rs. per ton			Rs. Billion
						APL	BPL	AAY/NFSA	
2006/07	69.35	9.23 (13.3)	7,000	11,77	11.88	6,10	4,15	2,000	240.10

				8		0	0		
2007/08	75.81	11.13 (14.6)	8,500	13,118	12.25	6,100	4,150	2,000	312.60
2008/09	78.57	22.69 (28.9)	10,000	13,806	14.89	6,100	4,150	2,000	437.50
2009/10	80.68	25.38 (31.5)	10,800	14,246	22.38	6,100	4,150	2,000	584.43
2010/11	80.80	22.51 (27.8)	11,000	14,944	23.03	6,100	4,150	2,000	638.44
2011/12	86.87	28.34 (32.6)	11,700	15,953	24.27	6,100	4,150	2,000	728.23
2012/13	94.88	37.92(40.0)	12,850	17,526	33.23	6,100	4,150	2,000	850.00
2013/14	93.51	25.09(26.8)	13,500	19,083	30.61	6,100	4,150	2,000	920.00
2014/15	95.85	28.02(29.2)	14,000	20,512	27.16	6,100	4,150	2,000	1226.76[3]
2015/16	86.53	28.09(32.5)	14,500	22,000	30.50	6,100	4,150	2,000	1244.19[3]
2016/17[2]	88.00	26.00(29.5)	15,250	na	na	6,100	4,150	2,000	na

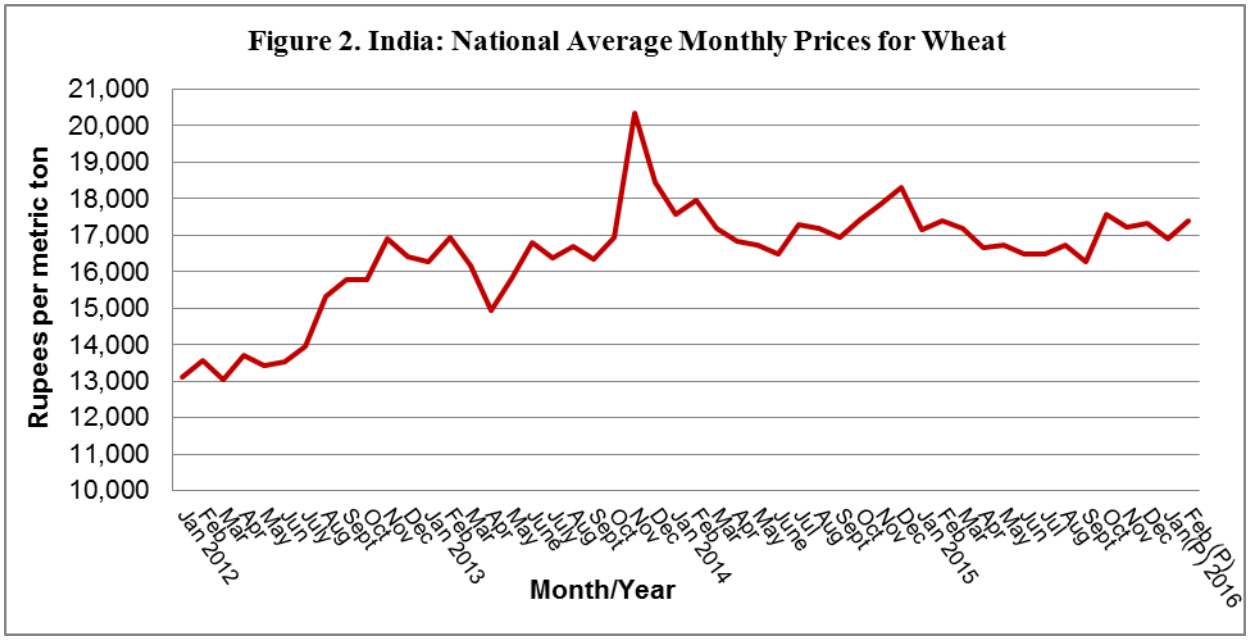
Source: Food Corporation of India, and GOI Budget.
Notes:
APL - Above Poverty Line
BPL - Below Poverty Line
AAY - Poorest of Poor
NFSA - National Food Security Act
1/: Figure in parenthesis is GOI procurement as percentage of total production
2/: FAS/New Delhi Estimate
3/: GOI budget estimate, actual expected 'to be higher

Cost of wheat procured under the MSP has nearly doubled in the last decade due to rising MSPs and high overhead costs due to strong procurement. On the other hand, the government sale price of wheat under various Public Distribution System programs has remained unchanged since 2002. The GOI's food subsidy spending has ballooned more than five times in the last decade, and is likely to increase further as the National Food Security Act (NFSA) of 2013 (See IN3105) expands entitlement to almost 2/3rd of the population, at the lowest price slab of INR 2000 per ton under the existing PDS programs. While the government initially planned to implement the NFSA by end of March 2015, the progress has been very slow with only about 16 states implementing at different stages resulting in the central government giving periodic extensions. The government is likely to further extend the deadline (end March 2016) to the state government for implementing the Act.

In the last few years, the government has also sold significant quantities of wheat to the local millers and private traders for sale under the Open Market Sale Scheme (OMSS) and for exports, typically at market prices but well below the cost to the government (cost of procurement, storage and distribution). Last year the government aggressively sold the MY 2015/16 wheat procured under relaxed standards on concerns about their keeping quality.

Prices

Despite lower production, domestic wheat prices in MY 2015/16 fluctuated in a narrow range on relatively weak international prices and strong government sales under the PDS and OMSS for private trade.



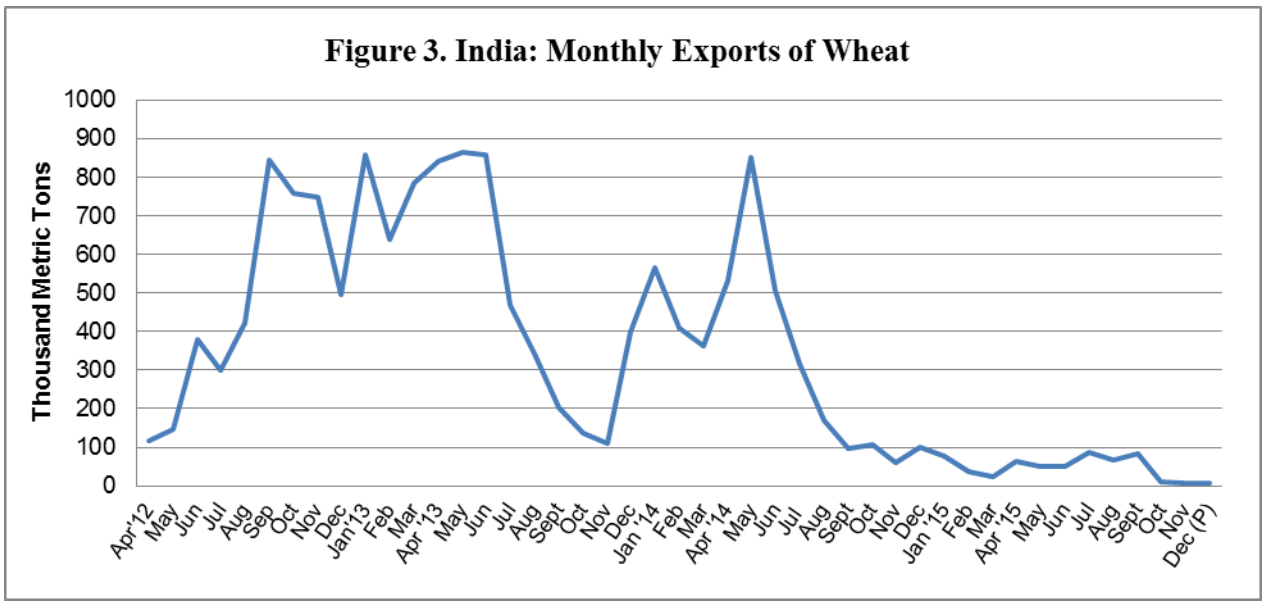
Source: Agmarket News (http://agmarkweb.dacnet.ic.in), Ministry of Agriculture, GOI

Spot prices in the first week of February 2015 were ranging between INR 16,187 ($237) to INR 16,511 ($242) per metric ton in major producing states. Despite forecast tight domestic supplies, expected low international prices are likely to pressure the domestic prices during the upcoming harvest and market arrival season (April-July) for the new crop.

Trade:

India is set to emerge as net importer of wheat in MY 2016/17. Post currently forecasts MY 2016/17 imports at 1 MMT on forecast tight domestic supplies and relatively weak international prices, mostly by private trade for augmenting quality wheat requirements in the southern states. At the current import price parity for foreign wheat vis-a-vis local wheat from north India, the south Indian mills are likely to find it advantageous to import wheat if domestic prices gain further or import duties were lowered to reasonable levels. While the current 25 percent import duty applicable through end March 2016 is likely to be further extended, market sources expect that the government may lower or remove the import duty in the second half of the marketing season on food price inflation concerns. Unfavorable late season weather conditions and consequent decline in forecast crop production and high domestic prices may improve import prospects from the current forecast.

