

USDA Foreign Agricultural Service

GAIN Report

Global Agricultural Information Network

THIS REPORT CONTAINS ASSESSMENTS OF COMMODITY AND TRADE ISSUES MADE BY
USDA STAFF AND NOT NECESSARILY STATEMENTS OF OFFICIAL U.S. GOVERNMENT
POLICY

Voluntary _ Public

Date: 4/2/2013

GAIN Report Number: IN3033

India

Post: New Delhi

India Grain April 2013 Update

Report Categories:

Grain and Feed

Agricultural Situation

Agriculture in the Economy

Policy and Program Announcements

Trade Policy Monitoring

Approved By:

Allan Mustard

Prepared By:

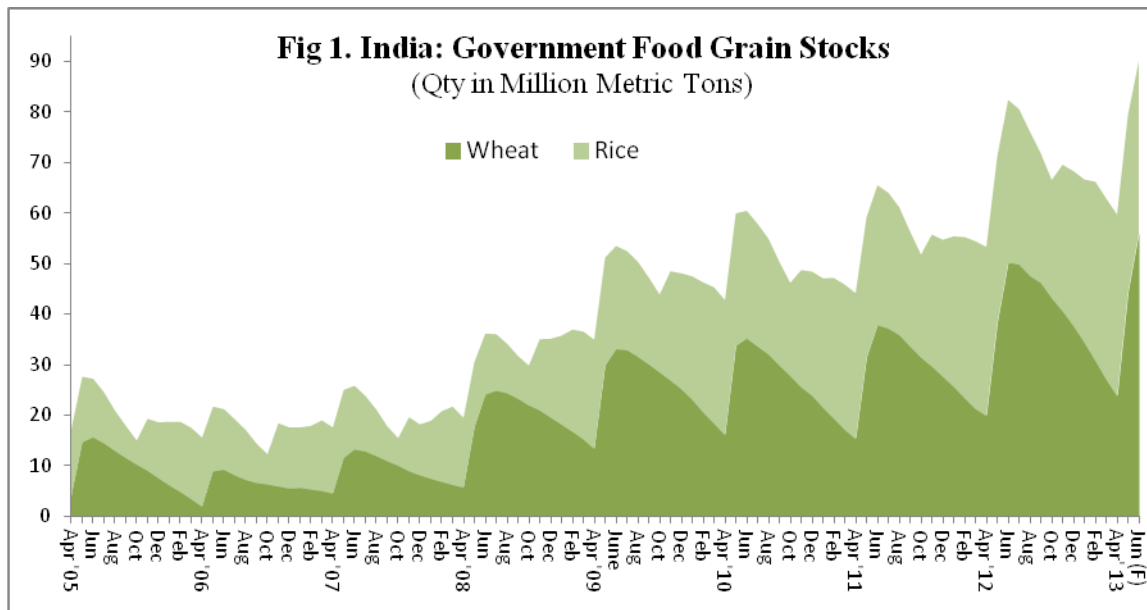
Santosh Singh

Report Highlights:

Forecast MY 2012/13 record wheat production of 95.2 million metric tons (mmt) and expected government procurement of 44.1 mmt, coupled with existing wheat and rice stocks, are leading to an unprecedented storage crisis. Government stocks of rice and wheat are projected to hit 90 mmt as of June 1, 2013. Government approval of exports of an additional 5 mmt via private trade appears unviable unless the mandated floor price is reduced, which would increase the implied export subsidy.

Executive Summary:

India's MY 2013/14 wheat production is forecast higher at a record 95.2 mmt on higher yields due to favorable March weather, which will propel government wheat procurement under the price support program to a record 44.1 mmt, about a 16-percent increase over last year's record procurement. MY 2012/13 government procurement of rice is also ahead of last year, estimated at 29.2 million tons through March 24, 2013, compared to 28.6 million tons last year during the corresponding period. Riding on back-to-back record procurement of both wheat and rice, the government-held food grain stocks on June 1, 2013, are forecast to balloon to a record 90 million metric tons.



With the total storage capacity available to the government estimated at around 71 million tons, the mammoth food grain stocks will pose an unprecedented storage crisis for the government, wherein a large quantity of wheat will be stored in the open, susceptible to damage and losses from monsoon rains, temperature changes, pests/rodents and pilferage. In an effort to lower the stocks to manageable level, the government has approved exports of an additional 5 mmt of government-held wheat from Punjab and Haryana by private traders. The government has already allowed exports of 4.5 million tons of wheat by government parastatals. The government will have to lower the proposed floor prices for exports under the new scheme to be viable, further increasing the implied export subsidy on wheat exports from government stocks.

