

The drying pipeline

03 April 2008 | News



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History shows that infusion of new technologies has helped increase farm outputs. It is now time to find the successor to Bt Cotton.

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Ever since the presentation of the Union Budget by our Finance Minister, agriculture has been in the headlines, almost every day. The waiver of farm loans, which would cost the exchequer over Rs 60,000 crore, is the single most significant pronouncement we heard in his speech. The merits of this measure continue to be fiercely debated, especially with a backdrop of a looming general election. The widening gap between the growth in agriculture and the other sectors of the economy, the primary reason for the inequities between the urban and rural India, is under a spotlight. The urgency to bridge this gap is only accentuated by the daily commentaries on the issue by opinion leaders in the media, and the frantic measures being proposed, both by the Central and the State governments, to revive agriculture. But sadly, what is getting lost in this medley of opinions, suggestions and proposed corrective measures, is the role of technology in raising agricultural productivity and consequently, the farm incomes.

Recent history underlines the importance of technology in boosting agricultural growth. It was the High Yielding Dwarf Varieties (HYVs) in wheat and rice, a product of genetics and plant breeding research, which ushered in the Green Revolution of the early 70s. From a "ship to mouth" existence, we became self sufficient in food grains. From around 2.5 percent growth rate in the pre-Green Revolution years, crops and livestock production grew annually at an average rate of 3.7 percent, overtaking the growth rate of the population and significantly contributing to the total economy. However, by the 90s, the easy gains through HYVs were already harvested and increases in food production started to slump again, reaching an average annual growth rate of around 1.2 percent from 1990 to 2007, lower than the annual growth of population, which averaged 1.9 percent, in the same period. As a consequence, the per capita availability of cereals and pulses has declined sharply in this period.

The situation calls for a second wave of technology infusion in agriculture. Studies in plant biology are opening up new ways of improving crops through novel means of genetic manipulation. Techniques have been refined to develop genetically modified (GM) crops that could effectively address some of the pressing problems in agriculture faced by the country. Huge investments have been made in the public research institutions on transgenic crop research. The private seed industry, though initially apathetic to this promising technology, was quick to catch up. Bt cotton field trials were initiated in the mid 90s through a partnership between a leading Indian seed company and the global leader in plant GM technologies. However, these efforts were severely hampered by the strident opposition to GM crops by activists, who invariably drew their inspiration, and may I add resources, from their friends in Europe. The buffer stock of food grains, which was in the news for being wasted through inefficient storage and handling, was projected as a measure of surpluses, that was never really there, in order to reject the need to increase productivity using GM technologies. A discerning observer however, would have easily seen the impending shortages, resulting in our country actually importing wheat last year to meet its food demand.

In spite of all the opposition, Bt cotton got finally approved for commercial cultivation in 2002 after much delay, and an interesting twist of events, which neither the regulatory authorities nor the activists could foresee nor could have any control on. The story of Bt cotton since then, is one of the realization of the promise of GM technologies in reviving Indian agriculture.

Importance of technology

From a little under 30,000 ha in the rainy season of 2002, Bt cotton area in the country has grown to over 6 million ha, which is almost 90 percent of the total area under hybrid cotton in the country. While the total area under cotton has remained unchanged, the cotton production in the country has touched almost 3 million bales (of 170 kg) from 1.4 million bales in 2002. The productivity, which was under 300 kg per ha in 2002 and is close to 500 kg per ha, now. We have overtaken the US to become the second largest global producer of cotton! From being an importer of cotton till 2003-04, we are today a net exporter. A number of independent studies, including one by the ICAR have shown that the farmer is earning at least Rs 3,000 more per acre by adopting Bt cotton technology, through increased production and savings in pesticide sprays. Pesticide usage in cotton, which used to account for a staggering 54 percent of all pesticides used in country, has seen a drastic fall, not to mention the attending environmental benefits. The most recent economic survey (2007-2008) shows that the production of almost all the food crops slowed down to less than 1.5 percent in the period 2002-2007, way below the projected targets. The only notable exception to this trend was cotton whose production in the same period grew at close to 20 percent per annum, exceeding the targets by a substantial measure.

The spectacular success of Bt cotton should have paved the way for such technologies in other crops. But, this is not happening. There are GM technologies in several other crops that are at least as safe as what is being grown today and with significantly added value to make farming a more lucrative enterprise. However, no one is sure when these would actually be deployed to benefit our farmers. The one question that dwells in ones mind is what's next after Bt cotton? The regulatory approval system, instead of becoming simpler and streamlined with the Bt cotton experience, has actually become uncertain and complicated. The shifting positions and the new and mostly unreasonable testing requirements have not only delayed the release of competing Bt cotton technologies but is holding up valuable technologies in other crops as well. The technology pipeline is right now choked, and if something drastic does not happen, it may dry up altogether.

There are several pending issues that need to be sorted out through reasoned debate and clear positions arrived at. It may be convenient to blame the recent court intervention for this morass, but that does not take away from the responsibility to be clear-headed in laying down the principles of implementing the regulatory system. It should be based on reasoned scientific principles and a common sense approach. Common sense, I am painfully discovering, is not all that common!

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