



Biotech In focus



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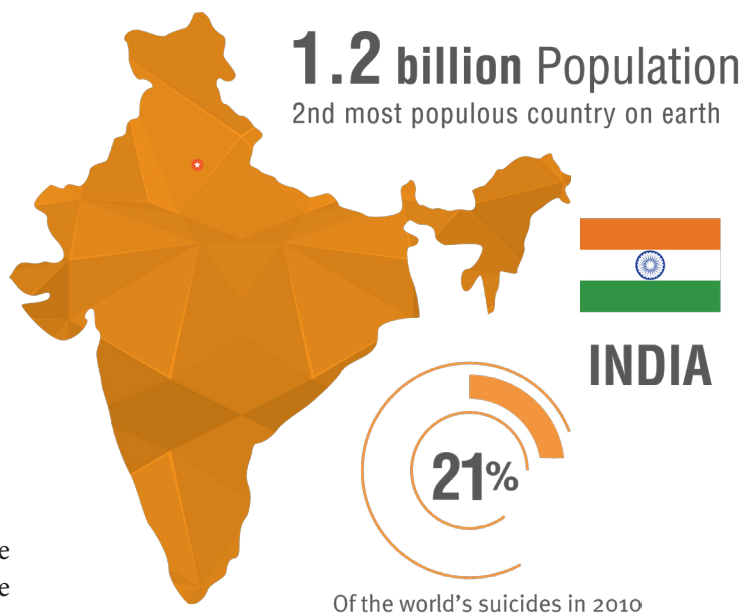
What are the Roots of Farmer Suicide in India?

In 2012, India was home to about 1.2 billion people. In that year a study published by Vikram Patel and colleagues in *The Lancet* estimated that in 2010, 187,000 men and women committed suicide in India. If the estimates of suicides reported in *The Lancet* are correct, India accounted for 18 percent of the world's population and at least 21 percent of the world's suicides at that time.



Suicide in India has become not just a source of private tragedy and public health concern, but also a controversy related to agricultural practices. It has been suggested that crop failures, attributable to the use of GE crops, is the cause of the suicides. Activists have labeled genetically modified Bt cotton as “seeds of suicide”. In the previous *Biotechnology in Focus* bulletin, we discussed the wide adoption of Bt cotton by more than 7 million farmers in India. Most of them are cotton farmers and small landholders. Is growing Bt cotton linked to high rates of suicide among these farmers?

The most common method for both men and women to commit suicide there is drinking pesticides. It is worth noting that the fraction of deaths resulting from suicide in India is lower among Indian farmers than among either the country's unemployed or its professional workers. Stark regional differences exist as well, with suicide being much more prevalent in the south than in the north.



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Lacking Correlation

A study published by the International Food Policy Research Institute in 2008 and updated in the Journal of Development Studies in 2011 concluded that adoption of Bt cotton did not correlate with an increase in farmer suicides. The increased suicide rate began in the late 1990s, before Bt cotton was introduced. Bt cotton was officially introduced in 2002 and accounted for two-thirds of cotton acreage by 2007; during this period the number of farmer suicides held steady across India and declined in some provinces. In the province of Maharashtra, a center of cotton cultivation, the number of farmer suicides rose slightly during this period, but in both India as a whole and in Maharashtra, observed trends prior to the introduction of Bt cotton predicted higher rates of suicide than were actually observed during the crop's first five years of cultivation there.



Debt Risks

One factor that several studies have linked to farmer suicide in India is debt. In a country where most agricultural plots depend on monsoon rains, each year carries a significant risk of crop failure.



Fluctuating Prices



When harvests are poor, farmers have no safety net and can borrow only at high interest rates. The production of commodity crops like cotton can magnify this risk because their input costs tend to be higher than for subsistence crops, and their prices rise and fall in response to global markets.

Bt Not the Cause

The data clearly show that Bt cotton is not causing a suicide “epidemic” or “genocide” among Indian farmers, as some activists have suggested.



Researchers note that growing a water-intensive crop on marginal lands without irrigation can place individual farmers at very high risk. These farmers are also unlikely to plant low-yielding refuges of non-Bt cotton to support populations of Bt-susceptible bollworms; this lack of refuges will likely speed up bollworm evolution of Bt resistance. Many scientists and advocates argue that farmer suicide rates could be dramatically lowered by access to affordable credit, crop insurance, and improved extension services.

Having traveled halfway around the world, our next bulletin will feature a GM crop grown in our own backyard in Hawaii: papaya.