General Information:

Author Defined:**WHEAT****Table 1: India: Commodity, Wheat, PSD**

(Area in thousand hectares and quantity in thousand metric tons)

Wheat India	2011/2012		2012/2013		2013/2014	
	Market Year Begin: Apr 2011		Market Year Begin: Apr 2012		Market Year Begin: Apr 2013	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	29,400	29,070	29,690	29,860		29,400
Beginning Stocks	15,360	15,360	19,950	19,950		23,800
Production	86,870	86,870	94,880	94,880		95,200
MY Imports	17	17	10	10		0
TY Imports	17	17	10	10		0
TY Imp. from U.S.	0	0	0	0		0
Total Supply	102,247	102,247	114,840	114,840		119,000
MY Exports	891	891	6,500	6,500		8,000
TY Exports	1,699	1,699	8,500	8,500		8,000
Feed and Residual	3,100	3,100	3,600	3,600		4,000
FSI Consumption	78,306	78,306	80,940	80,940		83,000
Total Consumption	81,406	81,406	84,540	84,540		87,000
Ending Stocks	19,950	19,950	23,800	23,800		24,000
Total Distribution	102,247	102,247	114,840	114,840		119,000

Favorable March Weather Bolsters Production Prospects

India's MY 2013/14 wheat production is raised to a record 95.2 million tons on higher yields due to favorable March weather. Prolonged cool temperatures, "more than normal" scattered rains interspersed with sufficient sunny days during late February and March in major wheat growing areas have provided ideal conditions at grain formation and maturity stages of the crop. This type of weather is particularly beneficial for late planted wheat, which accounts for a larger share of this year's wheat crop due to a delayed *kharif* crop harvest. Harvesting is already underway in central and western India, and has just begun in the major surplus producing states of Punjab, Haryana and Uttar Pradesh. Preliminary crop reports from major growing states (except for the drought-affected state of Gujarat) indicate a better production outlook than last year, with overall yield estimated higher at 3.24 metric tons per hectare compared to last year's record 3.18 metric tons per hectare. However, weather during harvest in April will be important as a sudden significant increase in temperature and/or rains and hailstorms during the harvest stage could potentially temper the production prospects and affect the quality (vitreousness) of the crop.

Government Set for Another Record Procurement

With a record wheat harvest in offing and relative slowdown in export demand, government wheat procurement under the price support operation is likely to surpass last year's record 38.2 million tons. Reports suggest that the Food Ministry expects more than 44 million tons wheat procurement in MY 2013/14, with the major increase accounted by the states of Madhya Pradesh and Punjab.

Table 2. India: Government Procurement of Wheat by States
(Quantity in Million Metric Tons)

State	MY 2013/14 ¹	MY 2012/13	MY 2011/12
Punjab	14.00	12.83	10.96
Haryana	7.80	8.67	6.93
Madhya Pradesh	13.00	8.49	4.97
Uttar Pradesh	5.00	5.06	3.46
Rajasthan	2.50	1.96	1.30
Bihar	1.50	0.77	0.56
Gujarat	0.08	0.16	0.11
Others	0.25	0.20	0.06
Total	44.12	38.15	28.34

Note ¹: Government's expected procurement.

Source: Trade Sources for MY 2013/14 and Food Corporation of India for MY 2012/13 and 2011/12.

Government procurement has just started in Madhya Pradesh (about 250,000 metric tons by March 30) and will begin in other states in the first week of April. Procurement in the major surplus states of Punjab, Madhya Pradesh and Haryana is likely to be over by May, but will continue through July in Uttar Pradesh and other states. Although the government encourages private wheat purchases, a minimum support price higher than the market and the government's continued subsidized open market sales of government-held wheat will discourage private buying. Private trade in Punjab and Haryana is severely affected by higher market fees and levies charged by the state governments, and in Madhya Pradesh and Rajasthan by the INR 1,500 bonus over and above the GOI's support price announced by the state governments. Most private trade buying will be confined to Uttar Pradesh as market prices tend to be lower than the support price due to relatively ineffective government procurement facilities, and some purchase of quality wheat at a premium from Madhya Pradesh and Rajasthan.

Government Wheat Stocks To Scale New High...

