

not easy to control. In the Indian context 'super weeds' would pose insurmountable problems.

The PCK–MSS paper also reports that DMH 11 is inferior in yield when compared with non-GM hybrid DMH 1 and also some pure varieties. Non-GMO hybrid comparators were not used in the later BRL I and II field trials. The failure to do this makes the field testing of DMH 11 invalid. Despite lower yielding DMH 11, the President, NAAS in his letter (27 May 2017, NAAS/XIII.0/2017) to the Prime Minister of India has used an invalid basis of comparison that in field trials DMH 11 out-yielded the national and zonal checks by 20–30%. These are not hybrids. It is surely wrong to mislead our Prime Minister. There are other anomalies in that letter to which answers were sought by the present author. In particular, my letter dated 5 October 2017 to the then Secretary of NAAS (K. V. Prabhu) has not been answered even now.

This rejoinder to the 17 authors needs no further comment. GMO science and technology as practised seems to be analogous to 'science in a post-truth era'. A recent thought-provoking article<sup>11</sup> and several others<sup>12</sup> deal with a growing trend to destroy true science, which by definition, is based on absolute integrity. Those who preach that opposition to GM technology is anti-science and unscientific are seriously invited to consider if the opposite is instead true.

Finally, the reference to R. S. Paroda and his report to the Supreme Court mentioned in the paper<sup>1</sup> is highly inappropriate. It is a one-sided version and completely untrue. It is known that he was added as the sixth member to the Technical Expert Committee (appointed

by Honourable Supreme Court) of original 5 members after the submission of the interim report by the original 5 members. As former Director General of ICAR, he had an agenda unsupported by available scientific data and the literature. The present author would not like to elaborate on it any further in this paper.

1. Datta, S. *et al.*, *Curr. Sci.*, 2019, **117**(3), 390–394.
2. Kesavan, P. C. and Swaminathan, M. S., *Curr. Sci.*, 2018, **115**(10), 1876–1883; doi:10.18520/cs/v115/i10/1876-1883.
3. Séralini, G. E. *et al.*, *Food Chem. Toxicol.*, 2012, **50**, 4221–4231; <http://www.sciencedirect.com/science/article/pii/S0278691512005637>
4. Séralini, G. E. *et al.*, *Environ. Sci. Eur.*, 2014, **26**(14); doi:10.1186/s12302-014-0014-5.
5. *Scientific American*, Do seed companies control GM crop research?, 2009; <https://www.scientificamerican.com/article/do-seed-companies-control-gm-crop-research/>
6. Schubert, D. A., Hidden epidemic. GMO Science, 17 March 2018; <https://www.gmoscience.org/hidden-epidemic/>
7. Avila-Vazquez, M., Maturano, E., Etchegoyen, A., Difilippo, F. S. and Maclean, B., *Int. J. Clin. Med.*, 2017, **8**, 73–85.
8. Kranthi, K., Fertilizers gave high yields, Bt-only provided cover. *Cotton Statistics and News*, 2016–2017, No. 39, 27 December 2016.
9. Komarlingam, M. S., *Curr. Sci.*, 2017, **112**(10), 1988–1989.
10. Zhang, L., Rana, I., Shaffer, R. M., Taioli, E. and Sheppard, L., *Mutat. Res.*, 2019, **781**, 186–206; doi:10.1016/j.mrrev.2019.02.001.
11. Hopf, H. *et al.*, *R. Soc. Open Sci.*, 2019, **6** 190161; <http://dx.doi.org/10.1098/rsos.190161>

12. Iyengar, S. and Massey, D. S., *Proc. Natl. Acad. Sci. USA*, 2019, **116**(16), 7656–7661; [www.pnas.org/cgi/doi/10.1073/pnas.1805868115](http://www.pnas.org/cgi/doi/10.1073/pnas.1805868115)

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### Response:

I do not find anything new in Kesavan's arguments. It would also be worthwhile to mention the article by Pental<sup>1</sup>, which has also highlighted the flaws in Kesavan's arguments, here and earlier. When polarized positions have been taken, any amount of debate is not going to help. It is only obvious that India will not be able to sustain its growing population, given the dwindling availability of land, water and human resource, without resorting to plant-based technologies, including GM technology. We can move forward if the Government of India gives a go-ahead at least on a case-by-case basis.

1. Pental, D., *Curr. Sci.*, 2019, **117**(6), 932–939.

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