Campaign against Bt Cotton

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The debate against genetically modified (GM) seeds in the country has been going on for quite some time and the article by Kavitha Kuruganti (KK henceforth) on "Bt Cotton and the Myth of Enhanced Yields" (EPW, 30 May 2009, pp 29-32) is a case in point. In her article, she questions whether Bt cotton has ever contributed to increased yield in any country, be it the United States (US), China or India. A careful reading of the article finds serious flaws in her analysis and a superfluous reading of the data.

First, KK argues that even in the US, GM seeds produced a lower rate of growth of yield in both soy and cotton. While this argument holds true for soy, it is not borne out by the data on cotton presented by her in Table 2. The rate of growth of yield for the period 1996-2008 (2.3%) is higher than that in the pre-GM years (1.27%). Also, the sub-period 2001-08 witnessed an even higher growth rate of yield of 4.3%. Taking the long-run growth rate over the entire period 1984-2008, it is seen that this is higher than that recorded for the 12-year pre-GM period (1984-96) in the case of cotton. The author should know that while interpreting growth rates, it is the long-term rates that are important, not the short run. The data presented in Table 2 clearly shows that KK's arguments are valid only for soy, and not for cotton.

Second, KK takes up the case of Gujarat, where the adoption of Bt cotton has been the greatest and today almost 80% of the area is under Bt cotton. The author presents data (Table 4) on area, production and yield, provided by the Cotton Corporation of India (CCI), but completely refrains from using it, because it makes a case against her arguments. Instead, she chooses to quote a letter written in 2005 by the state agriculture secretary to the Genetic Engineering Approval Committee, which says that probably low bollworm incidence along with other conducive factors are reasons for such high rates of yield growth seen in Gujarat, and that a higher yield was seen in the state even before the introduction of the Bt seed. But the data in the table gives much more recent figures than what the 2005 letter refers to. The table shows that the yield rates came down from 502 kg/ha in 1998-99 to 250 kg/ha in 2001-02 (before Bt adoption) and remained low for the next three years, which were rainfall deficit years, including in Gujarat. However from 2003-04 onwards, yield has progressively increased to 797 kg/ha (a 60% hike) in 2005-06. (This trend is also visible at the all-India level, see author's Table 3.)

The period of high yield growth, 2003-07 is one of high adoption of Bt cotton in Gujarat. As these are also good monsoon years, KK attributes the yield improvement to the latter. While no one denies that a good monsoon is an important factor, one also cannot deny that adoption of the Bt-hybrid has contributed to the yield. There is no way to isolate the seed factor to argue that it has not made a contribution. The author attributes yield growth to two more factors – area under irrigation and low bollworm incidence. Yes, assured irrigation is an important factor in increasing the yield, but adoption of hybrid has its own role. Moreover, how did the bollworm incidence come down from a time when it was a vexatious problem during 1997-2001 and how far has the adoption of Bt cotton contributed to its decline?

Third, KK contradicts the claims of B M Khadi (2007) who reports a spectacular yield growth after the adoption of Bt cotton in Gujarat, with another selective dated report for Andhra Pradesh published way back in 2002-03. This dated report talks about a large majority of farmers who reported a low yield in the very first year of Bt cotton introduction during 2000-02. Not only was this the first year of Bt adoption, it was also a year of an extreme drought. Since then there is overwhelming evidence of an increase in yield, that has contributed to a record level of cotton production in Gujarat and elsewhere. In the absence of any systematic study to support her, KK resorts to citing a booklet, published by the A P Agricultural University (*A P Vyavasaya Panchangam),* which is mostly anecdotal evidence on the failure of fertiliser use in yield improvements.

Role of Monsoons

KK begins by making a statement that whenever cotton yield improves, the industry and media attribute it to Bt seed and when yield declines, they put the blame on a bad monsoon. What she ends up doing in the article is exactly reversing this logic; for her, whenever yield improves it is because of a good monsoon, and when yield levels are poor, it is due to Bt cotton. The fact of the matter today is that Bt cotton is widely adopted and has led to a rise in yield and production.

As far as fears about GE technology are concerned, health and safety issues are a genuinely important one. While the European Union has taken a cautious stand, the Indian government does not seem to care. The health implications in the case of Bt brinjal should be thoroughly probed before approving it. In cotton too, the danger of toxicity entering the human food chain seems to be a possibility during the extraction of edible oil by crushing of cotton seeds. If the cotton seed is genetically engineered by the toxic to kill the bollworm, it can affect humans too. In such a case, Bt cotton seed crushing may need to be banned. But if the seeds are not crushed, farmers lose some value, and hence the economics of Bt adoption needs to be reworked. Dangers to livestock seem to be remote as animals are rarely known to eat cotton leaves. Hence, the campaigners of anti-Bt should, in fact, focus on health and safety issues, rather than seeing red herrings in yields and returns. The genuineness and credibility of anti-GE campaign would become suspect, if research is doctored, evidence is selectively read and facts are ignored.

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