Government-held wheat stocks on March 1, 2013, were officially placed at 27.1 million tons compared to 21.3 million tons a year ago, and are projected at 23.8 million tons on April 1, 2013. While off take of wheat from government stocks has increased in recent months by higher lifting by local millers and government parastatals for export, the expected record procurement from the 2013/14 harvest could bump up the government wheat stocks to a record 56.0 million tons as of June 1, 2013.

.... Cause Unprecedented Storage Crisis

Expected mammoth food grain stocks (90.0 million tons on June 1, 2013, which includes 56.0 million tons of wheat and 34.0 million tons of rice) will pose an unprecedented storage crisis for the

government. With the total storage capacity available with the government estimated at around 71 million tons (including estimated space for open storage on plinths under polythene tarpaulins), the government will be forced to store a large quantity of wheat in the open both with and without plinth and polythene covers, where the wheat stocks will be susceptible to damage or loss from monsoon rains, temperature changes, pests/rodents and pilferage. The crisis is likely to be most severe in the surplus states of Punjab, Haryana and Madhya Pradesh, where the government will be struggling to arrange storage space for more than 20 million tons of wheat before the onset of monsoon rains in late June/July.

Parastatals Push Export Sales as Demand Weaken

Government parastatals assigned to export 4.5 million tons of wheat from government-held stocks have floated tenders for about 4.3 million tons, of which about 3.75 million tons has been allocated to various private exporters. Prices have declined from the November peak of \$328.05 to 305.00 per ton as of March 25 (see Table 3).

Table 3. India: Government Wheat Tenders and Allocations

Agency	Quantity (Tons)	Tender Close	Shipment Period	Price (US\$ per ton FOB)	Port of Loading
August-December 2012					
Various	2,035,000	End Dec 2012	Aug 2012-Jan 2013	296.70-328.05	Various
January 2013 onwards					
PEC	35,000	Jan 3, 2012¹	Jan 10-Feb 10	318.00	Karaikal
PEC	100,000	Jan 7, 2013	Jan 10-Feb 15	320.89	Krishnapatnam
STC	50,000	Jan 10, 2013	Jan 21-Mar 5	323.50	Mundra
STC	100,000	Jan 10, 2013	Jan 21-Mar 5	318.50	Mundra
MMTC	50,000	Jan 11, 2013	Feb 1-Mar 5	319.45	Kakinada
MMTC	50,000	Jan 16, 2013	Feb 1-28	309.00	Pipavav
PEC	125,000	Jan 17, 2013	Feb 1-Mar 10	314.00	Kandla
STC	40,000	Jan 23, 2013	Feb 1-28	314.34	Chennai
PEC	35,000	Feb 6, 2013	Feb 11-Mar 10	312.00	Vizag
PEC	55,000	Feb 6, 2013	Feb 11-Mar 10	312.10	Karaikal
STC	200,000	Feb 7, 2013	Feb 18-Mar 30	310.21	Mundra
MMTC	50,000	Feb 14, 2013	Feb 20-Mar 31	311.11	Kakinada
PEC	125,000	Feb 18, 2013	Feb 20-Mar 31	312.20	Krishnapatnam
STC	30,000	Feb 25, 2013	Mar 5-31	305.00	New Mangalore
MMTC	75,000	Mar 5, 2013	Mar 15-Apr 5	303.40	Kakinada
PEC	40,000	Mar 6, 2013	Mar 15-Apr 15	303.40	Karaikal
MMTC	35,000	Mar 11, 2013	Mar 15-Apr 20	305.08	Pipavav
STC	70,000	Mar 12, 2013	Mar 20-Apr 20	305.08	Chennai
MMTC	40,000	Mar 14, 2013	Mar 25-Apr 20	305.08	Mormugoa

PEC	75,000	Mar 15, 2013	Mar 25-Apr 15	305.27	Kandla
PEC	80,000	Mar 20, 2013	Mar 25-Apr 30	306.87	Krishnapatnam
STC	200,000	Mar 20, 2013	Apr 1-May 10	305.72	Mundra
PEC	50,000	Mar 25, 2013	Apr 1-30	305.00	Gangavaram
STC	30,000	Mar 26, 2013	Apr 5-30	NA	New Mangalore
MMTC	65,000	Mar 26, 2013	Apr 1-30	NA	Pipavav
PEC	70,000	Mar 28, 2013	Apr 1-30	NA	Vizag
PEC	80,000	Mar 28, 2013	Apr 10-May 20	NA	Krishnapatnam
PEC	80,000	Apr 2, 2013	Apr 15-May 15	NA	Kandla
MMTC	100,000	Apr 3, 2013	Apr 10-May 12	NA	Kakinada
MMTC	40,000	Apr 9, 2013	Apr 20-May 20	NA	Mormugoa
STC	70,000	Apr 16, 2013	Apr 25-May 25	NA	Chennai
TOTAL	2,245,000				

Note: STC- [State Trading Corporation](#); PEC - [Project Export Corporation](#); and MMTC - [Minerals and Metals Trading Corporation](#). In some tenders, quantity allocation has been lower than the quantity mentioned in the tender.

