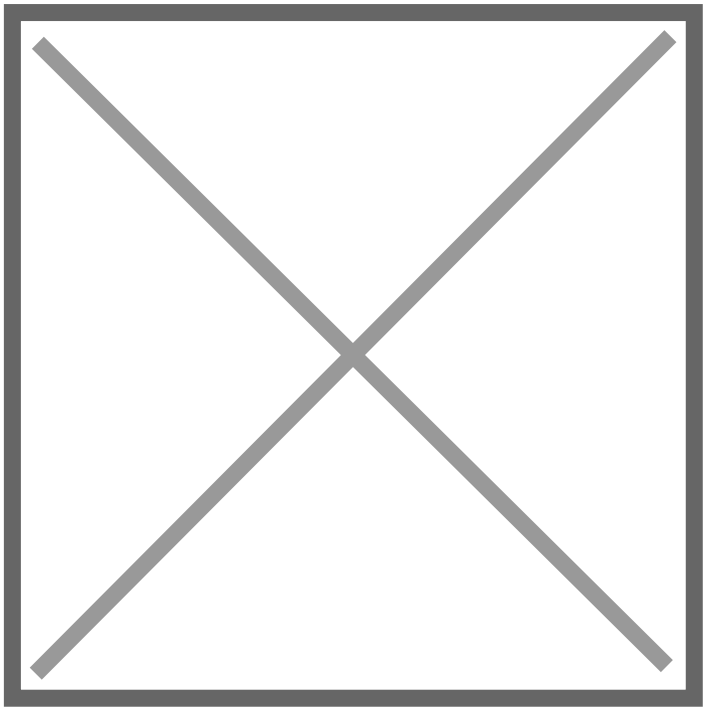
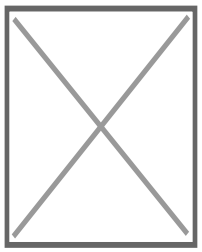
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Educate farmers to change behaviour

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A chartered accountant by qualification, Mr Sekhar Natarajan is the managing partner at S N Consultants since September 2010. He was the CEO and regional lead at Monsanto from June 1980 to August 2010. He is the chairman of the company's listed entity providing strategic counsel, business guidance, and representing the company on several industry forums.

It is 10 years since farmers in India planted hybrid cotton seeds with Bt trait technologies, which provide cotton plants in-built insect protection against bollworms infestation, thus leading to lower insecticide use, better boll retention, and higher yields. Bt cotton seeds are widely planted globally as an environment-friendly way of controlling bollworms, which are known to cause maximum yield loss and economic damage to the cotton crop. While there are five competing Bt cotton technologies available in India today, the first revolutionary technology was introduced in 2002 by Mahyco-Monsanto Biotech India (MMB), a joint venture between Maharashtra Hybrid Seeds (Mahyco) and Monsanto Holdings (MHPL).

Monsanto is singularly focused on agriculture. To quote Mr Hugh Grant, CEO, Monsanto, "When farmers succeed, we succeed." We have partnered in enabling farmers' success for over four of our six decades in India. What is unique to Monsanto is that majority of the field team are from farming backgrounds, who live and work daily with farmers. Their farming background and the company's singular focus on agriculture gives us a tremendous competitive advantage in understanding our customers' (farmers) needs. We begin with research to understand farmers' needs and challenges, and then evaluate the value that our products can create for farmers prior to any product introduction.

During 1993 t0 2002, cotton yields, production and acreage had stagnated to around 300 kg lint per hectare, 152 lakh bales and 85 lakh hectares, respectively. Our research indicated that due to heavy infestation by two main groups of insects — first, biting and chewing-type insects known as the bollworm complex and second, sucking pest insects — the cotton crop was largely non-remunerative to India's farmers. Cotton farmers faced reducing insecticide efficacy against bollworms, and had an urgent need for better insect protection.

