

GM Mustard Case Returns To Court In India: Bt Cotton Failure And Economic Distress Spun As A 'Success' In Pitch For GMOs

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The Government of India is attempting to push through the commercial cultivation of genetically modified (GM) food crops. In an attempt to spearhead the drive by making GM mustard the first such crop in the country, the government has apparently allowed [regulatory delinquency, non-transparent procedures and fraudulent science](#). Aruna Rodrigues argues what is happening is blatant criminality and has taken the issue to the Supreme Court, which chairs the next hearing of the case on 7 February (date has since been put back a few days).

There is no proof that GM mustard is [wanted or actually needed](#) and one of (if not) the main arguments used to justify its introduction (reduction of edible oils imports) is [fundamentally flawed](#). It raises the question: [What is the point](#) of GM mustard?

As lead petitioner in the case against GM mustard, Rodrigues is seeking a moratorium on the release of any genetically modified organisms into the environment pending a comprehensive, transparent and rigorous biosafety protocol in the public domain conducted by agencies of independent expert bodies, the results of which are made public.

Government bogus narrative on Bt cotton to drive GM food crops into India

The latest development in this ongoing saga involves a comprehensive deconstruction of the government's claims about Bt cotton, India's first genetically modified commercial crop. Rodrigues argues that the government is using a false narrative about the history and successes of GM cotton in the country to try to demonstrate the success of GM technology per se and thus drive GM food crops into the country.

She sets out her case against Bt cotton in a [rejoinder affidavit](#) in response to the government's previous [reply affidavit](#) that heralded the apparent successes of the GM crop. According to Rodrigues, the government appears to be "conducting a deliberate exercise in dissimulation in the reporting of facts and data and seeking to reconstruct a new set of facts." She adds that government data and statistics on Bt cotton "cannot be distinguished from what would be expected from the Industry."

According to Rodrigues, the government is unswerving in its plans to use Bt cotton as the 'template of success', despite unequivocal hard data to the contrary. The plan seems to be

to introduce wholesale into Indian agriculture Bt food crops in virtually the entire range of the nation's crops.

Whereas the government argues the apparent success (better yields and pest resistance) of Bt cotton is due to genetically modified traits, evidence suggests that other factors have contributed to any improved yields. For example, Dr K R Kranthi, Director of the Central Institute for Cotton Research in Nagpur recently completed his PhD study into Bt cotton and concludes:

“Bt-cotton plus higher fertilizers plus increased irrigation also received a protective cover from the seed treatment of neonicotinoid insecticides such as imidacloprid, without which majority of the Bt-cotton hybrids which were susceptible to sucking pests would have yielded far less. It can safely be said that yield increase in India would not have happened with Bt-cotton alone without enhanced fertilizer usage, without increased irrigation, without seed treatment chemicals, and the absence of drought-free decade.”

Dr Krathni has 20 years' experience in the field of cotton research. Readers may also wish to read [this](#) by Professor Glenn Stone, who quotes Kranthi to make the point that “in none of the top 4 cotton-producing states do the trends fit the claim that Bt cotton has boosted yields.”

Moreover, it must be made clear that there is no trait for yield in the Bt technology, which is based on reducing insecticide use and, even in this respect, it has been a failure.

Failing pesticide treadmill and now a failing biotech treadmill

Bt cotton is no longer effective for controlling the bollworm pest. Rodrigues argues that scientific publications clearly show that pink bollworm developed resistance to Bt-cotton Bollgard II six years ago in India. Resistance is now widespread and has led to a failure of the Bt technology. The evidence provided by Rodrigues is multi-sourced, including official statistical data. Readers are urged to consult the rejoinder for all cited sources, which includes a [summary of Dr Kranthi's findings](#).

More than 1,000 hybrid Bt cotton varieties of dubious quality were developed and sold by several companies without proper assessment of the need for the technology or the economic benefits. It is now at the stage where 95% of all cotton farmers adopting hybrid Bt seed cannot save seed for replanting, and seed for adapted domestic Desi cottons have disappeared from the market place. Farmers are now trapped on a failing biotech treadmill.

The rush to implement Bt cotton in India started in 2002. It was intended to solve a bollworm problem created by pesticide misuse (a failing pesticide treadmill). After its introduction, yields increased initially due to the dual effects of increased subsidised fertilisers and there was a temporary reduction in insecticide use. However, yields have since stagnated and insecticide use has increased to pre-2002 levels as new and highly damaging pests not controlled by the Bt technology have emerged and pest resistance to the Bt technology is spreading.