Source: Various trade sources.

Weak export demand has resulted in several tenders being cancelled or only partially allocated in recent months. Market sources report that in some of the recent tenders, the government agencies have negotiated with the highest bidders to raise the offer prices, particularly the exporters who have export commitments. While the government agencies are under pressure to allocate the remaining quota to create space for the upcoming MY 2013/14 procurement, market sources report that the government may have to remove the existing export floor price limit of \$300 per ton. Market sources report that about 2.9 million tons of government wheat had been shipped through the third week of March.

Provisional official trade statistics indicate that wheat exports for April 2012 to January 2013 reached 5.06 million tons, with the major export destinations being Bangladesh, South Korea, U.A.E., Yemen, Indonesia, Thailand, Oman, Tanzania, Djibouti and Philippines. Exports during February-March 2013, mostly of government wheat, should take MY 2012/13 wheat exports to 6.5 million tons.

Government Allows 5 Million Tons of Direct Export by Private Trade ...

On March 7, 2013, the Group of Ministers (GOM) headed by Agriculture Minister Sharad Pawar approved exports of 5.0 million tons of government-held wheat from Punjab and Haryana by private traders. Recognized private exporters will be allowed to export 2012/13 wheat stocks from Food Corporation of India warehouses in Punjab and Haryana. The export allocation will be done through a

bidding process with the floor price set at INR 14,800 (\$274) per ton, calculated as INR 13,200 (MSP plus transport from market to warehouse) plus 12.5% state taxes. The exporter/trader will have to arrange and bear cost of transportation for moving the grain from the government warehouses to seaports, unloading at seaport and FOBing charges. The export floor price is nearly the same as the open market sale price for the wheat to the local millers (INR 14,840 per ton), but significantly below the government cost of INR 19,100 (\$354) per ton. At the current floor price, the total FOB cost of government wheat for private trade is estimated at INR 17,600 (\$326) per ton after accounting for the cost of moving the wheat from the warehouse to seaport (INR 1,900/\$35 per ton) and unloading/FOBing charges (INR 900/\$17 per ton).

.... But No Takers under Current Terms

Trade sources report that the government's floor price for old crop wheat is too high to be viable for exports due to weak international prices and expected availability of new crop wheat at lower prices. The government wheat being exported through parastatals is currently selling much lower, around \$305 per ton, for delivery in March/April. Private traders have made some forward sales of open market wheat of the new MY 2013/14 crop at prices ranging from \$292 to \$295 per ton FOB for the Southeast Asian markets for April delivery.

Given the outlook for another record crop, local wheat in the open market in Uttar Pradesh is expected to be available during the peak marketing period of April-July at around INR 12,500-13,000 (\$231-241) per ton. After accounting for transport/rail freight (INR 1,500-1,800 per ton) from Uttar Pradesh to Gujarat ports and unloading/FOBing charges (INR 800-900 per ton), the open market wheat will be available for export at around INR 14,800-15,700 (\$274-291) per ton FOB seaport. The open market MY 2013/14 wheat is likely to be better in quality than the year-old MY 2012/13 government wheat. In addition, the Food Corporation of India's requirement of 100-percent advance payment for the consignment even before it's lifted from the warehouse is likely to be another major disincentive for the private trade to source government wheat for exports. With the government floor price for old crop wheat simply too high to be attractive for private trade, the government has not been able to work out the modalities for exports under the new scheme more than three weeks after approval of the Group of Ministers.

Lower Floor Price...

Given the historically unprecedented pressure of massive grain stocks and lack of sufficient storage space, government will have to explore measures for improving the viability of exports of government wheat. The current floor price of government wheat for export through direct sale to private trade (\$274 per ton ex-warehouse in North India) has to be significantly lowered for exports to be feasible. However, export of government wheat at prices below the open market sale price for local millers would likely be strongly opposed by local wheat millers and opposition political parties. Market sources report the government may contemplate open auction of government wheat at lower floor prices without end-user conditions, i.e., the auctioned wheat could be bought either by local millers or exporters. This would result in a significant increase in the food subsidy burden, which has already bloated to an estimated at INR 850 billion (\$15.7 billion) in Indian fiscal year (April/March) 2012/13 (see [IN3018](#)).