It is estimated that before 2002, cotton accounted for 50 percent or ₹16 billion of ₹33.8 billion-worth pesticides, used in agriculture in India (Agrolook, 2001). On an average, farmers sprayed bollworm insecticides five-to-20 times at a cost between ₹1,484 to ₹3,225 per acre (all India average cost was ₹2,146 per acre) in one cotton season. During the 2001-02 kharif season, the bollworm epidemic is estimated to have reduced the yield of cotton in the North zone by 50 percent. The frequent and regular crop failures for 15 years were attributed to bollworms, particularly to the Helicoverpa armigera insect. Thus, in 2002 Bt cotton technology was launched to offer our farmers the choice and convenience of in-built insect protection to cotton plants, as an option to repeated insecticide spraying for bollworms.

We overcame five challenges in the initial marketing of Bt cotton technologies.

- Category development of agri biotechnology.
- New segment entry – launching a new technology product in the seed segment.
- Technology ingredient marketing of a benefit experienced – A seed with a value-added protein unseen at purchase and sowing.
- Behaviour change to reduce spraying insecticides for bollworms infestation.
- Limited reach of mass media to educate six million cotton farmers across nine states.

Our MMB marketing plans focused on three pillars: category education; value to farmers; and choice of access.

Technology education
For farmers, seeing is believing. Our research finds that farmers prefer receiving crop information from fellow farmers, rural retailers, company, agriculture university or department representatives, meetings, and mass media.

So, we focused on show-and-tell, and word-of-mouth methods using field demonstrations and farmer meetings, supported by other tools. We reached out to lakhs of farmers and academics, to educate and demonstrate to them, the features, benefits and value created by seed biotechnology, versus using seeds-plus-insecticides (for bollworms).

Field demonstrations and farmer meetings (participants ranging from 15,000-to-10,000) were our main tools in category development and habit change, and to some extent helped overcome the limited reach of mass media.

MMB, our seed industry peers in India, and State Agri Universities' expanding farmer education efforts between 2002-05 laid the foundation for farmers' belief in the new technology. In 2002, the year of the launch, farmers planted Bt cotton seeds on 72,000 acres; and thereafter from 2003-08 we saw 50-to-100 percent growth every year.

Within seven-to-eight years of launch in 2008-09, farmers chose to plant cotton seeds with insect-protection Bt technologies on 90 percent of India's cotton acres. The immense value created by technology and insecticide savings, doubled cotton production and transformed our nation from a large importer into the world's second largest cotton producer and exporter.

It also helped that Indian seed companies priced the seeds significantly lower (₹1,600) than the combination cost to a farmer for seed-plus-insecticide for bollworms (approximately ₹2,500 at the time). Today's price of Bt insect-protection cotton seeds is approximately ₹1,000 per packet, only a tenth of cotton farmers' total input costs, yet making the maximum impact on yield.

Functional positioning of technology
In the agri input industry, we know that farmers' core needs are maximum yield and income. Hence, our communication focused on the functional benefits of technology, which is superior bollworm control to cotton plants, so that farmers save more through less insecticide usage, yield more cotton, and earn more income. This is supplemented by biotechnology's intangible benefits of convenience, peace of mind and savings in time.

By embracing biotechnology, farmers have reduced insecticide usage by over 20,000 metric tons annually, reducing agriculture's impact on the environment and saving billions of litres of water due to reduced spraying. Insecticide usage to fight bollworms in cotton has reduced by 57 percent, which in value became ₹260 crores in 2008 from ₹600 crores in 2002.

The International Cotton Advisory Council also confirmed that Indian farmers have experienced the greatest benefit from Bt cotton technologies as compared to their peers anywhere in the world. Broad licensing of technology to Indian seed companies offer farmers the choice to access technology in their preferred Indian hybrid seeds of choice. Indian farmers' seed purchase decisions are driven by suitability to their soil and moisture, and nutrient conditions, than by technology.

Today, MMB partners with several Indian seed companies in a broad licensing model. Seed companies offers farmers over 600 hybrid cotton seeds with our and other Bt technologies; and farmers can still choose to use non-hybrid non-Bt seeds. India's Bt cotton revolution is one of innovation and partnerships. The seed and biotechnology industry, partnering with 6.3 million farmers, governments at the Centre and in nine states, agriculture universities and scientists, rural trade, NGOs, and the industry that uses cotton (ginner, textile, export) have enabled India's cotton revolution.