Rodrigues notes that more than 65% of India's poorest farmers have less than a hectare of land. In rain fed areas, yields depend on the timing and quantity of highly variable monsoon rains. Add to that the high costs of Bt hybrid seed, continued insecticide use and usury costs and the situation has become economically devastating for poor farmers and is likely the

proximate cause of the increase incidence of suicides.

What if this scenario develops if biotechnology applications are introduced for Indian food crops across the board?

The 2005 base year for Bt cotton tells a different story

Rodrigues provides compelling evidence to show that claims for the success of Bt cotton derive from playing fast and loose with the data. Aside from abnormally low cotton yields in 2002 (taken by many as the base year for Bt cotton in India), the evidence indicates that 2005 should be regarded as the actual base year as Bt cotton then hit a double-digit market share for the first time.

This essentially changes the dynamics of Bt cotton growth drastically, providing a truer picture. The drastic fall in productivity in the last two years (2014 and 15) means that cotton productivity (because of resistance and crop failures) has now fallen back to levels in the pre-Bt era. Rodrigues adds that it must be also noted that cotton yield in the pre-Bt era increased significantly from its low in 2002 (191 kg/Ha) to 318 kg/ha in 2004-2005 registering an increase of 66% in just 3 years (DES). This increase was a result of increased acreage under hybrids and a new class of insecticides. The momentum of this upward swing carried into the Bt era that had nothing to do with the Bt. technology.

Rodrigues also notes that India's global rank is a dismal 30-32nd in terms of cotton yield, overtaken by non-Bt producing countries and despite irrigation infrastructure in 4.8 million hectares having improved significantly.

Evidence set out in the rejoinder affidavit shows the following.

- 1) Insecticide usage on cotton in 2001 was 10,988 metric tonnes without Bt-cotton.
- 2) Usage increased to 11,598 metric tonnes in 2013 with more than 95% area under Bt-cotton.
- 3) In 2002, insecticide usage on cotton was 0.88 kg per hectare, which increased to 0.97 kg per hectare in 2013.

Thus, there is no evidence of any advantage in insecticide usage due to Bt-cotton.

Rodrigues goes on to dismiss other claims with regard to Bt. It has not resulted in better incomes for cotton farmers. Also, bee colony collapse disorder (CCD) is a specific fall-out of Bt cotton in India. Neonicotinoids are used as seed treatment in India on every seed of hybrid Bt cotton, but not on desi cotton varieties. CCD has been extensively documented along with the suspected role of neonicotinoids.

GM is a dying technology: India should let it rest in peace

Rodrigues states:

"Never has an agri-tech been sold as a 'magic bean' to farmers, like Bt cotton, with opprobrium attaching to our regulators and ministries of governance who supported and continue to support this technology-castle built on sand, in the absence of evidence and when the hard data said the opposite."

The area planted with Bt cotton has increased substantially, even displacing food crops of lentils and oilseeds. Despite stagnating yields, which is the real measure of productivity (kg lint/Ha), 'adoption' or market share was deliberately used to camouflage the reality.

There should be a very clear line between regulation and product promotion. However, in India (as elsewhere), official bodies seem to not know the difference and are quite content to act as GM agritech product promoters while masquerading as regulators.

In addition to this, officials also seem quite confused when it comes to actual productivity. Rodrigues says:

"There is little distance between our regulators and institutions and ministries of governance and the supposedly regulated biotech industry, all of which together, promote GM crops as vendors. Is it to be assumed that the U of I [*Union of India*] does not know the difference between 'adoption' and 'productivity'?"

The rejoinder affidavit concludes by asserting that Bt technology is a dying technology worldwide because it is proving to be unsustainable on the ground. This is certainly true of Bt cotton in India. Therefore, Rodrigues says that it would be utterly tragic if at this juncture, India were to succumb to industry pressure and introduce Bt technology into other food crops as is clearly the plan.

It is clearly the case that Bt cotton cannot be used as a model of success to justify the push for GM. Along with [fudged data and invalid field tests](#), it smacks of desperation and constitutes part of a monumental bluff instigated on behalf of powerful commercial interests.

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