Export Subsidy to Bulge Further...

Sources report that the Ministry of Finance has estimated the subsidy burden for exports of 4.5 million tons of wheat through the government parastatals at INR 13 billion (\$241 million) and 5.0 million tons of wheat directly by private trade under the proposed new scheme at INR 4 billion (\$7.4 million).

Under the current arrangement of exports by the government, wheat is offered at FOB cost (see Table 3) at seaport, wherein the government bears the additional cost of transportation/rail freight (\$28-35 per ton) and unloading/FOBing (\$17 per ton). Consequently, the price the government receives for exported wheat is significantly lower than the cost of wheat to the government (\$354 per ton). Indeed, export sales in recent months have been below the open market sale price for local millers (\$274 per ton) in North India. If the current floor price is lowered or removed under the proposed scheme of direct sales to private trade ex-government warehouse, the export subsidy is likely to increase significantly over the current government estimate and exacerbate the government fiscal burden besides raising concerns among the other wheat exporting countries.

RICE

Procurement and Stocks Up

MY 2012/13 rice procurement by the government through March 24, 2013 was slightly higher at 29.2 million tons compared to 28.6 million tons last year during the corresponding period. Procurement has been relatively strong in the northern and eastern states, but lagging in the southern states. With additional procurement likely to continue in the southern and eastern states, government rice procurement is likely to be around a record 36 million tons, but significantly lower than the government's target of 42 million tons on relatively strong domestic prices and lower production.

Table 4. India: Government Procurement of Rice by State

State	MY2012/13 ²	MY 2011/12	MY 2010/11	MY 2009/10
Punjab	8.56 (7.73)	7.73	8.64	9.28
Andhra Pradesh	3.97 (4.55)	7.54	9.61	7.55
Chhattisgarh	4.80 (4.11)	4.12	3.75	3.36
Uttar Pradesh	2.17 (2.99)	3.36	2.55	2.90
Odisha	2.68 (1.88)	2.87	2.47	2.50
West Bengal	1.11 (0.98)	2.04	1.31	1.24
Haryana	2.60 (2.00)	2.01	1.69	1.82
Tamil Nadu	0.44 (1.34)	1.60	1.54	1.24
Bihar	1.06 (1.21)	1.53	0.88	0.89
Madhya Pradesh	0.90 (0.63)	0.64	0.52	0.26
Others		1.61	1.25	1.00
Total	29.20 (28.55)	35.04	34.20	32.03

Note ²: Total procurement as on March 24, 2013. Figures in parenthesis are last year's procurement for the corresponding period.

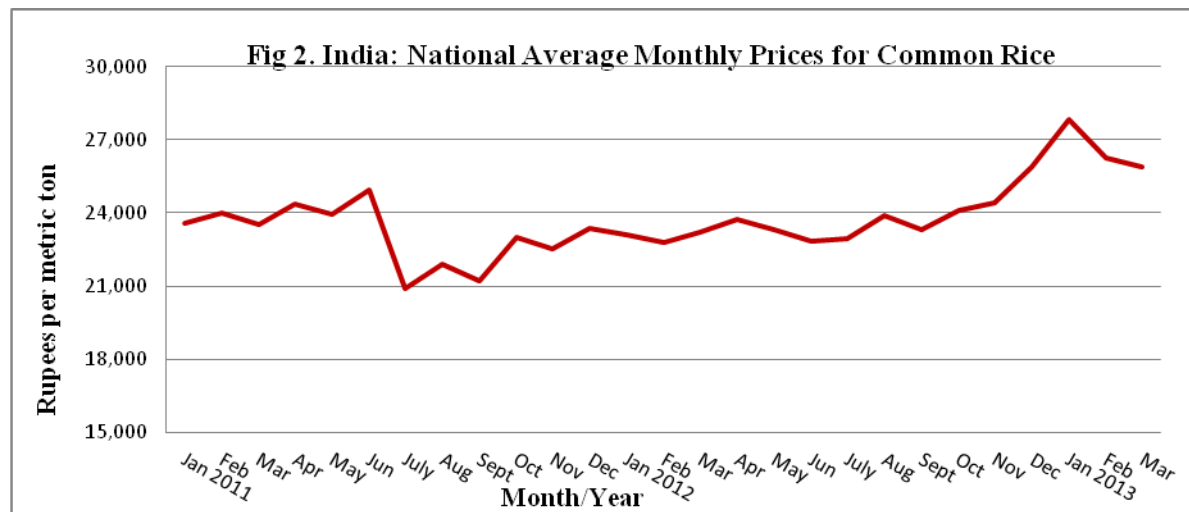
Source: Trade Sources for MY 2013/14 and Food Corporation of India for MY 2012/13 and 2011/12

