India may soon allow field trial of GM pulses

By Prabhudatta Mishra May 08 2016 , New Delhi

Tags: Agriculture

State-owned lab develops tur, chana for commercial cultivation

India's first genetically modified (GM) crop developed by a public sector agency could be tur or chana, the main two pulses that may soon be permitted for the first stage field trial.

Kanpur-based Indian Institute of Pulses Research (IIPR) under the Indian Council of Agricultural Research (ICAR) has developed transgenic varieties for resistance against gram pod borer in chickpea (chana) and pigeon pea (tur), a government official said.

Pulses import in India rose to a record 5.8 million tonnes in 2015-16 from 4.6 million tonnes in 2014-15 and still the country failed to meet the entire demand of 23.7 million tonnes that fell short by 800,000 tonnes, official data show. The pulses output changed little at 17.3 million tonnes in 2015-16 from a year ago.

India allowed commercial cultivation of GM crop in cotton in 2002. The area under Bt cotton has since reached 95 per cent of the total area under the natural fibre. Cotton production jumped from 13.6 million bales in 2002-03 (one bale equals 170 kg) to 34.8 million bales in 2014-15, according to official data. Output has fallen this year owing to drought across most cotton growing areas, with the cotton acreage dropping to 11.8 million hectares in 2015-16 from 12.8 million hectares in 2014-15.

However, in 2010, the government put a moratorium on release of Bt brinjal, developed by Monsanto's India partner Mahyco, due to opposition from NGOs and political parties. No GM food crop has been

released since then. The GEAC has also not yet approved the GM mustard developed by Deepak Pental, a former vice chancellor of Delhi University.

A group of secretaries has recommended fast tracking of BRL1 trial for resolving regulatory issues of GM crops. A similar GM chickpea developed by Assam Agricultural University is yet to receive clearance for BRL1 trial, as it is said to contain higher level of toxicity for which certain experts have expressed reservations, sources said.

The review committee on genetic manipulation (RCGM) had asked for certain clarifications, which have since been submitted by IIPR, the official said. “We are just waiting for the permission to conduct the trial,” he said.

IIPR had submitted the application to RCGM for field trials of four transgenic varieties in 2015, two each in chickpea and pigeon pea, minister of state for agriculture Mohanbhai Kundariya told parliament last week.

The RCGM will now recommend to the genetic engineering approval committee (GEAC), the regulator for biotechnology crops, to allow the first phase or bio safety research level (BRL1) trial, the official quoted earlier said. Under BRL 1 trial, the crop is grown within a small protected area.

Though some other crops like rice and maize have got approval for BRL1 trial, pulses are the first crop from a public sector lab at an advanced stage and with full support from the government due to stagnation in productivity.

“If the government approval comes in normal course, we can release the transgenic pulses for commercial cultivation after four years,” said Narendra Pratap Singh, director of IIPR. Singh made a presentation on these crops before officials of the department of biotechnology in February.

The GM pulses, being developed by Singh and his team of scientists, aim to bring out intrinsically pest resistance varieties. The Bt derived cry1Ac and cry1Abc genes under the control of ubiquitin promoter is being inserted into these crops via agrobacterium mediated transformation method. These genes are expected to provide a crystal protein in the transgenic plants, which are toxic to insects and thereby protect the crop from pest damage.

The GM pulses will be completely safe for human consumption, Singh said, allaying fears of any adverse health impact. If the approval comes before June-end, the trial for GM tur can be conducted this year, as the sowing season starts from June 20 and continues for about two months.

“If we do not get BRL1 trial permit, we will continue with variety selection to multiply the seeds. We need

approval of two-three states to conduct in field trials at eight to10 locations," Singh said.

The benefit of GM pulses is that it reduces use of pesticides, lowering input costs for farmers, he said. Though, there is no improvement in productivity as such from these crops, adoption of GM pulses would ensure a kind of insurance against pests, he said.

Depending on the stages of pest attack, the losses in productivity could be between 10 per cent and 60 per cent. But when 60 per cent of the crop is affected with pests, the entire crop becomes almost unfit for human consumption, he said.

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