

INDIGENOUS RESEARCH

Developer of desi Bt cotton event complains of sabotage, harassment

Dharwad agricultural university sits on permission for transfer of research material for ICAR trials

VIVEK DESHPANDE
NAGPUR, JUNE 1

A WOMAN SCIENTIST'S claim of having developed an indigenous Bt cotton 'event' superior to Monsanto's has got stuck in an internal dispute within the University of Agricultural Sciences at Dharwad (UASD) in Karnataka, with the matter even reaching the Prime Minister's Office (PMO).

Manjula S. Maralappanavar, Senior Scientist at the university's agricultural research station in Annigeri, claims that the 'UASD Event No. 78' developed by her shows higher levels of Bt toxin expression than Monsanto's Bollgard and Bollgard II events. Bt is short for *Bacillus thuringiensis*, a soil bacterium whose genes code for proteins that are toxic to various insect pests.

Maralappanavar says that despite having successfully incorporated her event in a UASD cotton variety called RAH-100, she has been subjected to harassment by the university administration. These range from denial of promotion to professor rank and withholding of salary for months, to a sudden transfer to a remote research station connected with safflower breeding.

Maralappanavar began research work on Bt cotton in 2005 with funding from the Department of Biotechnology (DBT). In 2009, she obtained four 'gene constructs' — an assembly of artificially made DNA sequences for experimental purposes — from the International Centre for Genetic Engineering

and Biotechnology (ICGEB) in New Delhi. That included Cry1Ac, a Bt gene that Monsanto had also used in its Bollgard event for imparting resistance to bollworm pests.

By 2012, Maralappanavar had developed many potential Bt cotton transgenic events, of which one — the UASD event No. 78 — was finally selected ('event' refers to the site of integration of a foreign gene at a fixed location on the host plant's chromosome). The Bt toxin expression levels in this event, according to her, was 11-12 micrograms per gram of tissue, as against 6-7 micrograms in Monsanto's Bollgard II event.

"A number of tests — southern blot hybridisation, polymerase chain reaction, ELISA and bioassay — confirmed the efficacy of my event. These related to presence of the Cry1Ac gene in the cotton genome, sufficient quantity of Cry toxin protein production and death of bollworm larvae", she notes.

KR Kranthi, director of the Indian Council for Agricultural Research's Central Institute for Cotton Research (ICAR-CICR) here, feels that the data from Maralappanavar's event, based on what he has seen, is very robust. "The integration of the protein in the gene sequence is good and so is the level of toxin expression. But I haven't checked the material physically, as it has not been made available to us by UASD"

But even as the efficacy of her event was established, Maralappanavar, in July 2014, was suddenly transferred to the All India Coordinated Crop Improvement Project for Safflower at UASD's Annigeri research sta-



Manjula S Maralappanavar (second from left) with her research students.

tion. Also, the laboratory, which she had set up through outside funding of Rs 50 lakh at the university's agricultural research station cotton farm in Dharwad, was shut down. "It had lot of transgenic seedlings and was dismantled intentionally by the administration. All the instruments were locked in a room in February 2015", she alleges.

The vice-chancellor of UASD, DP Biradar, refutes these charges. According to him, Maralappanavar's transfer was part of uni-

versity policy that did not allow scientists to stay at a single place for more than 10-15 years. Moreover, she was transferred to Annigeri, which is just over 40 km from the university headquarters, while being permitted to continue her work on Bt cotton at a centralised facility called the Institute of Agriculture Biotechnology (IABT) for three days a week. But she refused to do so.

Biradar also denies allegations of dismantling Maralappanavar's laboratory, terming

it "her fabrication to damage the reputation of the university". On the contrary, he states, she has till date neither handed over the keys of the laboratory and the greenhouse nor any research material supposedly present to the designated scientist.

Maralappanavar's retort to these is that her work on Bt cotton events "was my own ad-hoc project". Also, she found it unnecessary to work at the IABT: "Why should I, when the laboratory that I had established with great effort served my purpose much better". Besides, "my material is patentable, so why should I hand over my lab to anyone? If my not doing so is wrong as per rules, what stops the VC from taking action against me?"

Maralappanavar eventually took her case to the ICAR, which identified and approved the 'UASD event No. 78' to include in its trials for promoting a publicly-bred Bt cotton event, as an alternative to Monsanto's Bollgard. It even sent a material transfer agreement (MTA) proposal for the same to UASD on July 12, 2015. Further, a licensing agreement for commercialisation of the event was obtained on August 12 from the ICGEB — the supplier of the Cry1Ac gene construct — and submitted for approval by UASD.

The university is, however, yet to respond to either the ICAR's or ICGEB's MTA/licensing agreement proposals. This, Maralappanavar asserts, is a clear attempt to suppress the indigenous Bt cotton event. On September 18, she wrote a letter to the PMO

seeking its intervention. "After receiving my letter, the PMO directed ICAR to take appropriate action. But the latter did not inform the PMO about UASD not having responded to its request for material to enable commercialisation of the event", she adds.

Biradar, on his part, defends UASD's apparent inaction, citing an earlier controversy involving a so-called indigenous Bt cotton developed by the university, which was found to contain Monsanto's original 'Mon 531' event. "Because of that, I sought the opinion of a neutral expert, HE Shashidhar, professor of genetics and plant breeding at UAS Bangalore. He said that it (No. 78) was an event worth promoting", he told *The Indian Express*.

UASD had already given permission to Maralappanavar to undertake confined BRL (bio-safety research level 1 & 2) trials, for which the application was forwarded to the DBT's Review Committee on Genetic Manipulation in May 2015. "She has also requested permission for transfer of UASD Bt cotton event-78 to the CICR, Nagpur. This event may be transferred to CICR after compliance with all technical requirements", adds Biradar.

Further, UASD's director of research is "looking into" the agreement for commercialisation of the event with the gene provider (ICGEB) and the third party (CICR), while also seeking the opinion of the legal cell of the university.

But why should all this take so long is a moot question.

around 1/6
or 1/6 News paper writ