As in the case of wheat, government-held rice stocks on March 1, 2013, are estimated at a record 35.8

million tons compared to 33.2 million tons a year ago, and are estimated to have swollen to 35.9 million tons on April 1, 2013, more than double the desired government stocks of 14.2 million tons.

Domestic Prices Ease

Domestic rice prices have started to ease after peaking in January, but are still about 12 percent higher than last year's levels.

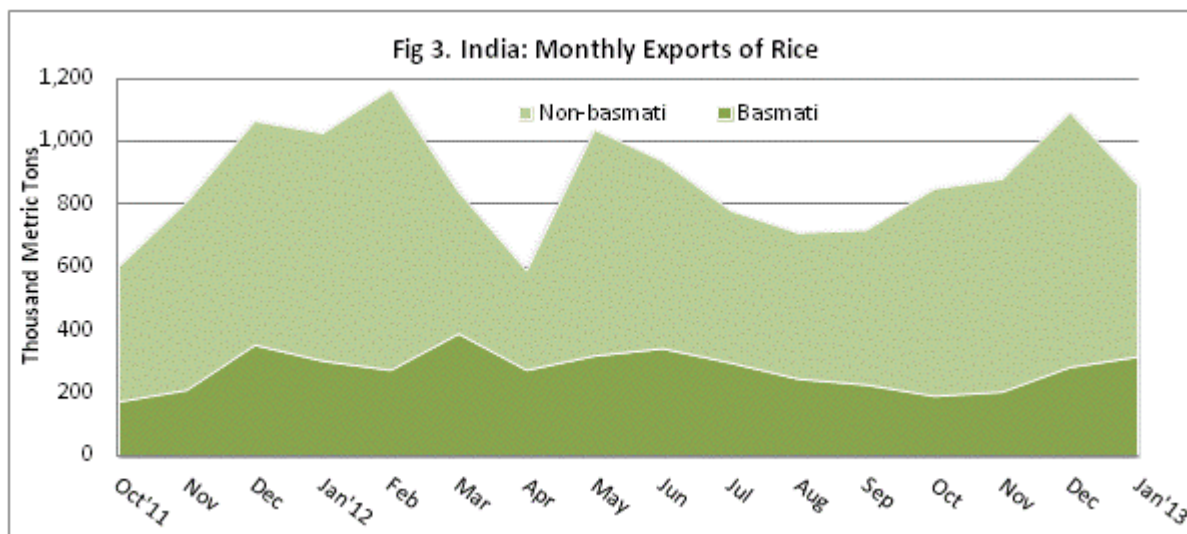


Source: Agmarknet, Ministry of Agriculture, GOI.

Higher domestic prices during the current season can be largely attributed to the higher government minimum support price (MSP), raised by nearly 16 percent over last year. As the government procures a significant share of production at MSP, domestic prices in MY 2012/13 are likely to remain firm compared to last year. However, the government is closely monitoring the inflationary domestic rice prices, and would intervene in the domestic market through increased allocation of rice from its “more-than-sufficient” stocks through the Public Distribution System (PDS) or open market sales if prices escalate.

Exports Weaken

Market sources report that Indian rice exports have slowed since the beginning of CY 2013 on relatively weak demand for non-Basmati rice (especially white rice) and relatively firm domestic prices. According to preliminary official statistics, rice exports in January 2013 declined to 864 thousand tons (320 thousand tons Basmati and 544 thousand tons non-Basmati rice) from 1.1 million tons in December 2012 (287 thousand tons Basmati and 809 thousand tons non-Basmati rice).



Source: Directorate General of Commercial Intelligence, Ministry of Commerce, GOI.