While there are no restrictions on exports of wheat sourced from the open market, monthly exports volumes have come to a virtual halt since October 2015 as Indian wheat has been uncompetitive even in the neighboring markets.

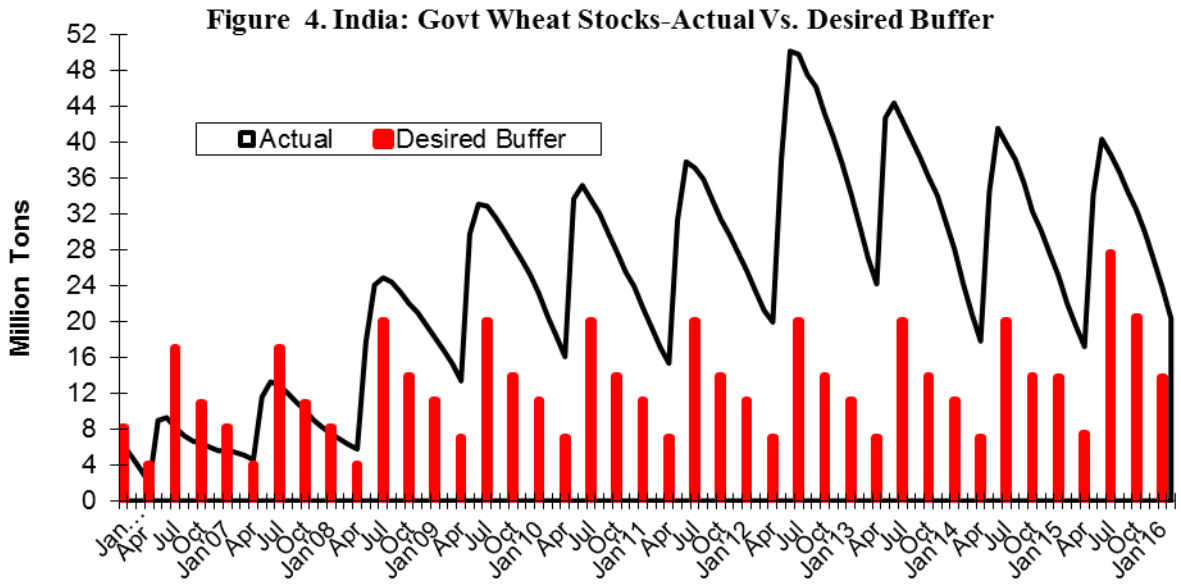


Source: DGCIS, GOI, and private sources (December estimate).

Assuming the current export price parity for Indian wheat vis-à-vis other origins, MY 2016/17 exports are forecast at 200,000 MT compared to 500,000 MT last year, mostly limited to neighboring countries by land route. Market prices in the states where the government procurement system is not very effective may decline during the peak arrival season (May-July), and some of the wheat from these states may find its way to the export market, mostly to neighboring Bangladesh and Nepal by land route. However, export prospects may improve if the international prices improve or the value of Indian rupee declines significantly.

Stocks:

Due to relatively higher offtake and lower procurement (Table 1), the government wheat stocks have come down steadily since 2013. The Food Corporation of India (FCI) estimates the government-held wheat stocks on February 1, 2016 at 20.3 MMT compared to 22 MMT at the same time last year.



Source: Food Corporation of India, GOI.

At the current pace of monthly offtake, MY 2015/16 ending stocks are estimated at 13.2 MMT compared to 17.2 MMT last year. MY 2016/17 ending stocks are forecast to come down further to 10.0 MMT on forecast tight supplies, but are sufficiently above the government's desired March ending stock of 7.5 MMT. Estimates of privately-held wheat stocks are not available, but MY ending stocks with private trade are expected to be minimal due to risks stemming from anti-hoarding provisions of the Essential Commodities Act. Consequently the PS&D table does not include privately held stocks.

Policy:

Research & Development:

Since the Green revolution of mid 1960's, growth of wheat and rice production has been and will remain cornerstone of India's food security. The GOI and various state governments support research, development and extension activities for transfer of new varieties and improved production technologies (seed, implements, pest management) for wheat to farmers. The NARS, under the aegis of ICAR, conducts wheat research and development at the national level, which is complemented by state agricultural universities, regional research institutions, and state agricultural extension agencies at the regional and state levels. The central and state governments also support farmers by subsidizing input supplies and agricultural credit to various crops, including wheat (crop wise breakup not available but wheat accounts for a significant share after rice). For more information on government support for agriculture, refer GAIN Reports IN4044 and IN5043.

Price Support and PDS Program:

The GOI policies relating to the MSP for select agricultural crops and the price for the PDS supply have the twin objectives of providing remunerative prices to farmers and affordable prices to 'target' consumers. Based on the recommendation from the Commission for Agricultural Costs and Prices (CACP), the GOI establishes a minimum support price (MSP) for wheat. In the past, some states provided additional bonus to their farmers over and above the MSP out of their own exchequers, which has been discontinued since June 2014 on the advisory of the GOI (see IN5027). Government parastatals like the Food Corporation of India (FCI) and various state marketing agencies bear the mandate to procure wheat at the MSP for central government stocks and make arrangements for storage and distribution. Subsequently, the government allocates wheat for distribution through the public distribution system (PDS) and other welfare schemes at subsidized prices. The government also sells wheat in the open market to the private trade to stabilize open market prices.

Trade Policy:

The GOI's trade policy does not impose any restrictions on exports of wheat by private trade. On September 9, 2011, the GOI removed the ban on exports of wheat, which had been in place since February 2007. In July 2012, the GOI allowed exports of wheat from government-held wheat stocks that continued through early 2014, with the total government wheat exports estimated at 5.6 MMT during this period. In May 2014, the GOI discontinued government wheat exports due to the opposition from other wheat exporting countries in the World Trade Organization (see IN4039).

Currently, the import duty on wheat is 25 percent *ad valorem* on C&F value effective through end-March 2016, but is likely to be further extended in MY 2016/17, at least through the harvest and marketing season (April-July). The GOI may relook at the import duty after the procurement season is over in July depending on domestic price movement and food inflation concerns. The GOI's phytosanitary requirement pertaining to the 31 specified quarantine weed seeds (wheat sample drawn from a single consignment not to contain more than 100 quarantine seeds per 200 kg sample) and other SPS issues have effectively barred U.S. wheat shipments to India.

Marketing:

Market sources report steady decline in the acreage under local 'hard and high-protein' wheat varieties like *Sharbati* and *Lok-1* grown in central India that could eventually create a market for high-protein wheat for blending of flour for the rapidly growing baking/confectionary industry. The growing fast food industry and modernizing wheat-based food industry is also likely to fuel demand for higher quality wheat. In years of lower domestic crop, India may import significant quantities of regular wheat (MY 2015/16 and 2016/17). However, U.S. wheat continues to be denied market access to India despite numerous discussions at the technical and policy levels.

Production, Supply and Demand Data Statistics:

Table 2. India: Commodity, Wheat, PSD
(Area in Thousand Hectares, Quantity in Thousand Metric Tons, Yield in MT/Hectare)

Wheat	2014/2015		2015/2016		2016/2017	
Market Begin Year	Apr 2014		May 2015		Apr 2016	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	30473	30473	30600	30600	0	29400
Beginning Stocks	17830	17830	17200	17200	0	13200
Production	95850	95850	88940	86530	0	88000
MY Imports	52	52	500	500	0	1000
TY Imports	273	273	300	300	0	1000
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	113732	113732	106640	104230	0	102200
MY Exports	3402	3402	800	800	0	200
TY Exports	1694	1694	800	500	0	200
Feed and Residual	4500	4500	4500	4200	0	4500
FSI Consumption	88630	88630	86540	86030	0	87500
Total Consumption	93130	93130	91040	90230	0	92000
Ending Stocks	17200	17200	14800	13200	0	10000
Total Distribution	113732	113732	106640	104230	0	102200

Table 3. India: Commodity, Wheat, Prices Table

Prices Table				
Country	India			
Commodity	Corn			
Prices In	Rupees	per uom	Metric tons	
Year	2013	2014	2015	%Change
January	13,084	12,908	12,829	-0.6
February	13,405	12,704	13,385	5.4
March	13,368	13,311	13,865	4.2
April	12,977	12,768	14,302	12.0
May	12,555	12,944	13,062	0.9
June	13,093	12,325	13,390	8.6
July	14,181	12,522	12,888	2.9
August	12,714	12,615	14,010	11.1
September	13,716	12,815	13,878	8.3
October	13,237	12,468	13,875	11.3
November	13,634	12,291	14,073	14.5
December	13,004	12,261	14,687	19.8
Exchange Rate	68.3	Local Currency/US$		
Date of Quote	02/22/16	MM/DD/YYYY		

National Average Monthly Wholesale Prices of Wheat
Source: Agmarket News (http://agmarkweb.dacnet.ic.in), Ministry of Agriculture, GOI.

