

## Protect patents: on revoking Monsanto's Bollgard-2 patent

The Delhi High Court (HC) judgment revoking Monsanto's Bollgard-2 patent is fraught with problems. Bollgard-2 is an insecticidal technology which uses a gene called Cry2Ab from the soil bacterium *Bacillus Thuringiensis* (Bt). When inserted into a cotton plant, the gene confers resistance against cotton pests. Monsanto's 2008 patent on Bollgard-2 protects several aspects of this technology: the modification of Cry2Ab to make it compatible with the cotton genome, the process of introducing this gene at a specific location in the cotton genome, and the protein expressed by the plant containing the gene.

So, why did the Delhi HC reject this patent? The judge reasoned that Monsanto's Bt gene was useless to farmers unless inserted into a cotton hybrid, which farmers could then grow to repel pests. This insertion is carried out by seed companies, who cross a Bt gene-containing plant (from Monsanto's donor seeds) with their proprietary cotton varieties. The judge argued that this crossing of plants was a natural and biological process. This argument undermined Monsanto's patent, because under Section 3(j) of India's Patents Act, a seed or a plant, or a biological process to create a seed or plant cannot be patented. If this argument is correct, few plant biotechnology innovations would be patentable in India. This is a dangerous conclusion because the lack of patent protection would discourage crucial research by the agri-biotech industry.

There are two key steps in the process of creating a Bt cotton hybrid. The first is carried out by Monsanto, in which it modifies the Cry2Ab gene into a form which doesn't occur in nature. Next, Monsanto inserts this modified gene into cotton seeds, again an unnatural process that cannot happen without human intervention. Such seeds, called donor seeds, are then sold to seed companies.

The second step is carried out by seed companies who hybridise cotton plants grown from the donor seeds with their own varieties. This hybridisation, as the HC said, is a biological process that cannot be patented. But that doesn't mean the insertion of the modified gene into cotton seeds by Monsanto is a natural biological process, says Eashan Ghosh, a Delhi-based intellectual property lawyer. The judgment appears to have conflated a step involving human intervention with a step involving a biological process.

Transgenic technologies such as Bt cotton are an important part of India's cotton production arsenal. They are not infallible. But this is true of all technologies, like antibiotics, that fail when used improperly, as was the case with Bollgard-2. The important thing for India is to keep incentivising the development of such technologies and to use them properly. Strong patent protection is a crucial part of this process.

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