

## Bt cotton is better, feel Dharwad farmers

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**The** success of Bt cotton seeds in 2002 has brought some cheer among farmers of Garag, Lokur and Hangarki, small villages near Dharwad in Karnataka. They are again looking at cotton cultivation after having reduced the acreage under cotton because of high cultivation costs with no margins. Here is what they had to say. In the ensuing pages, we also bring reactions from farmers hailing from other states as well.

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Basappa Barki is a small farmer in a village called Hangarki, about 20 km from Dharwad in Karnataka, owning 2.5 acres of land. He has been cultivating cotton for years but in the 1990s due to low returns on investment. However, he restarted cultivating cotton in 2002, not with regular hybrids but with the newly launched Bt cottonseeds.

"I came to know about this new Bt cotton seeds from an advertisement in a local newspaper in 2002. Since then I have been cultivating Bt cotton. Due to the drought during 2003 and 2004, we could not get a good crop. Otherwise I used to get 10-12 quintals of cotton as against only five quintals during drought, noted Basappa Barki.

On the contrary, Ashok Desai, a businessman who owns 100 acres of farmland in the same village, has different views. He said, "I was cultivating non-Bt cotton (DCH variety) in about 40 acres during mid 1990s. Not satisfied with its performance (fall in the yields) over the years and other problems such as labor, I looked at other cash crops, mainly sugarcane during the early 2000 by reducing the acreage to cotton. When I came to know about the new Bt cottonseeds in 2002, I tried it the same year."

He added, "I came to know about the launch of new Bt cotton seeds through Internet and tried with Mahyco Bt variety on three acres. The yield was good with about 8-9 quintals per acre. As the Bt cotton has short staple, the price for this was on the lower side. It fetched Rs 2,000 per quintal, comparatively lesser than the non Bt variety."

Ashok Desai continued, "Though the yield was good, I could not continue with Bt cotton from 2003 as it was not cost effective. The failure of monsoon and regular labor problems encouraged me to look at other cash crops like sugarcane in the irrigated land."

The same is not true in case of Sankappa Shighihalli, who has 150 acres of dry agriculture land in Garag village, where Monsanto has a 150-acre field trial facility. Sankappa has started sowing Bt cotton only in 2006 kharif after recommendations from his neighbor Bhimappa Tigadi who has been using Paras Brahma since 2004 kharif season.

Incidentally Garag has had the history of being the sole producer of the National Flag and the hand-woven khadi for the manufacture of National Flag since 1956. Sankappa Shighihalli said, We purchased only three packets of Paras Brahma Bt cotton, that too at the fag end of the sowing season i.e. during July 2006. He happily adds, "We are getting good yields with good returns too." On asking about the yields, Sankappa noted, 25 quintals for three acres. "This year the rates for cotton are on lower side and we got Rs 2,250 per quintal."

Shighihalli has been cultivating soya, maize, groundnut, onion, potato and sugarcane along with cotton (non-Bt variety) in about five-six acres in his dry agricultural land. To get good returns on investment, he has been spraying pesticide 10 times. For each spray, he has been spending Rs 500 per acre per spray. Now with the Brahma Bt, he said, "We just spray for two times during the entire crop season. Happy about adapting to this new Bt cotton, he said, "We have so far not come across any side effects of Bt cotton on animals as we have allowed small animals for grazing in our fields. This year we will increase the acreage for cotton to 5-6 acres.

Manjunath Shighihalli, the youngest brother of Sankappa, a teacher at a primary school in the same village, said, "The children have a lesson on the basics of biotechnology and its application. They are keen to know more about it and also DNA etc.

Sharing his views on the Bt cottonseeds, Bhimappa Tigadi said, "I was one among few farmers of Garag to get free Bt cottonseeds along with two other non-Bt varieties in 2004-05 for trials in  $\frac{1}{4}$  acre (10 guntas). After realizing the merits of this Bt cotton (Brahma) for two years, I decided to buy the Bt cottonseeds at Rs 750 per packet in 2006. Now most of the farmers in our village are using this new Brahma Bt variety.

Bhimappa Tigadi said, "During the last kharif season, I had cultivated Brahma in four acres and one acre with DCH variety. The yield for the Brahma variety was good with 12-quintals/acre while for DCH variety, I got just five quintals/acre. The rate for Brahma is comparatively less against the non-Bt variety, which has long staple. In spite of this, I will go for more of Bt cotton this season due to less number of sprays and more yield.