Table 4. India: Commodity, Wheat[1], Export Trade Matrix

Export Trade Matrix

Country	INDIA		
Commodity	Wheat[1]		
Time Period	April-March	**Units**	Tons
Exports for	MY 2014/15		MY 2015/16[2]
U.S.	49	U.S.	7
Others		**Others**	
Bangladesh	1,113,975	Bangladesh	308,446
UAE	391,018	UAE	87,987
Indonesia	348,006	Nepal	67,561
Sudan	112,025	Taiwan	14,517
Nepal	111,256	Malaysia	6,742
Yemen	104,381	Philippines	6,363
Oman	103,294	Sri Lanka	4,050
Malaysia	81,563	Jordan	3,703
Philippines	79,694	Indonesia	3,038
Korea RP	66,405	Oman	2,954
Vietnam	55,672	UK	2,807
Qatar	38,001	Myanmar	2,755
Total for Others	**2,605,290**	**Total for Others**	**510,923**
Others not Listed	309,398	Others not Listed	7,471
Grand Total	**2,914,737**	**Grand Total**	**518,401**

Source: Global Trade Atlas and Directorate General of Commercial Intelligence and Statistics (DGCIS), GOI

[1] Does not include wheat product

[2] Provisional data for the period April through November 2015

Commodities:

Rice, Milled

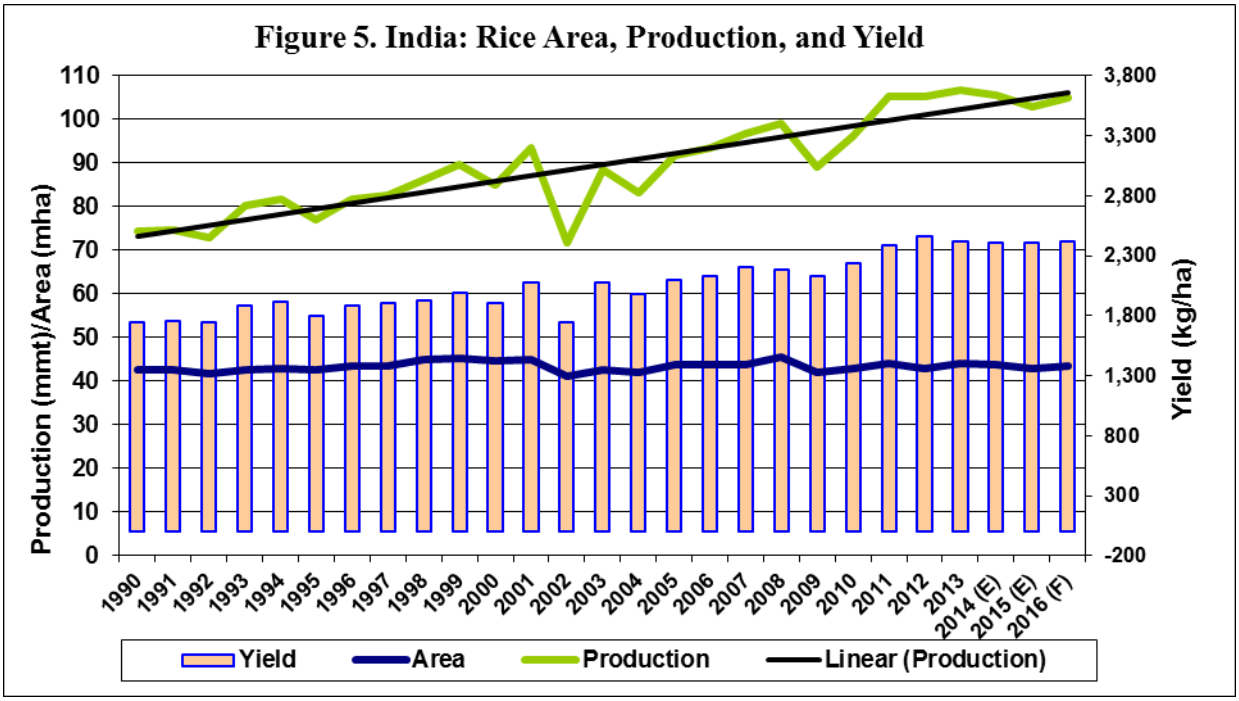
Production:

Assuming normal 2016 monsoon (June-September) and weather conditions, MY 2016/17 (October/September) rice production is forecast higher at 105 MMT from 43.5 million hectares compared to MY 2015/16 production of 103 MMT. Although the weak 2015 monsoon raised the cost of cultivation (higher supplemental irrigation costs and lower yields) in MY 2015/16, farmers will continue to prefer rice in the upcoming season due to relatively stable yields and prices compared to competing crops. The government's rice procurement program and expectation of steady increase in the government's MSP further reassures farmers to continue rice cultivation as the other competing field crops are not adequately supported by the government's procurement program. With about 40 percent of the rice crop unirrigated and dependent on monsoon rains, a timely and well distributed 2016 monsoon will be critical for achieving the MY 2016/17 forecast production.

MY 2015/16 rice production is raised higher to 103 MMT based on higher than earlier anticipated yields in the irrigated *kharif* (fall harvested) rice, particularly in north and central India. However, inadequate irrigation water availability is likely to affect the *rabi* (winter planted) rice prospects in south India. Consequently, Post's estimates MY 2015/16 rice production lower at 103 MMT compared to the government second advance estimate of 103.6 MMT (subject to further revisions). Based on the final official estimate, MY 2014/15 rice production has been raised to 105.5 MMT. MY 2014/15 rice area is estimated higher at 43.7 million hectares, while MY 2015/16 area is revised lower to 42.75 million hectares on lower *rabi* rice planting based on the latest planting estimates from the state department of agriculture compiled by the Crop Weather Watch Group Report (see

India's long-grain Basmati rice is cultivated in the north Indian states of Punjab, Haryana, West Uttar Pradesh, Uttarakhand and Himachal Pradesh. Basmati rice production has been growing steadily after the commercialization of the PUSA 1121 variety in 2003, and the growth has been further fueled by the introduction of the semi-dwarf PUSA Basmati 1509 variety in 2013. The new variety is being increasingly adopted by farmers due to shorter duration, lower irrigation requirement and higher yield. Basmati rice production in MY 2015/16 increased to 9.8 MMT from 2.1 million hectares compared to 8.5 MMT from 2.0 million hectares in MY 2014/15. However, domestic prices crashed by 30-40 percent in MY 2015/16 compared to last year on weak export demand. Consequently, Basmati acreage in MY 2016/17 is forecast to decline to 1.7 million hectare and production to 8.0 MMT assuming normal weather conditions.

Rice is the most important food crop in India contributing to more than 40 percent of total food grain production and cultivated/consumed across the country. Rice is predominantly a rainfed crop planted in the *kharif* season after the onset south-west monsoon rains during June through August. However, there is a small *rabi* crop, mostly irrigated, planted in the states of West Bengal, Andhra Pradesh, Odisha and Tamil Nadu. India's rice production shows a steady upward trend but subject to wider year-on-year fluctuations compared to wheat as only 60 percent of the crop is irrigated.



Source: Ministry of Agriculture, GOI; and FAS/New Delhi (MY 2015/16 and 2016/17)

Due to the steady diversion of agricultural land for non-agricultural use and relatively intensive water and labor use in rice cultivation compared to other crops, rice cultivation area in India plateaued at 44 million hectares. India's rice yields are well below the world average, and there are wide variations in productivity in producing states depending on the irrigation water and other resource availability. In 2010/11, the government launched a Special Program to Bring the Green Revolution to Eastern India by promoting the Green Revolution and other improved technologies to the eastern region of the country comprising Bihar, Chhattisgarh, Jharkhand, eastern Uttar Pradesh, West Bengal, and Odisha. The government is also promoting a "System of Rice Intensification" technology which requires less water and chemical fertilizer in some rice growing states, but the adoption of this system is relatively slow as it is highly labor intensive. Consequently, the eastern states have realized significant productivity gains in the last few years due to the various government programs, but are still highly dependent on the monsoon.

The public sector agriculture research system (NARS) works extensively on developing new rice varieties/hybrids and developing new production practices for increasing yield, resistance to common pests/diseases and better grain qualities for various agro-climatic conditions. However, agricultural experts are increasingly concerned about the ability of the existing rice production system to meet the projected food demand in 2020. Major surplus rice growing states (Punjab, Haryana, Uttar Pradesh, Chhattisgarh, Andhra Pradesh, Telangana, West Bengal, and Orissa) follow intensive rice-wheat or rice-rice cropping systems, and consequently face severe environmental issues like declining water tables, deteriorating soil health and emergence of resistant disease/pests in the growing areas. The central government and several state governments have been promoting crop diversification from rice to lower water intensive crops like corn, and other horticultural crops. The government's continued emphasis on rice-wheat production for food security and a lack of more profitable and lower risk crop rotation alternatives discourages farmers from shifting out of rice to other crops in the near future.

There are about 50 varieties of hybrid rice, most developed by private seed companies, of which about 20-22 are popular in the market. Most of the hybrid rice is cultivated in eastern India - eastern Uttar Pradesh, Bihar, Jharkhand, and Chhattisgarh. Despite sustained government efforts to expand area under hybrids, area under hybrid rice has remained largely unchanged in the last few years, estimated around 1.8 million hectares in 2015/16. Growth of area under hybrid rice is hampered by its inability to cater to the vast diversity in consumer quality preference, low incremental yield realization, and poor milling quality over traditional varieties. Nevertheless, several private seed companies and public sector institutions are developing improved hybrid rice varieties targeting quality and yield enhancement traits, which should accelerate hybrid rice adoption by Indian farmers in future.

