

Bt-Cotton performance 2003 – 2004: fields swamped with illegal variants

In the 2003-04 cotton season, almost all cotton regions were swamped with a large number of illegal variants of Bt cotton, derived from the original Navbharat 151. There is no way of getting a clear picture of how much of which variant has been cultivated. It is therefore not possible to judge the real performance of any of the Bt cotton varieties.

Suman Sahai and Shakeelur Rehman Gene Campaign

In continuation of the survey done on the performance of Bt cotton in the kharif season 2002-2003, Gene Campaign has conducted a field study on the cotton performance in kharif 2003-2004. This study was conducted in Andhra Pradesh, in the four districts of Warangal, Guntur, Mahboobnagar and Rangareddy. A total of 136 farm families were surveyed.

Like last year, the farmers surveyed had cultivated Bt cotton on only a part of their land holding. In Warangal, Mahboobnagar and Rangareddy, the acreage devoted to Bt cotton ranged from one to two acres/ farm family, with a few farmers planting up to four to five acres. In Guntur, by comparison, most farmers planted much higher acreage under Bt cotton. About 30% of the farmers in Guntur planted between 10 to 30 acres with Bt cotton.

Comparison of Bt & Non Bt cotton cultivation between 2002-03 & 2003-2004

Year	Total input cost		Pesticide (Rs. per acre)		Yield per acre (In qnt.)		Rate (Rs. per qnt.)		Net Profit (Rs. per acre)		Profit difference between Bt-Non Bt
	Bt	Non Bt	Bt	Non Bt	Bt	Non Bt	Bt	Non Bt	Bt	Non Bt	
2002-03	5716	4733	1316	1533	3.7	4.4	2050	2275	1869	5277	-3408
2003-04	7100	6150	2900	3150	9.5	9.5	2600	2600	17600	18550	-950 -850

The data as recorded from the field are summarized in the table above. Cotton yields have been overall higher this year compared to last year because of the good monsoon and sufficient water. The improvement in yield is seen in both Bt and non-Bt cotton.

However, because of the high cost of the Monsanto Bt cotton seed compared to local hybrids and the fact that savings on pesticides are modest, the economics of cultivating the Monsanto variety, like last year, remains adverse for the farmer. The difference of approximately Rs.1200 per bag of seed is only partially made up by pesticide savings. Last year the net profit from non Bt cotton was Rs. 5277/- per acre and from Bt cotton only Rs. 1869/- per acre

in the best farms; 60% of the Bt farmers had suffered losses. The farmer made Rs. 3408/- per acre more from planting non-Bt cotton than from Bt cotton. This year Bt cotton appears to have closed the gap somewhat. There is a difference of only Rs. 950/- in net profit between non-Bt and Bt cotton, with non-Bt cotton still performing better but by a smaller margin. Curiously, the market which had placed the Monsanto cotton as distinctly inferior to the non Bt cotton last year, is this year paying the same price for Bt and non-Bt cotton and it is paying a higher price. The traders and the farmers admit that almost all the cotton reaching the market is a Bt-non-Bt mix and both are of comparable grade.

Data from which Bt cotton?

There is a big catch in Table 1. The data are calculated assuming that all the cotton that is planted as Bt cotton, is in fact Mahyco-Monsanto's Bollgard. This as the reports from the field now clearly show, is not the case. The Gene Campaign team double checked and can confirm that a number of variants of Bt cotton, many derived from the original illegal Navbharat 151 have been cultivated. Some kinds of cotton were cultivated of which it is difficult to ascertain the pedigree. Mahyco-Monsanto's Bt was also planted according to farmers.

Briefly, there is chaos in the cotton fields and nobody can say with any guarantee what actually has been cultivated in this cotton season and how much. As a matter of fact, the data as computed in Table 1 do not really mean much since it turns out that they have been derived from a mixture of Bt varieties. Our results and reports are from Andhra Pradesh, but colleagues are reporting much the same situation from Maharashtra, Madhya Pradesh and Punjab, in addition to Gujarat where the mixture of Bt varieties has been known to exist since at least two years.

The new development this year is that variants of the Navbharat 151 which have proliferated and reached most cotton growing areas in India, have been cultivated in a big way in Andhra Pradesh. In our study area, farmers in Guntur (which planted the largest acreage) were willing (on condition of anonymity) to admit that they had procured seed of the Navbharat varieties from Gujarat. Other farmers were not willing to admit the real name and source of their seeds since they are aware that the Navbharat varieties are illegal and their purchase is punishable. Almost no one had planted Monsanto's failed Mech 162 from last year. The few that did, reported the same poor results as last year.

On being questioned, farmers responded with fictitious names like Rasi Bt, Banny Bt, Jalna Bt, Ratna Bt, Ankur Bt, in addition to Monsanto- Mahyco's Mech 12, as the cotton varieties they had planted. None of these varieties have been released for cultivation officially. The only known Bt varieties in the pipeline are from Rasi and Ankur but they were still undergoing large scale field trials when the 2003-04 crop was planted. One Rasi Bt has been subsequently approved and is available for the season 2004-05 for which planting has just concluded.