Similarly Channabasappa Neeralakatti, a school teacher and also having a small agriculture land of five acres at Hangarki village has been sowing Bt cotton since 2005. He said, I purchased two packets of Bunny Bt for Rs 1800/packet in 2005 and thanks to the Supreme Court's intervention as we got the Bt seed packet at Rs 750/packet in 2006.

He further said, "It started with just three-four farmers in 2002. Now 90 percent of the farmers in our village are using Bt cotton seeds like RCH-2, Mallika, Brahma, Bunny Bt, Mahyco â€"Bt etc."

The situation is the same in Lokur village, a familiar name that came to limelight when the BBC crew members visited this small village to feature the Narasingannavaras, the largest joint family in India. The farmers in Lokur are now turning to Bt cotton.

It was Veerabhadragouda Patil, a progressive farmer with over 100 acres of agriculture land who brought cotton to this village for the first time in 1975 and also tried with Bt cotton in his fields in 1998 at a time when the Karnataka Rajya Raitha Sangha (KRRS) activists had burnt the Bt cotton trial fields in Bellary, as part of Operation Cremation Monsanto.

Mallangouda Patil, a son of Veerabhadragouda Patil, said, "My father was the first to introduce cotton to our village way back in 1975. Thereafter we were covering cotton in about 40-50 acres out of 100 acres of dry farmland. We used to get good returns initially. Gradually with fall in yields, increase in costs of cultivation and continuous drought-like situation pushed us to look at other crops like groundnut, potato, green dal etc. In 1998, our father also bought a packet of Bt cottonseeds when trials were going on and tried with new Bt variety without bringing it to notice of the other farmers.

"Again in 2005 we tried with Rasi's RCH â€"2 in one acre and the yield was satisfactory with 6-quintals/ acre. We increased the acreage in 2006 kharif by buying 12 packets of Mahyco's Bt cotton by paying at Rs 1,450 per packet. Drop in the price of

Bt cotton supported us to buy few more packets of the same variety that we distributed to other farmers in the village. We are happy with the performance of Mahyco's Bt (8-9 quintals per acre). The rate for this cotton was also good as we got Rs 2,200 per quintal."

Shivangouda, Mallangouda's brother, said, "This year we are not getting a good rate for cotton. Earlier the rates had crossed the Rs 4,000 mark. However, less number of spraying (twice per season) and good yields support us to look at this new Bt cotton."

Considering the positive results of Bt cotton, Mallangouda said, "Bt cotton is better over the non-Bt variety. And we are looking at covering about 20 acres with Bt during the coming kharif season."

Mahesh Kittur, a small farmer from Hangarki with 10 acres of dry agriculture land, wishes to shift to Bt cotton and he's not an exception. Kittur, who used one packet of Bunny Bt last year by buying it at Rs 750, said, "In the coming kharif season, I will buy two packets of Mallika and increase the area under cotton." Besides Basappa Barki, Kittur and Neeralakatti, other small farmers with land holdings of 5-10 acres such as Rudrappa Hulagannavar, Gurupadappa Solagad, Shankargouda Badiyavar have expressed happiness over the performance of Bt cotton and are looking forward to increasing the acreage under cotton in the coming years.

On the other hand, Mahadevappa Andi, a small farmer with 14 acres of land at Hangarki, who also does 'Lavani' (cultivating other' lands for rents or share cropping for specific period) was a bit unhappy with the way the seed companies treat the farmers. He cultivated cotton in about 5-6 acres with Bunny Bt in 2006.

An agitated Mahadevappa Andi said, "In 2005, Nuziveedu Seeds had organized 'Kshretrotsava' (a regional agricultural fair) on the fields of Channabasappa Neeralakatti, inviting farmers from the neighboring districts. It was a gathering of over 1,500 farmers. During that year they had regular field visits and regular plot supervision was done. As a result, more and more farmers bought packets of Bt cottonseeds the following year. In 2006 we came across uneven growth of the plant and also the size of the bud. In spite of our please to the companies, not a single representative turned up to help us."

Sharing his views on the issue, Channabasappa Neeralakatti said, "We were able to bring an agri scientist from the University of Agricultural Sciences, Dharwad, to our fields, who on observation told us that it might be due to mixture of different varieties of Bt cotton seeds taken from different fields/ plots.

Mahadevappa was not very convinced with the answer. He said, "I strongly feel about the possibility of mixing of spurious seeds with genuine Bt cotton seeds. He even questioned the seed firms for not making efforts in making the farmers aware of the situation and helping them in identifying the genuine Bt cotton seeds.