Efforts are also underway, mostly in the private sector, to develop transgenic rice varieties to incorporate resistance to various pests, diseases and abiotic stresses. However, approvals and commercialization of transgenic rice are still several years away due to the non-functioning Indian biotech regulatory system. Meanwhile, several public sector rice research organizations are doing work on marker assisted breeding of rice for resistance to biotic and abiotic stresses and incorporating quality traits.

Indian rice cultivation also faces the challenge of global warming and climate change as glacier melting and aberrations in the monsoon rain patterns affect the irrigation water availability to the rice crop. In addition, a significant share of the rice crop is produced in the coastal regions which are susceptible to a rise in the sea level. The NARS is also working on the climate change issues related to rice cultivation in India.

Consumption:

The MY 2014/15 and 2015/16 consumption estimates are raised higher to a record 99.5 MMT and 98.6 MMT, respectively, to reflect the revised production estimates based on the GOI's 2nd advance estimate. Despite forecast sufficient supplies and rising population, rice consumption in MY 2016/17 is forecast unchanged from last year at 99.5 MMT on declining per capita consumption.

Rice is the major staple food for more than 70 percent of the Indian population with more than 4,000 varieties and hybrids of rice grown throughout the country to cater to varied consumer preferences, typically consumed as boiled rice or variants with various additives (flavors, pulses, vegetables, meat, etc.). Some rice is also used for processed products like snacks (puffed rice), savories and bakery items.

The latest available National Sample Survey show a steady decline in the per capita consumption of rice through Indian fiscal year 2011/12 (April/March) (see IN2026). Market sources report that per capita consumption has continued to decline over the years. With the growing economy and expanding Indian middle class, Indian consumers are increasingly diversifying their diet to include higher value and nutritious food instead of the basic staple food like boiled rice and various variants (flavored rice, *biryani* etc.).

Typically, government and private trade procure paddy (unmilled rice) from farmers and get milled. Milled rice is distributed through the open market and public distribution system to the households and

hotels, restaurants and food service institutions. Most rice retained by farmers (50 percent), after saving some quantities for seed use for the next season, is also custom milled for home consumption and small quantities for feed use (mostly lactating cows and buffaloes). Some of the paddy is procured by the organized milling sector for producing milled rice for the hotels, restaurants and institutional sector and a small share for branded and packaged rice. The livestock feed industry, including poultry and aquaculture, uses deoiled rice bran and broken rice from the milling industries. Market sources report higher usage of broken rice as energy source in poultry and aquaculture feed in MY2015/16 due to relatively lower prices of rice compared to corn. However, there are no official or industry estimates available of rice use for feed consumption.

Government Procurement and Offtake

Rice is the most important food grain critical for the government's PDS and other food security programs with the government consistently purchasing about 30-35 percent of the total production in the last few years.

Table 5. India: Government's Rice Procurement and PDS Operation

Marketing Year	Production	GOI Procurement[1]	MSP for Paddy (Unmilled Rice Common variety)	GOI Economic Cost	Offtake from GOI Stocks	PDS Issue Price		
(Oct-Sept)	(Million Tons)	(Million Tons)	Rs. per ton	Rs. Per ton	(Million Tons)	Rs. per ton		
						APL	BPL	AAY/NFSA
2006/07	93.35	25.11 (26.9)	6,200	13,912	na	7,950	4,150	3,000
2007/08	96.69	28.74 (29.7)	7,450	15,499	na	7,950	4,150	3,000
2008/09	99.18	34.10 (34.4)	9,000	17,407	25.69	7,950	4,150	3,000
2009/10	89.09	32.03 (36.0)	10,000	18,201	28.36	7,950	4,150	3,000
2010/11	95.98	34.20 (35.6)	10,000	19,831	31.97	7,950	4,150	3,000
2011/12	105.30	35.04 (33.3)	10,800	21,229	31.44	7,950	4,150	3,000
2012/13	105.24	34.04 (32.3)	12,500	23,049	31.39	7,950	4,150	3,000
2013/14	106.54	31.85 (29.9)	13,100	26,155	30.74	7,950	4,150	3,000
2014/15	105.48	32.17 (30.5)	13,600	29,436	32.96	7,950	4,150	3,000
2015/16[2]	103.00	32.00 (31.1)	14,100	30,938	33.00	7,950	4,150	3,000
2016/17[2]	105.00	na	na	na	na	7,950	4,150	3,000

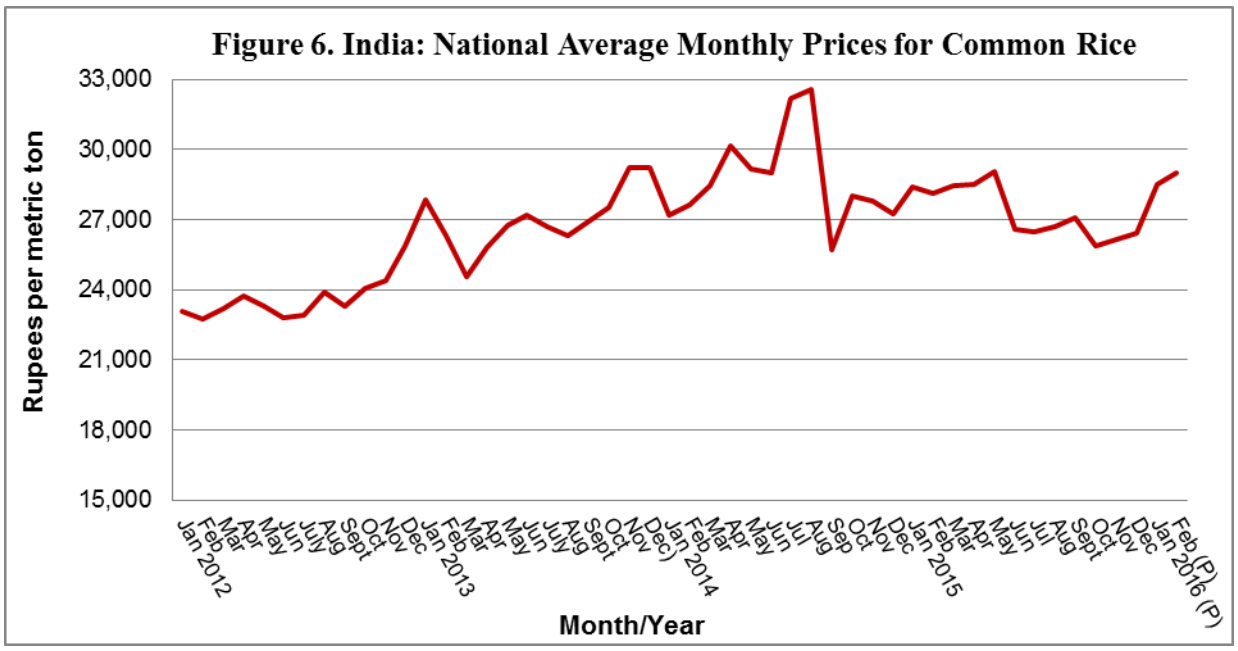
Source: Food Corporation of India, and GOI Budget.

Notes: APL - Above Poverty Line; BPL - Below Poverty Line; AAY - Poorest of Poor; NFSA-National Food Security Act
1/: Figure in parenthesis is GOI procurement as percentage of total food production; 2/: FAS/New Delhi Estimate

Despite lower production, MY 2015/16 government procurement has been significantly higher than last year due to relatively low open market prices on weak demand, both domestic and export. Official sources estimate rice procurement as of February 11, 2016 at 26.1MMT, more than 20 percent higher than last year during the corresponding period. However, with the significant increase in domestic prices on expected lower *rabi* rice harvest, procurement is likely to slowdown in the coming months. However, overall rice procurement in MY 2015/16 is likely to cross 32 MMT, nearly the same as last year.

Under the procurement program, rice is classified into two categories - Common (length to breadth ratio less than 2.5) and Grade A (length to breadth ratio more than 2.5) and procured either under the levy program or direct purchase of paddy for custom milling. Under the levy program, depending on the state, local rice millers must sell to the government a fixed portion of their milled rice at pre-established rates, called the "levy price," which are linked to the MSP of paddy rice plus milling costs. With the government's raising the MSP significantly in recent years, local millers have reduced their purchases of paddy rice for milling. In the recent years, the government has been largely procuring paddy rice bought at the support price, which is subsequently custom-milled for the government by private millers at government expense for storage and distribution through PDS.

Prices



Source: Agmarket News (http://agmarkweb.dacnet.ic.in), Ministry of Agriculture, GOI.

