

stakeholders and regulators had prescribed cultivation of *Bt*-cotton in the realm of IPM practices.

The evolution of resistance, first to Cry1Ac and then to Cry2Ab2 was sequential. BG II cotton formed ~27% of total *Bt*-cotton acreage in 2008, 57% in 2009 and increased to 90% and above from 2012 onwards. PBW had already evolved resistance to Cry1Ac by the time BG II occupied a fair share of cotton acreage from 2008 and beyond. It was relatively quicker to evolve resistance to the second toxin, Cry2Ab2. Thus, it would not be right to use evolution of *Bt* resistance in PBW as a simple dipstick evaluation for the efficacy of RIB. It would serve other bollworms as well.

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1. Muralimohan, K. and Mahesh, H. M., *Curr. Sci.*, 2020, **118**(10), 1494–1495.
 2. Mohan, K. S. and Sadananda, A. R., *Curr. Sci.*, 2019, **117**, 739–740.
 3. Kranthi, S. *et al.*, *Curr. Sci.*, 2017, **112**, 1992–1993.
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Response

Data have revealed that *Bt* seed packets planted by the farmers contained non-*Bt* seeds to the extent that the Government of India has recommended for deliberate inclusion¹. Mohan seems to have wrongly assumed that we have suggested not to mix 5% non-*Bt* seeds in the bag. In contrast, we have mentioned that there was no need for a deliberate mix of 5% non-*Bt* seeds under the existing circumstances, and, further, that companies had to ensure that the extent of trait purity was greater than 95%, for justifying the addition of 5% non-*Bt* seeds.

The objective of our study was to evaluate the extent of non-*Bt* seeds in the *Bt* seed packets that are planted by the farmers. While digressing from the objective, Mohan's comments pertain to *Bt* seeds present in the non-*Bt* seed packets that are not planted by majority of Indian farmers. His comment in this regard is irrelevant.

It is a fact that the field populations of PBW have already developed resistance to both *Cry* genes. It is either failure in the implementation of resistance management strategies or an issue related to the technology that might have led to the recorded resistance. Any corrective action that is made now (like introducing RIB) holds little water.

Mohan makes an unsupported claim that evolution of resistance in PBW was first to Cry1Ac, followed by Cry2Ab2 in a sequential manner. Such presumptions hold no relevance. PBW is a target bollworm, and it has developed resistance against both *Cry* toxins. We have shown that the requisite quantity of non-*Bt* seeds was already present in the seed packets planted by the farmers, which raises concerns about the recommendations made in the RIB strategy for deliberate inclusion of non-*Bt* seeds for resistance management. It appears that the development of resistance might not be delayed by such deliberate inclusion. Moreover, rigorously conducted studies have shown that the RIB strategy could accelerate the rate of resistance development in target insects².

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1. Muralimohan, K. and Mahesh, H. M., *Curr. Sci.*, 2020, **118**(10), 1494–1495.
 2. Brévault, T., Tabashnik, B. E. and Carrière, Y., *Sci. Rep.*, 2015; doi:10.1038/srep09807.
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