The above views from farmers clearly indicate that they are ready to accept the change and adapt the new technologies as long as they are benefited. They too have to move with the changing situations in a global village to lead a better living. Keeping this in mind, the companies, the governments and other related agencies should make sincere efforts in bringing about awareness on the latest technologies available for farmers who undoubtedly form the "backbone of our society.

Narayan Kulkarni in Dharwad

### **Punjab's Bt cotton cultivators are optimistic**

*Bt cotton was approved for commercial sale in the Northern part of India in 2005. With the widespread success of Bt cotton in the state of Punjab, it became a big election campaign tool in the recent assembly elections to mobilize mass farmer support for Capt Amarinder Singh, Chief Minister of Punjab. As the polls neared, Bt cotton was touted as the reason for the rising prosperity in the Malwa region (north-western Punjab). Here is a direct feedback from a Punjab farmer who has been growing Bt cotton in her fields for two seasons.*

Suman Taneja is a 45 year-old educated farmer hailing from Kandwala Amarkot village, about 8-9 km from Abhore at the Punjab-Haryana border, in district Firozpur, Punjab. In addition to managing her 20-acre field, this political science postgraduate with a bachelor in education (BEd), also teaches English to primary students in a nearby-recognized private school. She is a seasoned cotton farmer, growing cotton in the kharif season and wheat in the Rabi season along with some

fodder crops.

Suman's family has been growing cotton in their farm since Independence and she was among the first few farmers in her village to adopt Bt cotton in 2005, the year it was approved for commercialization in Punjab. "One of my cousin brothers is a research officer at the Punjab Agricultural University, Ludhiana. He was the one who had initially advised me to plant Bt cotton in 2005", she said. "That year, I experimented with Bt cotton (Rasi Seeds-RCH-134) in 5 acres. Though the seeds were expensive, about Rs 1,749 a packet, the yield was good. The plants achieved good height, demanded less water, and just one or two rounds of insecticide spray as compared to eight-10 round of sprays on the other regular varieties. The cotton balls were also bigger and softer. Even the workers doing the picking were happy as they managed to pick more cotton in a day."

When asked about how do the Bt cotton varieties compare with the non-Bt varieties, she clarified, "I was earlier planting hybrid cotton varieties. These also gave good yields but were quite susceptible to pests, in particular to the American Bollworm complex. Encouraged and enthused by the results that she saw in 2005, the following year she decided to increase the acreage of Bt cotton in her fields. In 2006, Suman planted Bt cotton (RCH-134, MRC-6301 and MRC-6025) on eight acres of land. She also tried an unapproved Bt cotton variety from Gujarat on 3.5 acres and the regular hybrid variety (from Rasi Seeds) on five acres. Once again, she was not disappointed with the yield from Bt cotton, although the weather turned bad with heavy rains and hailstorm at the time of the cotton-picking leading to a lot of ball dropping and wastage. "The yield was about 12 quintals/acre and if the weather had been good, it would have touched about 16 quintals/acre", she said. According to her, even the illegal variety gave good results, but it required a lot of water as compared to the Rasi Bt cotton variety.

Comparing and contrasting the upbeat mood of the farmers in Punjab today with that ten years ago, she commented, "Ten years ago, the cotton farmers were facing a grave problem due to the various pests, which used to damage the standing crop very badly. And they were not being controlled by any mechanism. Those were uncertain and trying times for us. The situation has vastly improved since the last four-five years with better hybrids, effective pesticides and now the Bt cotton."

"The main advantage with Bt cotton is that I can manage my fields better with significantly lesser sprays. There is less pest infestation leading to a good yield. Now I can be more relaxed, there is less tension and uncertainty and I can spend more time with my family."

But Suman strongly feels that the cost of the Bt cottonseeds should come down. "On an average, the hybrid seeds are available for Rs 400 per packet, whereas I had bought the Bt cotton seeds for Rs 1,700-1,750 in 2005 and Rs 1,140 in 2006 per packet. And it takes two packets to sow one acre of land. At the time of sowing, it becomes difficult to arrange money to buy Bt seeds in bulk. Also, many a times it rains just after sowing and in such cases we have to prepare the fields again and do re-sowing. The cost of the seeds should be less so that even the small farmers can purchase these seeds easily", she said emphatically.

Another issue that she points is the availability of Bt cotton seeds at the time of sowing. "Due to the high demand for seeds in the sowing season, many a times they go out of stock. There should be a proper distribution system in place to ensure a reliable steady supply of seeds," she said.