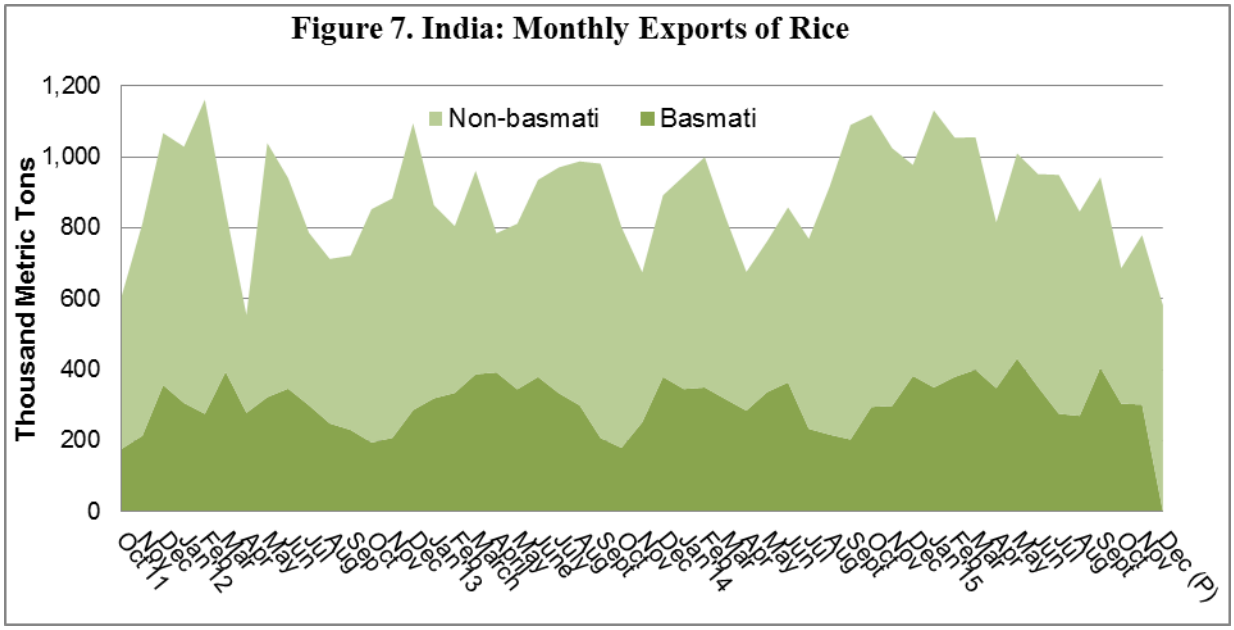
Despite deficient 2015 monsoon and concerns on the upcoming harvest, domestic rice prices fluctuated in a narrow range in the first quarter of MY 2015/16 on sufficient domestic supplies and relatively weak demand, both domestic and export. However, market prices surged from January 2016 due to

speculation on the lower *rabi* prospects. Prices during the balance of the season will depend on the export demand and international prices.

Trade:

India emerged as one of the world's leading exporters of rice after the export ban on non-Basmati coarse rice was removed in September 2011. However, exports have slowed down in MY 2015/16 due to relatively weak export demand. India's rice exports for MY 2016/17 are forecast lower at 7.0 MMT, split equally between coarse-grain rice and Basmati rice, on the forecast of tight domestic supplies. Depreciation in the value of Indian rupee and/or increase in the global demand and prices could potentially bolster export prospects and raise exports higher than the current forecast.

Figure 7. India: Monthly Exports of Rice



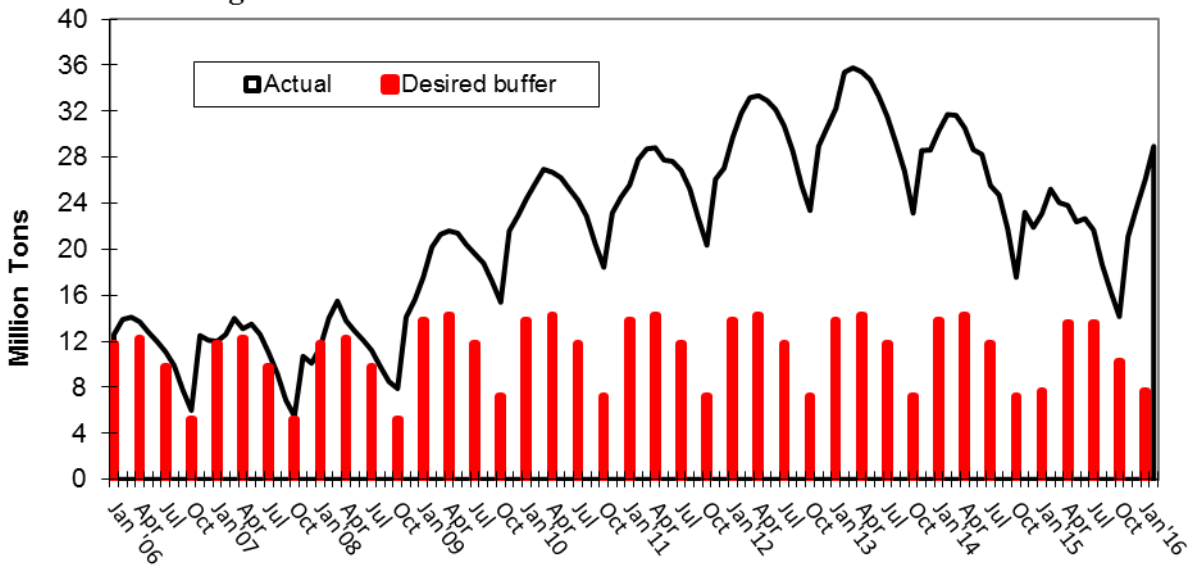
Source: DGCIS, GOI, and private sources (December estimate)

India's rice exports have slowed down significantly since the beginning of MY 2015/16 due to weak export demand from traditional markets in Middle East, Africa and neighboring Bangladesh and Sri Lanka. Basmati rice to Iran has slowed since October 2013 following the withdrawal of Iran sanctions by the United States and five other nations. The neighboring Sri Lanka and Bangladesh decision to raise the import duty on rice has also affected Indian rice exports. Consequently, exports are likely to remain weak during the remaining MY due to relatively higher domestic prices. Government is unlikely to impose any export restrictions on rice exports due to sufficient supplies and slowdown in exports. Post continues to estimate MY 2015/16 rice exports at 8.0 MMT (4.5 MMT coarse rice and 3.5 MMT Basmati rice) assuming no significant changes in the price parity of Indian rice in the international market.

Stocks:

Post's MY 2016/17 ending stocks are forecast to decline to 11.8 MMT compared to 13.3 MMT last year due to forecast tight supplies. MY 2015/16 ending stocks have been raised higher to 13.3 MMT based on higher than initially expected MY 2015/16 production and government procurement.

Figure 8. India: Govt. Rice Stocks-Actual Vs. Desired Buffer



Source: Food Corporation of India, GOI

Due to the relatively strong rice procurement, government-held rice stocks on February 1, 2016, increased to 28.9 MMT compared to 25.2 MMT same time last year. However, government is likely to increase the offtake of rice during the balance of the season to control the rising domestic prices. Assuming a higher pace of monthly off take of rice in the balance three quarters, government rice stocks on October 1, 2016 (MY 2014/15 ending stocks), are expected to decline to 11 MMT, slightly higher than the GOI's desired stocks of 10.3 MMT.

There is no published information, official or industry, about privately held rice stocks. Relatively tight domestic supplies and weak export demand are likely to draw down the privately held MY 2015/16 ending stocks to 2.3 MMT compared to MY 2013/14 ending stocks of 3.6 MMT. The rice PS&D table includes both government stocks and estimated privately held stocks.

Policy:

Production and Market Support:

The central and state government follows the same production and market support policies for the two important food crops-rice and wheat. In addition, the GOI, with the support of select state governments, has also undertaken various rice-specific development schemes like the Special Rice Development Program (SRDP) and Promotion of Hybrid Rice (price subsidies on seed). The government also undertakes a domestic price support, procurement and distribution program for rice similar to that for wheat. The GOI has banned futures trading in rice since September 2007 on price inflation concerns as policy makers believe that futures trading may lead to speculation.

Trade Policy:

Currently there are no export restrictions on non-Basmati and long grain Basmati rice. On September 9, 2011, the government lifted the export ban on non-Basmati rice, which had been in effect since September 2007 (with *ad hoc* humanitarian exports exempted from time to time). On July 4, 2012, the government removed the minimum export price (MEP) requirement on exports of Basmati rice.

In March 2008, the GOI removed the import duty on rice, but there has not been any importation of rice due to competitive pricing and consumer preference for local varieties.

Marketing:

Indian markets high-quality long-grain Basmati rice and select premium rice varieties that compete against U.S. in several markets, particularly Middle East and European countries. India also exports these premium varieties of rice to the United States, mostly to cater to the needs of the Middle East and Indian sub-continent origin population.

