

Three Years of Bt Cotton

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The latest study of the growth of biotech crops by International Service for the Acquisition of Agri-biotech Applications (ISAAA) pointed out that Bt cotton crop area in India has increased 400 percent and Bt cotton was cultivated in over 1.3 million acres of land. This is a good sign considering the fact that the crop was allowed for commercial production in April 2002. Three Bt cotton hybrids of Mahyco Hybrid Seed Company Ltd, MECH-12, MECH-162 and MECH-184 were the first to be allowed for commercial cultivation. Besides being engulfed in controversies, the question was would the farmers lap this technology as the seeds very expensive compared to the non-Bt seeds?

“In the past three years, it has been unambiguously proven that the Bt cotton technology is a farmer and environment-friendly technology that substantially improves the net economic return to the cotton farmer of this country both by means of savings in the cost of pest control and additional income generated through enhanced yield (yield that would otherwise been lost to pest damage) and improved cotton quality,” remarked Dr P Sateesh Kumar, director, Prabhat Agri Biotech Ltd. However, the experience of the past three years has also clearly demonstrated that the value of the technology will be realizable only when it is incorporated in the right genotype (hybrid). This is an overwhelming feeling within the industry. Added Dr Kumar, “Most of the debate and controversy in the past three years about Bt cotton was due to people not being able to segregate the impact of the technology from that of the genetic potential of the hybrid in which it was being delivered to the farmer.” However, this confusion has been cleared in the past year with the availability of the technology in a hybrid like RCH2 and the likelihood of commercial release of the Bt version of popular hybrids like Bunny, Mallika and Ankur 651 in Kharif 2005. This will make the impact of the technology more perceptible.

During kharif 2004, 13 lakh packet of “Bollgard” Bt cotton seeds were sold in six states-Andhra Pradesh, Tamil Nadu, Karnataka, Gujarat, Madhya Pradesh and Maharashtra. According to Ranjana Smetacek of Monsanto India, “Bt cotton seeds were sold to over 350,000 farmers in 2004.” Market researcher, IMRB is conducting a survey to assess the performance of Bt cultivation in 2004. According to various other sources, Bt cotton has grown to 1.3 million acres in Kharif

2004, from 72,000 acres in 2002, when it was released for commercial cultivation, and 2,30,000 acres in 2003. Bt cotton represented for about 11 percent of the hybrid cotton area.

Further there has been considerable savings in insecticidal application ranging from Rs 1,300 to Rs 2,500 per hectare according to the International Cotton Advisory Committee (ICAC), Washington. The Bt hybrids also resulted in additional income of Rs 15,000-50,000 per hectare.

Monsanto rules

For most part of these three years, it was Mahyco, which dominated the market as it was the only player permitted to commercially sell the seeds. Dr KK Narayanan, managing director, Metahelix, said "The area under Bt cotton is expected to go up substantially in the coming year mainly due to more rains in the southern belt, introduction of more Bt gene-incorporated popular cotton hybrids by companies like Mahyco, Rasi and Ankur." And increasing awareness among farmers about the effectiveness of Bt cotton in controlling the biggest cotton pest, boll worms is also supporting the companies to sell more Bt cotton seeds in the country. "Many Indian companies who have got the Bt technology from Monsanto are already conducting trials to launch their brand of Bt cotton seeds in North India," Dr Kumar said.

Spurious Bt Cotton Seeds in Gujarat. Bt cotton seeds were originally developed by Monsanto in the US and marketed under the brand name of *Brakshak*, which has been 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, Krishi Dhan, Vikram Seeds, and Pusa Seeds. The trials conducted by these seed companies are at different stages.

At present Rasi and Mahyco hybrids have already hit the market. Ankur is expected to get the approval for commercial release for its hybrids in 2005. Some more hybrids of Rasi and Mahyco are awaiting the GEAC green signal. "There are four approved Bt cotton hybrids now in commercial cultivation, three from Mahyco and one from Rasi Seeds and it is very likely that two hybrids from Nuziveedu Seeds Ltd and one of Ankur Seeds will be approved for commercial cultivation in 2005," said Dr Kumar.

Of Cry 1 A gene, here's the story. Though Monsanto technology has been lapped by most of the seeds companies, indigenous technology and technology from *Brakshak* are also being considered. Companies like Indo American Hybrid Seeds and Metahelix are working on this front.

Brand Name 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. However, if the regulatory system is rationalized it could happen earlier than that felt Dr Kumar and Narayanan.

The Bt cotton is presently priced at Rs 1600. Will the prices drop down? Dr Kumar said that the current high price of the Bt cotton technology was due to the monopoly of the technology. If the policy makers are interested in seeing that the technology is available to the farmer at a reasonable price, then the regulatory agencies should expedite the approvals for alternative technologies of similar type.