The Bt cotton has fetched her a price in the band of Rs 2,100-2,400 per quintal in 2006 and although she has not been able to make any substantial savings till now, she is optimistic about the good income generation in the future. In the coming season, a confident Suman plans to increase the acreage of Bt cotton in her fields and would advice the farmers to try Bt cotton.

Rolly Dureha

Tamil Nadu farmers give thumbs up to Bt cotton

### **Tamil Nadu farmers give thumbs up to Bt cotton**

*The area under cotton is increasing as most of the farmers who have opted out of cotton cultivation due to the pest incidence are now coming forward to cultivate Bt cotton. Here are some cases of farmers from Tamil Nadu reflecting their faith in Bt cotton.*

### **VKV Ravichandran, Nallamangudi, Nanilam, Tiruvarur district**

"I have been cultivating variety and hybrid cotton since 1995 in the rice fallow, as irrigated cotton. When the Bt cotton was introduced in 2002, I was apprehensive about it. On February 21, 2004, I happened to attend a seminar organized by SICA at Coimbatore, and listen to the lecture presentation by Dr TM Manjunath, the then director of Monsanto Research Center. And that year I took up sowing of Bt cotton in about one acre. On seeing the Bt cotton free from bollworm menace, I decided to take up Bt cotton in more area. Since then, I have been taking up Bt cotton in about 12 acres every year.

In 2005 and 2006, I raised RCH2, RCH20 and MRC 6918 BT hybrids. I experienced a quantum jump in yield, profitability and quality by taking up Bt cotton. I achieved a maximum yield of 16 quintal per acre of RCH 2 BT, 14 quintals of RCH20, and 12 quintals of MRC 6918 ELS Bt cotton.

Until I started cultivating Bt cotton, I could not achieve the potential yield of any variety despite my sincere efforts. Boll shedding is the major cause for the yield loss. Though the squares and bolls shed due to several factors, bollworm attack is a major reason for the reduced yield, accounting for nearly 50 percent of the boll shedding. The Bt cotton does not guarantee direct increase in yield level, but the near absence of ball shedding due to bollworm helps us to realize the potential yield. Further, I spent lesser on sprays to control bollworm. I could save about Rs 1,200 per acre. It is our fond hope that GM crop researches should evolve.

### **Balachandran, Okkarai, Tiruchirapalli district**

Balachandran cultivates on about 16 acres, with six acres under irrigation and 10 acres under rainfed. This farmer had been cultivating Cotton Suvin, LRA 5166 and RCH 2 in the past and because of the severe incidence of pink bollworm he stopped the cultivation of cotton. After introduction of Bt cotton, in the year 2004 he cultivated RCH 2 Bt cotton and obtained an average yield of 13 quintals per acre. The net profit per acre was Rs 13,600.

"I got the information about the release of Bt cotton through All India Radio and a newspaper. I contacted the company representative and obtained seeds for four acres. The crop came up very well and I did not spray any plant protection chemical for the control of bollworms. I used to spray not less than 10 times previously for non Bt cotton. The bolls burst in full with good white colour and it gave me Rs 100 more for the good quality. From then on, I am regularly cultivating Bt cotton like RCH 20 Bt and RCH B 708 Bt. Because of me many farmers in my village have switched over to Bt cotton. Bt cotton gives me peace of mind and more money since the bollworm attack is eliminated".

Last year this farmer obtained 19 quintals of yield with RCH B 708 Bt cotton in one acre and was given a prize by Rasi Seeds for the excellent results. Balachandran was happy that the labourers did not complain about the problems associated with the harvest like pest affected bolls, unopened bolls etc. and this allowed them to collect more kapas thereby getting more money.

### **V Kumaresan, Oduvankuruchi, Rasipuram**

"I have been cultivating cotton for the past 10 years. I suffered very much because of the plant protection problem. Every week the crop had to be sprayed. I stopped cultivating cotton at one stage. But during last year, we got 16 quintals per acre from RCH 2 Bt. We were getting only four quintals per acre previously and with Bt technology now the yield has gone upto 16 quintals per acre.

Bt cotton is profitable. There is good boll setting and there is uniform bursting from the bottom to top. There is no pest attacked boll. So a good price is obtained. We cannot differentiate between Bt and non Bt plants both look alike. But in Bt plants, the bolls are set uniformly and there are no drops. About 90 percent of the bolls in Bt cotton come to bursting. Since Bt cotton is not affected by the bollworms we are able to get 10 quintals per acre compared to non Bt cotton where one got five-six quintals per acre.