Production, Supply and Demand Data Statistics:

Table 6. India: Commodity, Rice, Milled, PSD
(Area in thousand hectares and quantity in thousand metric tons, Yield in MT/Hectare)

Rice, Milled	2014/2015	2015/2016	2016/2017

Market Begin Year	Oct 2014		Oct 2015		Oct 2016	
India	**USDA Official**	**New Post**	**USDA Official**	**USDA Official**	**New Post**	**USDA Official**
Area Harvested	43000	43740	43000	42750	0	43500
Beginning Stocks	22757	22757	17686	17766	0	13266
Milled Production	104800	105480	100000	103000	0	105000
Rough Production	157216	158236	150015	154515	0	157516
Milling Rate (.9999)	6666	6666	6666	6666	0	6666
MY Imports	0	0	0	0	0	0
TY Imports	0	0	0	0	0	0
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	127557	128237	117686	120766	0	118266
MY Exports	11871	11871	8500	8000	0	7000
TY Exports	10800	10800	8500	8000	0	7000
Consumption and Residual	98000	98600	98000	99500	0	99500
Ending Stocks	17686	17766	11186	13266	0	11766
Total Distribution	127557	128237	117686	120766	0	118266

Table 7. India: Commodity, Rice, Milled, Prices Table

Prices Table				
Country	India			
Commodity	Rice Milled			

Prices In	Rupees	per uom	metric tons	
Year	2013	2014	2015	% Change
January	27,828	27,198	28,400	4.4
February	26,300	27,612	28,149	1.9
March	24,577	28,462	28,463	0.0
April	25,825	30,162	28,497	-5.5
May	26,777	29,162	29,036	-0.4
June	27,190	29,020	26,582	-8.4
July	26,682	32,165	26,495	-17.6
August	26,295	32,539	26,673	-18.0
September	26,905	25,697	27,061	5.3
October	27,501	28,014	25,888	-7.6
November	29,241	27,792	26,136	-6.0
December	29,215	27,258	26,451	-3.0
Exchange Rate	68.30	Local Currency/US$		
Date of Quote	02/22/2016	MM/DD/YYYY		

National Average Monthly Wholesale Price of Common Rice

Source: Agmarket News (http://agmarkweb.dacnet.ic.in), Ministry of Agriculture, GOI.

Table 8. India: Commodity, Rice, Milled, Export Trade Matrix

Export Trade Matrix	
Country	INDIA
Commodity	Rice, Milled

Time Period	Jan-Dec	**Units**	Tons
Exports for	CY 2014		CY 2015[1]
U.S.	113,118	U.S.	134,883
Others		**Others**	
Bangladesh	20,240,447	Saudi Arabia	1,125,617
Saudi Arabia	1,089,029	Senegal	889,076
Iran	1,028,145	Iran	735,887
Senegal	692,081	UAE	713,088
Sri Lanka	521,322	Bangladesh	479,077
UAE	470,912	Guinea	390,039
Nigeria	384,270	Cote D' Ivorie	388,983
South Africa	334,621	South Africa	274,506
Guinea	329,975	Liberia	258,718
Liberia	265,178	Somalia	240,159
Yemen	231,463	Yemen	226,281
Cote D' Ivorie	213,630	Kuwait	203,443
Total for Others	**25,801,073**	**Total for Others**	**5,924,874**
Others Not Listed	8,181,060	Others Not Listed	4,158,192
Grand Total	**34,095,251**	**Grand Total**	**10,217,949**

[1] Provisional data for the period January through November 2015
Source: Global Trade Atlas & DGCIS, GOI

Commodities:

Corn

Sorghum

Millet

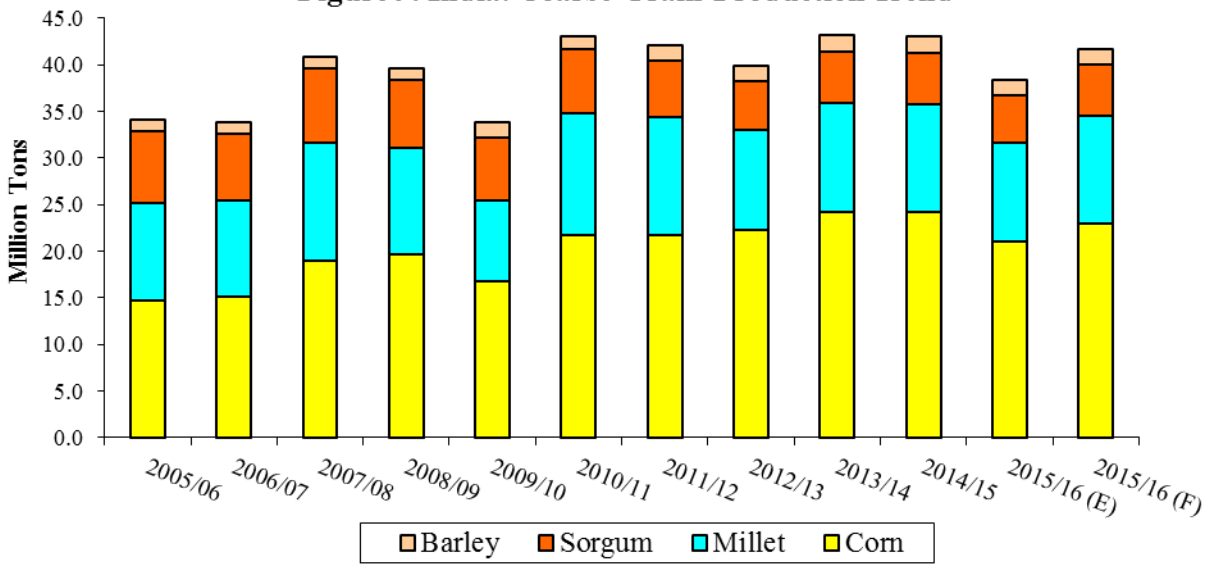
Barley

Production:

Assuming normal 2016 monsoon and weather conditions, India's MY 2016/17 coarse grain production is forecast to recoup to 41.7 MMT after declining to 38.3 MMT in MY 2015/16 due to 'deficient' 2015 monsoon. The MY 2016/17 production forecast includes 23MMT of corn, 11.5 MMT of millet, 5.5 MMT of sorghum and 1.7 MMT of barley. India's coarse grain production depends on the performance of the southwest monsoon rains as only about 15 percent of the area is irrigated. More than three fourth of the coarse grains are taken in the *kharif* season and the planting depends on the timely arrival and progress of the monsoon through July. Well spread monsoon rains during August-September are essential for good *kharif* coarse grain yields. Some corn, sorghum and barley are cultivated in the *rabi* season under residual soil moisture and irrigation from the monsoon precipitation.

The deficient 2015 monsoon affected planting of MY 2015/16 *kharif* coarse grains (corn, millet, sorghum) as these crops have relatively smaller planting window (June to 3rd week of July) compared to competing crops like rice and cotton (June-mid-August). Moisture stress also affected *kharif* crop yield, particularly in highly deficient rains affected states of Maharashtra, Rajasthan, Gujarat, Karnataka, Andhra Pradesh and Telangana. Dry soils and inadequate irrigation water availability also affected planting of *rabi* season corn, sorghum and barley. Consequently, MY 2015/16 total coarse grain production is estimated to have declined by more than 11 percent to 38.3 MMT compared to the previous year, wherein corn production declined steepest by over 13 percent to 21 MMT. Based on the final official estimates, MY 2014/15 coarse grain production is revised higher to 43.1 MMT, marginally lower than the record 43.2 MMT in MY 2013/14. MY 2014/15 and 2015/16 area under various coarse grains have also been revised based on the latest planting estimates compiled by the Ministry of Agriculture.

Figure 9. India: Coarse Grain Production Trend



Source: Ministry of Agriculture, GOI; and FAS/New Delhi estimates for MY 2015/16 and 2016/17.

After a steady upward trend, corn production in India decelerated last year due to deficient monsoon in 2015. The corn planted area has plateaued around 9 million hectares in recent years, while the yields are unlikely to improve significantly without any major technological breakthrough. Market sources report that planting of hybrids has reached 70 percent, mostly single cross hybrids. The last two 'below normal' monsoon in 2014 and 2015 have adversely affected profitability of hybrid corn as they are more susceptible to moisture stress compared to traditional cultivars. Consequently, replacement of the traditional cultivars by existing hybrids is likely to slow down in near future. India's weak intellectual property regulations (IPR) and a slow agriculture biotechnology regulatory system has precluded major technological breakthrough in productivity gains from current cultivars and hybrids. Unless there is a significant technological breakthrough, growing domestic demand from the rapidly expanding poultry, starch and commercial animal feed industries is likely to outstrip domestic production in few years. India will also be importing corn in adverse monsoon/weather affected years, as happening in the current MY 2015/16.

Planting and production of the largely unirrigated millet and sorghum production fluctuates year to year depending on the performance of the monsoon. In the last decade, millet production has been stagnant while sorghum production has declined. In the absence of any significant yield enhancing varietal or agronomic breakthrough, lack of specific usage in any industrial sector and steady shift in consumers' preference for rice and wheat, most of the farmers are shifting to other competing crops (corn, cotton, and soybean).

Steady demand from the growing malting and brewing industry has supported production of barley, a relatively small winter crop in north India. Traditionally, barley production in India was of six-row varieties, unsuitable for malting and mostly used for food and animal feed purpose. In the last decade, few good malting-type barley varieties have been developed under public-private breeding programs, which are steadily replacing food/feed barley. Some malting and brewing companies have started contract farming of malting barley in Rajasthan, Punjab and Haryana.