Kavach F-1 Hybrid Kapas

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Changing regulations

Suraksha â€" Hybrid Cotton Seeds The regulatory system is evolving but it was felt that the evolution is too slow. 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. "Containing the spread of illegal Bt cotton should have been the priority of the regulators, however, nothing is being done in the regard," say some of the seeds companies. 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.

The major reason for the inordinate delay in technology being available to the farmer in good hybrids is the current regulatory system. "The current regulatory system is releasing every hybrid on a case-by-case basis after two-three years of mandatory testing for assessing purely the agronomic potential of the hybrid," said Dr Kumar. However, if the technology had been deregulated after the clearance of bio-safety and varietal release was done in accordance with the existing seed laws for varietal release, then the technology could have reached the farmers in the hybrids of their choice much faster. The inexplicable and inordinate delays by the regulatory system in releasing the technology in good hybrids has led to the mushrooming of the illegal Bt cotton. Dr Kumar added further, "In fact, today in the country 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)."

At a recent meeting of the Genetic Engineering Approval Committee (GEAC) in January, the representation received from the All India Crop Biotechnology Association regarding the rampant production, sale and cultivation of illegal Bt seeds in Gujarat and other cotton cultivating states was discussed at length. Representative of the ministry of agriculture (MoA) and member secretary GEAC briefed the Committee on the action taken report by MoA and ministry of environment and forests (MoEF) respectively. The representative of MoA pointed out that the existing Seed Act does not cover transgenic crops. He therefore requested GEAC to authorize the Seed Inspectors to confiscate illegal seeds and also authorize laboratories for testing as per the provisions of Rules 1989. The committee also requested the chairman of GEAC to write to the chief secretaries of the concerned states to take necessary action in controlling the production, sale and cultivation of illegal Bt cotton seeds.

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.

Ch. Srinivas Rao with inputs from Narayan Kulkarni

â€œThe challenge lies in creating awareness among farmersâ€œ?

- Muthu Gounder Ramasami, MD, Rasi Seeds (P) Ltd

It is three years now that Bt cotton has been introduced. How is Bt cotton progressing?

Bt cotton is doing well now. After the initial two years of setback, the release of RCH 2 Bt in 2004 has created greater confidence in the farmers about Bt technology. The farmers have understood that they get maximum benefit using hybrids with Bt technology as the yield potential is higher.

How have things changed on the licensing conditions after the first release of Bt cotton?

There is a definite change in the licensing conditions and the system is getting streamlined. Yet the licensing system should take into account the demand for hybrids. More hybrids are needed to meet the requirements of farmers in India, which has the largest area of cotton under cultivation in the world.

Rasi Seeds is the second company in India to make commercial hybrids.

How much time did it take for Rasi to get the license?

It took us two years to get the first product approved since RCH 2 is a notified hybrid. Other hybrids are likely to take three years for approval.

What has been your experience in getting the licenses and introducing your products in the market? How is your Bt cotton performing?

Since there were lots of controversies over the technology and over the first released hybrids, we at Rasi had to organize a very large number of trials. Besides, extensive promotional activities were organized to change the perception of the farmers during 2003. We created a good awareness campaign among the farmers and as a result of this, Rasi could cover 400,000 acres in the first year itself.

company is making its mark in the market.

What are your challenges with respect to marketing your product ?

The real challenge lies in creating awareness on the economic benefit among the farmers. The impression on the minds of the farmers is that the cost of Bt seeds is high. This has to be removed by effective demonstration of the economic benefit. Rasi does not foresee any threat immediately as we have very strong hybrids in the pipeline.

How is Rasi Bt cotton faring and where do you see yourself in terms of the market potential and share in the next few years? What is your distribution model?

Rasi Bt cotton performs very well and satisfies the expectation of the farmers. The market potential is expected to go very rapidly and nearly 80-90 percent of the hybrid area will be covered in the next three years. We are aiming to take the maximum share. The country's total requirement may rise to a level of 15 million packets and we are ambitious to develop a big market.

When do you feel that the prices will come down? What are the other Bt products in the pipeline?

The Bt cotton is priced at Rs 1600 per container of 450 gm. The prices are based on market forces. It will react as per the demand. We have two hybrids for North India, four hybrids for Central India and two hybrids for South India. These hybrids are expected to get the regulatory approval during Kharif 2005.

Do you have a research lab and what are the areas of research?

We have a research farm which is spread over an area of about 110 acres, for conventional breeding of crops like cotton, maize and vegetables. We also have a biotechnology laboratory which is equipped to handle the testing of Bt gene at various stages of transfer of Bt gene into our hybrids and also to test the quality of the seed going into the market. We have created an additional facility for DNA finger printing and genetic purity test. We also plan to expand further and initiate biotechnology work on other crops such as vegetables, paddy and maize.

Who are the other major competitors for you now and when do you see the competitor's Bt products in the market place?

The major competitors are Mahyco and Ankur Seeds. While Mahyco's products are already in the market, Ankur's Bt products are expected to be launched this year. The number of Bt Cotton players will increase from 2006.