There are three distinct possibilities of what has taken place. One, that varieties like Rasi Bt, Ankur Bt and Banny Bt have actually been leaked to the farmers before completion of the procedure and official approval, in much the same way that Navbharat 151 was. The second possibility is that knowing such varieties are under development, farmers are using these names to cover up for the illegal Navbharat varieties that they are actually using but are afraid to admit to. Most of the Bt seeds have been procured through gray channels and neither farmers nor seed stores had either seed packets or bills of purchase to show the Gene

Campaign team. Only the Guntur cotton farmers, who are on average the larger farmers in this study, admitted that they had procured the Bt seed from Gujarat. The third possibility is that fly by night operators are marketing spurious Bt cotton seeds which may not even contain the Bt gene. Several Bt variants are available in the market and can be procured easily, and at a much cheaper cost than Monsanto's Mech 162 or Mech 12.

Because of the failure of Mech 162 last year, Monsanto had apparently released its Mech 12 Bt cotton variety this season. That is what the seed agents were saying. As it stands, the situation is very unclear. There is no way to calculate how much of which Bt variant, procured from which agency has been planted, nor is it possible to assess the true acreage planted with Mech 12. Farmers name Mech 12 since they know it is approved but it is impossible to assess how much of the cotton acreage is actually planted with Mech 12 and how much with the illegal variants.

The complete failure on the part of the GEAC to take action against the spread of illegal Bt cotton varieties, originating from the original Navbharat 151 has resulted in several variants becoming available to the farmers. Since this has been going on for at least the last four years, some say longer, the rash of Bt cotton varieties has spread to all the cotton growing regions including Punjab, Madhya Pradesh and Rajasthan. A number of agencies including progressive farmers have backcrossed the Bt gene to local, high performing cotton hybrids. This has resulted in a range of hybrids available in the illegal cotton seed market, with varying performance. Due to this development, it is now probably impossible to get an accurate picture of the performance of Bt and non-Bt cotton. Only one thing seems to be emerging clearly, that most local hybrids carrying the Bt gene are out performing the Monsanto Mech varieties.

Because of their performance, farmers have assiduously sought the illegal seeds. What we are assessing as Bt cotton in the field this year is not the Monsanto cotton but the far more widely cultivated, better performing illegal Bt cotton. For this reason, the performance of Bt cotton recorded this year has been on par with the performance of non-Bt hybrids. Judging by the market response, the cotton from Bt variants is of better grade and the traders do not seem to mind the mixture of cotton they receive, for which they are offering a higher price compared to last year when Mech 162 was cultivated.

Monsanto's unsupported claims to superior performance

All these developments makes one wonder at the boldness of Monsanto's statements asserting the superb performance of the cotton that the farmers seem to have rejected. A recent survey commissioned by Mahyco Monsanto and conducted by the agency AC Nielsen ORG-MARG, has reported outstanding performance by Bollgard, Monsanto's Bt cotton variety in the 2003-04 cotton season. The executive director of AC Nielsen, Mr. Inamdar, even chose to give Bollgard a resounding endorsement.....*" For us it has been an enlightening experience to see, at first hand, the difference that Bollgard has made in the life of India's cotton farmer."*

Given the fact that the cotton fields of India are awash with a mixture of Bt cotton variants and that it is impossible to know the performance of individual varieties in this tangle, Nielsen's data must be questioned. What have they actually surveyed and what do their results mean? Knowing the reality on the ground, it would be difficult to take at face value the data that AC Nielsen has put out and their ringing endorsement of Monsanto's Bollgard.

The Nielsen study showing superlative performance for the Monsanto cotton is of a piece with the earlier, controversial and thoroughly discredited study by Qaim and Zilberman which reported an 87% increase in yield when Monsanto's Bt cotton was used! The little catch was that the Qaim and Zilberman study was done exclusively on the field trial data of Monsanto. No other data was analyzed, nor any farmers' fields studied.

We therefore have a rather curious situation when the only people praising the Monsanto varieties are Monsanto themselves. Its friends and supporters have ensured both times that these questionable data are circulated widely and enter the record as the authentic data from India. Every other agency is reporting results to the contrary, that Monsanto varieties are the worst performers when compared to good local hybrids and illegal Bt variants. Not just Gene Campaign, but other studies, done by Greenpeace, Deccan Development Society, independent researchers, state agriculture departments and media teams, report more or less the same picture. It is high time the Indian government, the GEAC particularly, woke up to this charade. A long due investigation into what is actually happening with respect to Bt cotton must be undertaken immediately and the mess has to be cleaned up. Finally someone has to get up and cancel the permission given to Monsanto's non-performing Mech varieties before the farmers are fooled any further.

The writers can be reached at genecamp@vsnl.com , www.genecampaign.org