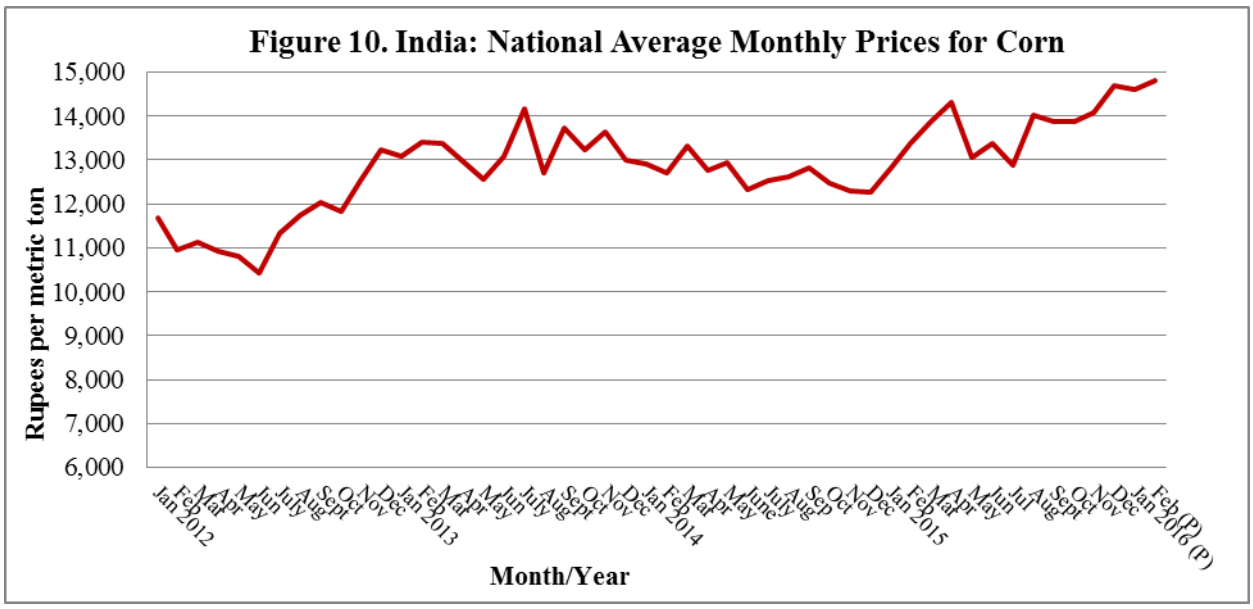
India has not yet commercialized any genetically engineered (GE) coarse grain crops. Several Indian seed companies and public sector research institutions are working on development of various GE crops including corn and sorghum, but it may take several years for commercialization due to the slow biotech regulatory system in India.

Consumption:

Forecast higher domestic production and steady demand from animal feed and industrial users is likely to raise MY 2016/17 coarse grain consumption to 41.3 MMT compared to MY 2015/16 estimated consumption of 39.5 MMT. The growing Indian economy and expanding middle class is likely to continue to fuel demand for corn and other coarse grains by poultry and animal feed sector and industrial users (starch, ethanol).

Historically, various coarse cereals were the staple diet of Indians, especially for the rural and lower income households, near the producing areas. The late 1960's 'Green Revolution' driven productivity breakthrough in rice and wheat led to a pan-India spread of these two food grains increasingly replacing coarse grains in the consumer plate. Recent steady economic growth and changing consumer preferences continues to fuel a steady shift away from coarse grains (see IN5027 table 10). Consequently, coarse grains as a major staple food are limited to the subsistence farmers and rural poor in growing areas, which remains a substantial segment of the population. Consumption of coarse grains is improving among "health conscious" and diabetes-prone Indians for their richer nutrient and fiber contents.

In the last two decades, corn is increasingly being used for feed (poultry, aquaculture and dairy) and industrial (starch) use. Relatively strong corn prices during MY 2015/16 pressured domestic corn users to shift to cheaper alternatives like broken rice and other coarse grains (see below).



Source: Agmarket News (http://agmarkweb.dacnet.ic.in), Ministry of Agriculture, GOI

Corn consumption is likely to recover in MY 2016/17 on forecast sufficient domestic supplies and reasonable prices. The poultry industry has been growing at 4-5 percent in the last few years. Assuming no significant changes in overall economy and growth in demand for poultry and livestock products, MY 2016/17 corn use for feed is forecast to increase by about 6 percent to 13.2 MMT. Corn use by the starch industry, largely catering to the textile sector, is also likely to grow by about five percent to 1.8 MMT. Some corn is also used for production of ethanol for the potable liquor industry to for produce blended whisky and other industrial usage, estimated at about 1.2 MMT. The balance will go for traditional staple diet, snacks and savories and seed use.

Sorghum, millet and barley consumption is largely accounted for by food use for traditional staple diet, snacks and savories. The high tannin content of Indian sorghum restricts its use in poultry rations, but its use in the production of spirits, industrial alcohol, and starch is reportedly increasing. Some inferior quality grains (largely rain damaged) go for cattle feed. However, the new barley varieties are being used for brewing (around 700,000 metric tons).

The GOI does not allow use of cereal grains for producing ethanol for fuel or alcohol unless it is certified not fit for human food or animal feed consumption. India's domestic ethanol program is based on molasses, a sugar industry byproduct, as feed stock for fuel. Consequently, the domestic ethanol program does not affect the domestic market for food, feed and trade in cereal grains and their byproducts.

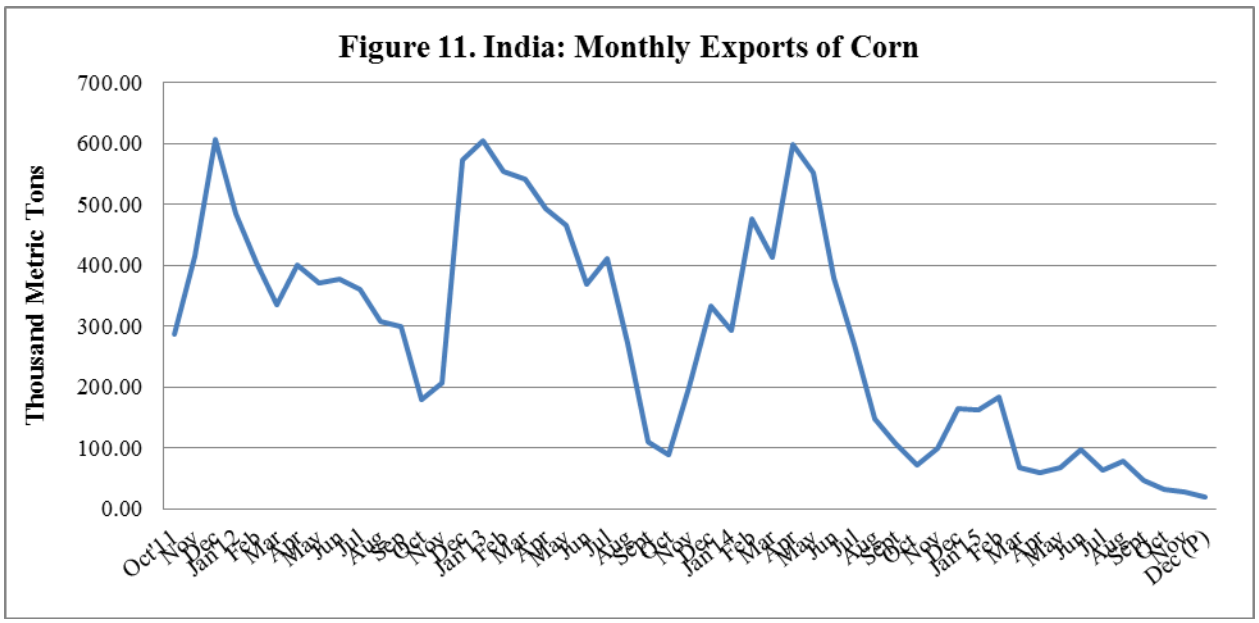
Trade:

Indian corn exports have declined sharply since March 2015 on uncompetitive prices in the international market. Based on the current pace of exports, Post MY 2015/16 corn exports are revised lower to 500,000 metric tons. Assuming no major changes in the export parity of Indian corn in the international

market, India's corn exports in MY 2016/17 are forecast unchanged at 500,000 MT, with exports limited to neighboring market and some containerized shipments to south Asia. While the GOI's MSP is likely to keep the domestic prices steady, any significant increase in the international market prices or depreciation in the value of Indian rupee can improve the corn export prospects. India exports small quantities of sorghum and barley, mostly for feed use to Middle East.

After a gap of more than 15 years, India is commercially importing corn in MY 2015/16 (see IN6022) due to domestic shortages and relatively cheap international corn. Post estimates MY 2015/16 corn imports at 400,000 MT based on the recent orders from the government parastatal for imports under the Indian fiscal year (IFY) 2015/16 (April/March) TRQ and expected additional orders under the IFY 2016/17 TRQ after the domestic *rabi* corn arrivals are over in August. Post expects forecasts MY 2016/17 corn imports at 200,000 MT on expected spillover of the shipment against the IFY 2016/17 orders. High import duties preclude opportunities for significant imports of other coarse grains in the near future.

