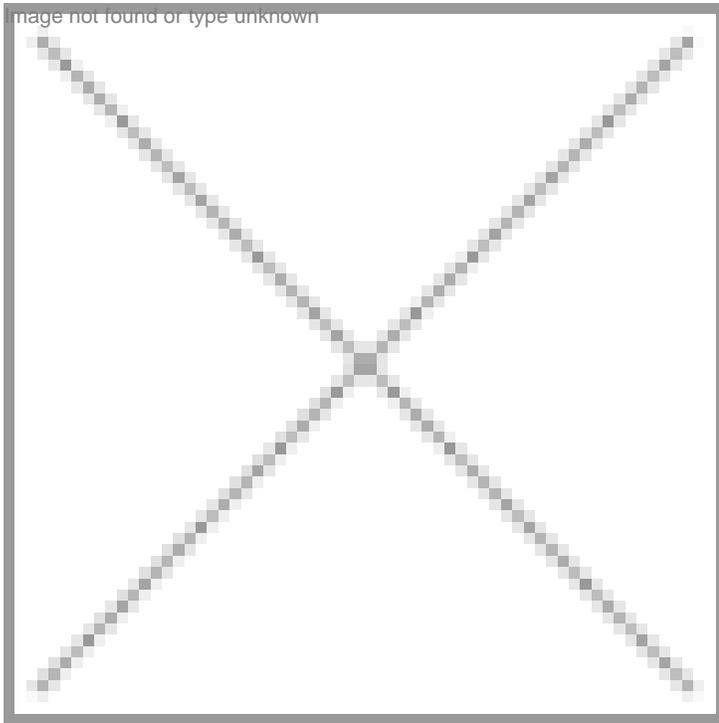


BioAgri is the Fastest Growing Sector

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The BioAgri sector has come of age in India. In 2004-05, Rasi Seeds became the second company in India to make commercially available Bt cotton. With the entry of Rasi, the entire Bt cotton seeds business changed. The release of RCH 2 Bt in 2004 by Rasi has created greater confidence in the farmers about Bt technology. The farmers have understood that they get maximum benefit using hybrids with Bt technology and there is huge demand.

The total Bt cotton seeds revenues in 2004-05 was Rs 253.3 crore, a record growth of 369 percent compared to Rs 54 crore in 2003-04. A total of 15.8 lakh packets of seeds containing 450 grams were sold. The total seeds sale was 7.11 lakh kg. The "Bollgard" Bt cotton seeds were sold in six states-Andhra Pradesh, Tamil Nadu, Karnataka, Gujarat, Madhya Pradesh and Maharashtra. Rasi Seeds in 2004-05 reported total Bt cotton seeds sales of Rs 86.9 crore. Mahyco-Monsanto, the first company permitted to sell Bt cotton, was estimated to have grown over 208 percent to end the year at Rs 166.4 crore.

The total bioagri sector in the country was estimated at Rs 330 crore, up from Rs 130 crore in 2003-04. The Bt Cotton seeds sales only accounted for 76.75 percent of this market, bio pesticides, biofertilizers and markers accounted for the rest. International Panacea and Biotech International were the two major companies in the biopesticides and biofertilizers category. International Panacea reported sales of Rs 17 crore, while Biotech Biotech International's sales stood at Rs 10.64 crore.

This year would be a watershed year for Bt Cotton. Bt cotton gets green signal in several other states. The apex regulatory body, the Genetic Engineering Approval Committee (GEAC), approved six new varieties of transgenic cotton in the northern states of Punjab, Haryana and Rajasthan. With this decision, transgenic cotton will now be commercially cultivated in the North for the first time. These approved genetically modified Bt cotton hybrids include MRC-6301 and MRC-6304 of the Jalna-based Maharashtra Hybrid Seeds Company (Mahyco), RCH-134 and RCH-138 of the Coimbatore-based Rasi Seeds and Ankur-651 and Ankur-2534 of the Nagpur-based Ankur Seeds.

Only three Bt cotton hybrids of Mahyco (Mech-162, Mech-184 and Mech-12) were given the approval in 2002. In 2003, it was Central Cotton Research Institute of Rasi Seeds that was given the green signal for cultivation in Central and Southern India. The ICAR verified the allelotype of transgenic Bt cotton. The total yield of Bt cotton hybrids approved for cultivation has climbed up to 17. And these can be grown in the three zones. While the North zone includes Haryana, Punjab and Rajasthan, Central India includes Maharashtra, Gujarat, Madhya Pradesh and Chhattisgarh, South zone includes Andhra Pradesh, Karnataka and

Tamil Nadu

Rakshak

Nuziveedu Seeds Ltd, which launched its Bt versions of its cotton hybrid varieties, Bunny and Mallika, announced that it has prepared about five lakh packets of Bt hybrid seed for cultivation in the kharif season. Of these, 1.2-1.5 lakh packets will be sold in Andhra Pradesh. The Bt seed pack, including the conventional seed, has been priced at Rs 1,820.

Kavach F-1 Hybrid Kapas a€" 151, Monsanto technology rules the roost. The Bt cottonseeds, originally developed by Monsanto in the US and marketed under the brand name of 'Bollgard', is being marketed by the joint venture company Mahyco Monsanto Biotech India Ltd. The company has transferred the Bt technology to over 15 Indian seed companies like Rasi, Ankur, Emergent Genetics, Ajeet, JK Seeds, Krishi Dhan, Vikram Seeds, and Tulsi Seeds. The trials conducted by these seed companies are at different stages. Each of these companies pay Monsanto about Rs 1200 per packet as royalty.

BT Cotton Varieties	
Company	Approved Bt
Ankur Seeds	Ankur-09
Ankur Seeds	Ankur-2534
Ankur Seeds	Ankur-651
Mahyco-Monsanto	Mech-12 Bt
Mahyco-Monsanto	Mech-162 Bt
Mahyco-Monsanto	Mech-184 Bt *
Mahyco-Monsanto	MRC-6301
Mahyco-Monsanto	MRC-6304

Indigenous technology and technology from Sygenta are also being considered. Companies like Indo American Hybrid Seeds and Mahyco-Monsanto are working on this front. Moreover, Metahelix is getting ready with its own Bt Cotton. In October 2003, National Botanical Research Institute (NBRI), Lucknow, announced that its technology was ready for transfer and also licensed the same to a consortium, Swarna Bharat Biotechnics Pvt Ltd (SBBPL), for transfer. The indigenous Bt technology and its likely commercialization in the current regulatory system are likely to happen in 2007-2008.	MRC-6322 MRC-6918 NCS-145 Bunny Bt
Nuziveedu Seeds	NCS-207 Malika Bt
Rasi Seeds	RCH-118
Rasi Seeds	RCH-134
Rasi Seeds	RCH-138
Rasi Seeds	RCH-144
Rasi Seeds	RCH-2
Rasi Seeds	RCH-20
Rasi Seeds	RCH-317
Rasi Seeds	RCH-368

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The regulatory system has been on an evolution path. The regulatory system is unable to do anything about the spread of the illegal Bt cotton, which is spreading at an unabated and alarming rate. The illegal Bt cotton occupies more area (about 25 percent of total hybrid cotton area) than the legal version (about 10 percent of total hybrid cotton area) according to some reports. It is widely felt that deregulation of transgenic technologies like Bt cotton (Cry1 A(c) gene in cotton) where bio-safety is proven and approved for commercial use, as it is the case in countries like the US and Australia, is the solution for several of the regulatory problems with transgenic crops like Bt cotton in India. With the National Biotech Policy in sight, most of them are hopeful that things will change. And 2006 would be a landmark year for Bt cotton.