In the past, if I grew five acres of cotton, I would spend Rs 50,000 for pesticides and Rs 20,000 for fertilizers and I would receive Rs 1 lakh from it. The other expenses would come to Rs 30,000 and there was no profit. Now I spend very less for plant protection that it self is profit to me. I spray only thrice. There is total peace of mind for me now and I am recommending Bt cotton to my neighbors."

## Farmers like Bt cotton

### Tamil Nadu

Lakshmiopathi Somanahalli Palacode is a 40 year-old farmer in Dharmapuri, Tamil Nadu. He is also a diploma holder in Civil Engineering and is currently serving as the secretary of Abhiyaman Procession Farming Association, Dharmapuri. Lakshmiopathi has been cultivating Bt cotton for the past four years using the Mahyco Trial Cotton and RCHB 708 hybrids. The maximum yield of his crop from these hybrids has been 10 quintals leading to Rs 23,000 as profit in account.

VKV Ravichandran Nannilam is a 48 year-old farmer in Nannilam, Tamil Nadu. He is also a graduate in Maths and has also completed a certificate course in cotton cultivation. Ravichandran is currently serving as the secretary of the sugarcane forum, Nannilam and is also a member of Paddy, Sugarcane, and Cotton Lions Club. He has been cultivating Bt cotton for the past three years using the RCH 2, RCH 20 and MRCH 6918 hybrids. The maximum yield of his crop from these hybrids has been 16 quintals leading to Rs 21,000 as his profit in account.

### Maharashtra

Dr Dilip Adhar Patil is a 47 year-old farmer from Dangari, Jalgaon. He is a qualified Doctor of Homeopathic Medicine and Science (DHMS). Dr Patil has been cultivating 125 acres of irrigated land for the past 22 years and he has been using Bt technology for the past five years.

Bhagwan Nathu Patil is a 32 year-old farmer from Malpimpri, Jalgaon. He has been educated till ninth standard and is also the sarpanch of Malpimpri. Patil has been cultivating eight acres of irrigated land for the last 15 years and has been using Bt technology for the last three years.

Bhagwan Shankar Patil is a 30 year-old farmer from Pimpale Sim, Jalgaon. He has been educated till higher secondary (12th Standard). Patil has been cultivating 70 acres of irrigated land for the last seven years and has been using Bt technology for the last three years.

Vijay Tukaram Patil is a 44 year-old farmer from Tonde, Dhule. He has been educated till tenth standard. Patil has been cultivating 46 acres of irrigated land for the last 17 years and has been using Bt technology for the last four years.

Sureshbhai Sakharambhai Patel is a 37 year-old farmer from Phes, Nandurbar. He is a qualified MCM. Patel has been cultivating 52 acres of irrigated land for the last 22 years and has been using Bt technology for the last five years.

### Andhra Pradesh

Veeraswamy is from Penagunda village, K Samudram village, K Samudram Mandal, Warangal district. "I have planted both Bt and non-Bt varieties last year. Pest incidence is low in Bt cotton compared to non-Bt cotton. Bt cotton plants had around 300 flowers per plant which lead to good yield and income.

Adhi Reddy belongs to Sitammapet village, Atmakur mandal. Warangal district. He hails from a family of farmers where several successive generations have been tilling the land. Reddy has himself been farming for the past 17 years and has been using Bt cotton for the past few years. He has had a positive experience with Bt cotton.

"I am cultivating Bt cotton for the last three years. I have almost stopped spraying pesticides because Bt varieties are resistant to Bollworm. As I have stopped spraying insecticides, the population of useful insects has increased in my field. I save Rs 4,000 per acre by this practice."

V Venkateshwar Reddy hails from Upparapalli Village, K Samudram Mandal. Warangal district. He has over 15 years of experience in cotton farming and is cultivating 10 acres of land with Bt cotton. His experience with Bt cotton has been good especially in the past few years where he has seen increased yield.

"Reduction of seed prices to Rs 750 per packet is more useful for farmers. We have to grow Bt cotton only".

Lakakula Satyanarayana is another Bt cotton farmer from K Samudram village, K Samudram Mandal, Warangal district. "I cultivated Bt cotton last year. Other farmers sprayed more pesticides for their non-Bt crop which led to huge losses. I did not spray insecticides to my Bt crop which helped me in realizing high income."

Kaki Rami Reddy, K Samudram village, K Samudram Mandal, Warangal district, too favors Bt cotton. "I got 30 quintals of lint from one acre of Bt. I sprayed insecticide only once. I have decided to grow only Bt cotton this year and not to spray insecticides."

*Source: Federation of Farmers Associations Meet in Warangal, AP.*