Indian corn exports have declined sharply since July 2015 as high domestic prices have made Indian corn uncompetitive even in the neighboring markets where it enjoys significant transportation advantage over competing origins



Source: Monthly exports through November 2015 are derived from Global Trade Atlas, and December 2015 figures are derived from corn shipping data compiled by a private source

Monthly exports have tapered off as the traditional buyers have shifted sourcing to other cheaper origins. Market sources report that export prospects may slightly improve after the harvest of *rabi* corn in March, but tight domestic supplies are unlikely to make Indian corn very price competitive in the near future. Assuming no significant changes in the international prices and value of India rupee, Post estimates MY 2015/16 corn exports lower at 500,000 MT.

Due to the high domestic prices, the local poultry and starch industries pressured the government to allow corn import under the TRQ (500,000 metric tons at zero duty in an Indian fiscal year

(April/March). The government parastatal PEC's has issued orders for importing 220,000 MT of corn (see IN6022) and have issued a tender for import of an additional 240,000 MT. Market sources report that PEC may not issue new orders due to the lack of interest from the end-user buyer with the imminent arrival of *rabi* corn from March onwards. Imports in the later part of the marketing year will depend on the size of *rabi* corn harvest and domestic prices. However, import prospects are likely to improve by end August after rabi corn is marketed. The government parastatals may float tenders and import more corn under the TRQ for IFY 2016/17 (April-March). Assuming a normal harvest of *rabi* corn and relatively stable price parity for Indian corn vis-à-vis other origins, MY 2015/16 imports are estimated to reach 400,000 MT and MY 2016/17 imports at 200,000 based on spillover of the corn contracted for imports against the IFY 2016/17 TRQ.

Policy:

Production:

The GOI production policy and programs for coarse grains are significantly weaker on coverage and budgetary support compared to rice and wheat. The government's minimum support price (MSP) procurement program and food distribution program through public distribution system (PDS) for coarse grains are limited to occasional purchasing in specific markets where the open market prices goes significantly below MSP for longer periods. Sources report that the government procurement of coarse grain during the ongoing MY 2015/16 has been limited to millet, corn and sorghum in the states of Karnataka, Madhya Pradesh, and Maharashtra, while last year it was limited to corn in Madhya Pradesh. Unlike wheat and rice, the government does not have any buffer stock commitment for coarse grains.

Trade Policy:

GOI does not impose any restrictions on exports of corn, millet, sorghum, or barley, and imports are allowed subject to the effective import duty and phytosanitary conditions specified in the Plant Quarantine (Regulation of Imports into India) Order 2003. Historically, India's trade policy allowed imports of most coarse grains only through the Food Corporation of India and other designated state trading agencies. On September 29, 2014, the GOI removed the restriction paving the way for imports by private trade. However, India imposes a basic import duty of 50 percent on sorghum and millet, while the import duty on barley is zero.

India allows imports of corn under a tariff rate quota (TRQ) of 500,000 metric tons at zero duty for a given Indian fiscal year (IFY) April-March. Imports of corn outside the TRQ are subject to a 50-percent import duty. To import corn under TRQ at zero duty, the importer must obtain a Tariff Rate Quota Allocation Certificate issued by the Directorate General of Foreign Trade (DGFT). The Certificate is issued in accordance with the procedure as may be specified by the EXIM Facilitation Committee from time to time through a public notice. The government parastatal PEC Limited intends to use the full 500,000 MT TRQ in IFY for imports of corn for actual end users, mostly starch and poultry feed manufacturers.

The GOI's phytosanitary requirement pertaining to the limitation on weed seeds, ergot and other SPS issues, and absence of approval of biotechnology events have effectively banned U.S. coarse grain exports to India, including corn and barley. Imports of any biotech product, including genetically

modified corn and products, are subject to approval by India's biotech regulatory agency, the Genetic Engineering Appraisal Committee (GEAC). The GEAC has approved no biotech coarse grains or byproducts for import.

Marketing:

For the first time in several years, India is importing corn in MY 2015/16 and may import in the near future also to augment domestic production shortages. The growth of the poultry and starch industries may eventually create demand for significant imports of corn in next five to ten years. Growth in the brewing industry may fuel demand for malting barley in next four to five years.

Production, Supply and Demand Data Statistics:

Table 9. India: Commodity, Corn, PSD
(Area in Thousand Hectares, Quantity in Thousand Metric Tons, Yield in MT/Hectare)

Corn	**2014/2015**		**2015/2016**		**2016/2017**	
Market Begin Year	**Nov 2014**		**Nov 2015**		**Nov 2016**	
India	**USDA Official**	**New Post**	**USDA Official**	**USDA Official**	**New Post**	**USDA Official**
Area Harvested	9300	8980	9000	8760	0	9000
Beginning Stocks	1428	1428	2011	2211	0	1111
Production	23670	24170	21000	21000	0	23000
MY Imports	24	24	400	400	0	200
TY Imports	21	21	400	400	0	200
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	25122	25622	23411	23611	0	24311
MY Exports	1111	1111	700	500	0	500
TY Exports	1156	1156	700	500	0	500
Feed and Residual	12500	12500	12500	12500	0	13200
FSI Consumption	9500	9800	9200	9500	0	9800
Total Consumption	22000	22300	21700	22000	0	23000
Ending Stocks	2011	2211	1011	1111	0	811
Total Distribution	25122	25622	23411	23611	0	24311

Table 10. India: Commodity, Corn, Prices Table

Country	India			

Commodity	Corn			
Prices In	Rupees	per uom	Metric tons	
Year	2013	2014	2015	%Change
January	13,084	12,908	12,829	-0.6
February	13,405	12,704	13,385	5.4
March	13,368	13,311	13,865	4.2
April	12,977	12,768	14,302	12.0
May	12,555	12,944	13,062	0.9
June	13,093	12,325	13,390	8.6
July	14,181	12,522	12,888	2.9
August	12,714	12,615	14,010	11.1
September	13,716	12,815	13,878	8.3
October	13,237	12,468	13,875	11.3
November	13,634	12,291	14,073	14.5
December	13,004	12,261	14,687	19.8
Exchange Rate	68.30	Local Currency/US$		
Date of Quote	02/22/14	MM/DD/YYYY		

National Average Monthly Wholesale Prices of Corn
Source: Agmarket News (http://agmarkweb.dacnet.ic.in), Ministry of Agriculture, GOI

Table 11. India: Commodity, Sorghum, PSD
(Area in Thousand Hectares, Quantity in Thousand Metric Tons, Yield in MT/Hectare)

Sorghum	2014/2015		2015/2016		2016/2017	
Market Begin Year	Nov 2014		May 2015		May 2016	
India	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	5500	5300	6000	5750	0	5800
Beginning Stocks	364	364	193	343	0	193
Production	5050	5450	5500	5050	0	5500
MY Imports	0	0	0	0	0	0
TY Imports	0	0	0	0	0	0
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	5414	5814	5693	5393	0	5693
MY Exports	121	121	100	100	0	100
TY Exports	118	118	100	100	0	100
Feed and Residual	700	750	750	700	0	750
FSI Consumption	4400	4600	4600	4400	0	4600
Total Consumption	5100	5350	5350	5100	0	5350
Ending Stocks	193	343	243	193	0	243
Total Distribution	5414	5814	5693	5393	0	5693

Table 12. India: Commodity, Millet, PSD
(Area in Thousand Hectares, Quantity in Thousand Metric Tons, Yield in MT/Hectare)

Millet	**2014/2015**		**2015/2016**		**2016/2017**	
Market Begin Year	**Nov 2014**		**May 2015**		**May 2016**	
India	**USDA Official**	**New Post**	**USDA Official**	**New Post**	**USDA Official**	**New Post**
Area Harvested	8903	8903	9000	8950	0	9400
Beginning Stocks	477	477	397	507	0	287
Production	11420	11630	11000	10680	0	11500
MY Imports	0	0	0	0	0	0
TY Imports	0	0	0	0	0	0
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	11897	12107	11397	11187	0	11787
MY Exports	0	0	0	0	0	0
TY Exports	0	0	0	0	0	0
Feed and Residual	1500	1600	1500	1400	0	1600
FSI Consumption	10000	10000	9500	9500	0	9800
Total Consumption	11500	11600	11000	10900	0	11400
Ending Stocks	397	507	397	287	0	387
Total Distribution	11897	12107	11397	11187	0	11787

Table 13. India: Commodity, Barley, PSD

(Area in Thousand Hectares, Quantity in Thousand Metric Tons, Yield in MT/Hectare)

Barley	**2014/2015**		**2015/2016**		**2016/2017**	
Market Begin Year	**Apr 2014**		**May 2015**		**Apr 2016**	
India	**USDA Official**	**New Post**	**USDA Official**	**USDA Official**	**New Post**	**USDA Official**
Area Harvested	674	674	800	705	0	700
Beginning Stocks	231	231	232	232	0	247
Production	1831	1831	1600	1610	0	1700
MY Imports	1	1	5	5	0	5
TY Imports	5	5	5	5	0	5
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	2063	2063	1837	1847	0	1952
MY Exports	431	431	200	100	0	200
TY Exports	97	97	200	100	0	200
Feed and Residual	200	200	200	250	0	250
FSI Consumption	1200	1200	1200	1250	0	1300
Total Consumption	1400	1400	1400	1500	0	1550
Ending Stocks	232	232	237	247	0	202
Total Distribution	2063	2063	1837	1847	0	1952