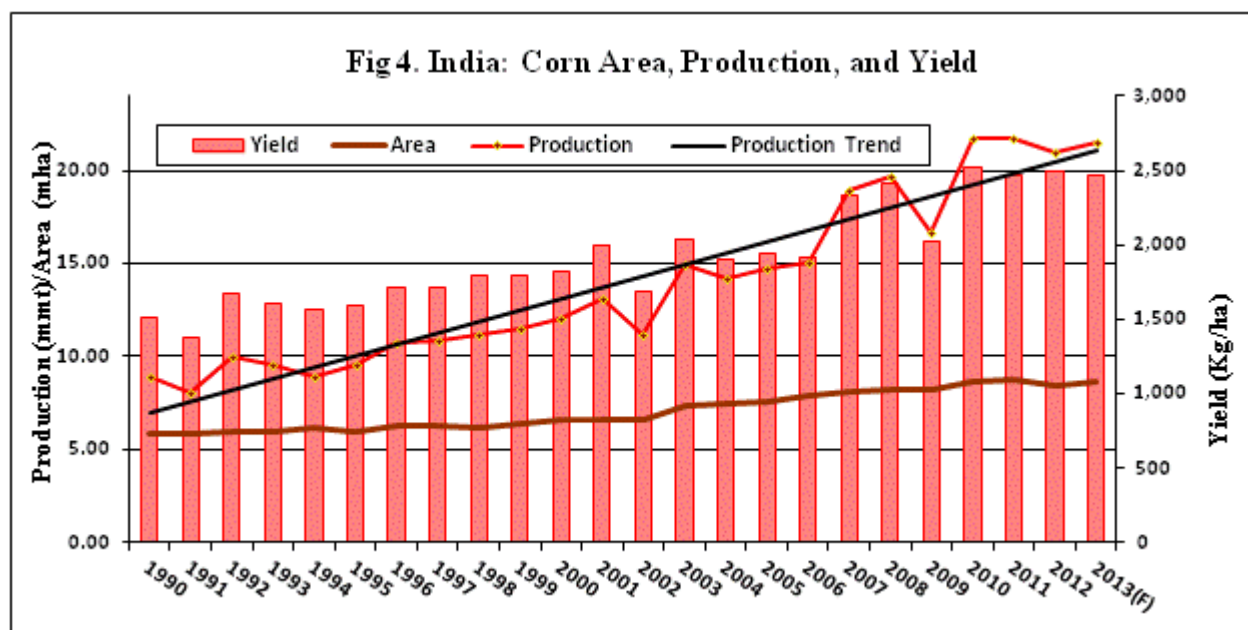
Exports of non-Basmati white rice are facing stiff competition from other competing origins, like Vietnam, Myanmar and Pakistan. Currently Indian non-Basmati white rice is quoted at around \$445 per ton for 5-percent broken and \$380 per ton for 25-percent broken. However, exports of parboiled non-Basmati and Basmati rice are steady on competitive prices vis-à-vis other origins. Consequently, CY 2013 rice exports are likely to reach 8.1 million tons, compared to last year's record 10.6 million tons.

CORN – THE INDIA MAIZE SUMMIT 2013

On March 21-22, 2013, the [Federation of Indian Chambers of Commerce and Industry](#) (FICCI) and [National Commodities and Derivatives Exchange](#) (NCDEX) organized the *India Maize (Corn) Summit 2013 - Multidimensional Approach for Outlook, Implications and Perspective* in New Delhi. The event was very well attended by representatives from the local corn industry, researchers and policy makers. **The following is an overview of the event's presentations, and does not reflect analysis of this office.**

Production Scenario

Following the 'Green Revolution' in wheat and rice crops in late the 1960's, cotton, corn and long grain Basmati rice also experienced significant production growth. Corn production has nearly doubled from around 12.0 million tons in the early 2000s to over 21 million tons today. This remarkable production growth has been largely driven by adoption of single cross hybrids in the late 1980's and continued strong growth in demand from the domestic poultry and starch industries and exports.



Despite the strong production jump, Indian corn yields are still significantly below the corn yields of major corn producing countries like the United States, China, the E.U., Brazil and Argentina and also world average. Most speaker believe that there is significant scope for an increase in India's corn production by increasing area under hybrids (currently only 54%), adoption of better genetics (including superior germplasm and biotech corn) and improved agronomic practices. There is wide yield variation state by state depending on the level of adoption of hybrids and availability of irrigation. Upgrading production technology in the lower yielding states like Rajasthan, Uttar Pradesh and Madhya Pradesh could raise total corn production significantly.

About 6.5 to 7.0 million corn farmers grow corn, largely under rainfed conditions (only 24% irrigated) on small holdings of 1-2 acres. Expansion of area under hybrids is constrained by inadequate irrigation facilities, lack of appropriate hybrids for rainfed conditions, and inferior germplasm due to inadequate IPR enforcement. The Government of India has not approved planting of any bioengineered corn, although there are some events in the pipeline for approval. The small resource poor farmers have limited ability to adopt modern and capital intensive agronomic practices.

Domestic Demand to Outstrip Production Soon

One speaker noted that domestic demand for corn is likely to grow to 30 million tons by 2017 and 44 million tons by 2022, largely driven by the strong growth in poultry industry. Demand for corn by the poultry industry is fueled by consumer demand for poultry products on rising incomes and growing demand for meat and other protein-rich foods. Indian meat consumption is largely of poultry meat and products. Beef is prohibited for the largely Hindu population, mutton and fish/marine products are in short supply and pork is prohibited both for the Muslim population and considered 'unhygienic' by the majority Hindu community.

Table 5. India: Demand for Corn By 2022

Poultry feed	22.9
Starch	7.1
Direct consumption	2.9
Cattle feed	7.1
Other	4.3
Total	44.3

Source: KPMG Study

At the current technology level, multiple speakers asserted that domestic demand will outstrip production by 2018/19. Consequently, domestic production of corn has to respond to the growth in demand.

Drivers of Future Growth in Production

Some speakers were optimistic that Indian corn producers would be able to respond to the demand growth provided the right technology and policy support are provided. Adoption of existing improved production technology (single cross hybrids, improved agronomic management) in the lower yielding states like Rajasthan, Uttar Pradesh and Madhya Pradesh could raise overall corn production significantly, but may not be sufficient to meet demand. Production could be doubled from current planted area of 8.8 million hectares if the farmers shift to improved single cross hybrids.

Driven by strong domestic demand and a more efficient private marketing system, higher corn prices could encourage farmers to bring more area under “potentially” more remunerative and sustainable corn. Due to the growing problems of ground water depletion and soil degradation under the existing “Rice-Wheat” rotation in north India, there is considerable scope for shifting area to “lower resource” intensive and “higher photosynthesis” efficient corn. Under the recently launched crop diversification project, the government is seeking to shift about 1 million hectares of area under rice in Punjab and Haryana to corn. However, farmers are concerned about shifting to corn due to the absence of a government minimum support price (MSP) procurement system for corn, as exists for rice and wheat. The private sector will be critical for marketing of corn produced under the proposed diversification initiative.

Participants observed that biotech corn currently faces significant challenges under the existing biotechnology regulatory system and the adverse media campaign by anti-biotech groups. However, all leading corn producing countries, including neighboring China, have adopted biotech corn and are realizing significantly higher yields and benefits to the farmers. Growing rural labor shortages and need for improved water use efficiency could be efficiently tackled by adoption of biotech events like herbicide tolerance in corn. Growing domestic demand and impending imports could force India to look at approval and adoption of GM corn in the near future.

Dr. Ashok Gulati, Chairman of the government’s Commission on Agricultural Costs and Prices, emphasized the need for a stable and predictable trade policy to support future growth in corn production. Temporary export bans or imposition of high import duties could choke or block the international market resulting in severe market uncertainties and disruptions, which in turn could harm domestic corn producers and users (poultry, starch and other processors).

Improved Infrastructure Required to Support Higher Corn Business

Currently, most corn marketing, storage and distribution are handled manually in jute bags of 50 kg, same as rice and wheat. Post-harvest losses in corn vary from 10 to 12 percent of production, which could be easily reduced significantly by improved handling facilities. Indian corn exports occasionally face the problem of higher levels of aflatoxins due to improper drying of corn, typically sun drying in the open without mechanical dryers. One speaker observed that not one mechanical corn drier exists in India.

Major challenges facing improvement in the post harvest handling include:

- quality variation due to small corn lots marketed by individual farmers, each producing a different variety,
- highly fragmented supply chains,
- regional and spatial distortion in marketing due to variation in state tax policies,
- higher interest and capital costs (14-16 percent per annum)
- year around availability of corn from various producing regions makes storage unattractive, and
- lack of adequate transportation and logistical infrastructure.

The higher domestic demand and “consequent” production of corn will require integrated bulk handling and storage systems. The other drivers for change to mechanized handling will be the rising labor (mechanical handling) and land costs (vertical silos against flat warehouses).