

Lok Satta Party

Some perspectives on Transgenic Technologies

- Agriculture contributes about 15% of India's GDP, but provides livelihood to about 55% of our population. Simple arithmetic tells us that the per capita income of those dependent on agriculture is less than one-sixth, or 16% of the per capita income of the rest of the population. Agricultural share of GDP is steadily declining; but share of population dependent on agriculture is not showing decline at the same pace. As a result, rural unrest and agrarian crisis are deepening. Therefore increasing productivity and incomes of farmers and tenants is a matter of vital national importance.
- All agricultural growth involves cross-breeding, development of hybrids and high-yielding varieties, and selection of plant varieties based on desirable genetic traits. That is how mankind mastered agriculture and generated surpluses. Our green revolution, pioneered by the greatest benefactor of human race, Dr Norman Borlaug, and ably supported by our policy makers, scientists and administrators, was a result of application of knowledge of genetics and selection and propagation of desirable genetic traits. That is how India, whose total production of food grains was of the order of 52 million tons at the time of independence, now has 83 million tons of food grain stored FCI godowns during peak storage period. Embracing new gene technologies is critical for agricultural prosperity.
- Genetic engineering of crops is nothing but selective introduction of DNA segments in a plant's genome through gene-splicing techniques. This process allows the organism to acquire desirable traits like pest resistance, drought resistance, improved yield and nutrition etc. Traditional genetic

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modification is done through selective plant-breeding. Transgenic technology allows scientists to transfer desirable traits rapidly and surely. GM Technology is therefore a vital tool in the fight against poverty and for food security.

- Globally, transgenic varieties of agricultural and food crops have been raised in a gross area of about one billion hectares cumulatively so far. At present, GM crops are raised in about 160 million hectares annually.
- Before introduction of GM Crops they are subject to strict testing and verification. Stringent regulatory measures are in place. So far, the technology has been in use for about 15 years, and it has yielded very good results.
- India developed long-stapled hybrid cotton in late 1970s, and within a decade, production of high quality cotton rose significantly. However, by late 90's, cotton crop developed severe pest attack in the form of resistant heliothis (boleworm). Farmers suffered huge losses, and application of pesticides could not save the crops. Scores of farmers committed suicide in late 80's, and cotton production fell. Years later, the gene that could resist heliothis was identified in a bacterium called *Bacillus thuringen* (BT), and through transgenic technology, it was introduced into cotton seeds. Thus BT cotton became resistant to pest attacks, and it revolutionized cotton cultivation in India. Nearly 95% of the 30 million acres under cotton in India now sows BT cotton seeds. Our production now is about 33 million bales of cotton, second only to China, and India is slated to overtake China in the next few years. Pesticide consumption has come down significantly; environment improved; and India is a major exporter of cotton earning precious foreign exchange. There has been no negative effects on agriculture or health. Cotton seed is consumed by cattle, and oil extracted from seed is consumed as cooking oil.

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All over the world, these products have been perfectly safe for cattle and human consumption.

- Many transgenic technologies – in vegetables, pulses and oil seeds – are now being developed. For instance, ICRISAT, the International Crop Research Institute for dry areas, located near Hyderabad, is developing transgenic ground nut. India now imports 9 million tones of cooking oil at enormous expense to meet our shortages. Transgenic seeds would revolutionize dry land oil seed cultivation, enhance incomes of small farmers in places like Amateur and Mahaboobnagar, eliminate imports, and improve food security of India. Similarly, vitamin-D rich rice is now being developed through trans-genic technology. This and other such varieties will significantly reduce malnutrition and hunger of most of our people.
- Human Insulin now available to patients of Type-1 diabetes and Type-2 Insulin-resistant diabetes is a transgenic product saving lives. Until Human Insulin has been developed through GM technology bovine insulin was the only recourse, and many insulin-dependent diabetics developed insulin-resistance and life-threatening complications.
- Mankind always prospered by technological innovation. While India's geographic area is only 2.5% of global land mass, we have about 11% of World's arable land. Such land mass, plentiful sunshine, good rain fall and millennia of strong agricultural tradition give us priceless opportunity to become a global giant in farming, and make our agriculture an engine of economic growth. For this to happen, we need the best proven technologies available to farmers. A nation of India's size and potential cannot deny to itself frontier technologies. The US, Brazil, China, Russia, Australia, South Africa, Canada and other major agricultural powers are harnessing transgenic technologies effectively to enhance their production and productivity

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Soyabean, maize and other GM crops are already transforming global agriculture. India cannot afford to be marginalized in agriculture.

- We should certainly take all steps possible to prevent monopolies of MNCs in transgenic technology. Corrective steps are necessary by ICAR, agricultural universities and scientists to ensure that transgenic varieties are developed in public sector to benefit farmers. Years ago, ICAR declined to purchase BT cotton technology and germ plasm when it was offered by private companies on attractive terms. India is paying a heavy price for that lapse. We now need to promote GM research.
- We must not confuse between access to technology and danger of monopolies. We need technology; but we must prevent monopolies. We cannot give up technology for fear of monopolies. That would be tantamount to throwing the baby with the bathwater.
- Lok Satta fought against monopolistic tendencies of Monsanto, an MNC, which has huge market share of BT cotton seeds. In 2006, Lok Satta filed a writ petition WP No.5505 of 2006 in the High Court of AP seeking a declaration that the trait value of BT Cotton seeds involving Monsanto Technology should be reduced and should be sold at a level that was in vogue in China. Taking a cue from this writ petition Government of Andhra Pradesh has instituted a complaint before MRTP Commission, New Delhi in RTPA No.2/2006, which was disposed of on 8-12-2009, where in orders were passed reducing the price of BT cotton seeds. Lok Satta's initiative and Government's positive response brought down seed price significantly.
- This is a clear case where fight against, and regulation of, monopolies and extortionary prices is separated from the desirability of proven transgenic technology. Merits and Safety of technology should not be confused with safeguards against monopoly.

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- Independent regulatory authority to prevent abnormal pricing and fixing of reasonable prices is necessary. Fair return on investment to seed producers and developers, and affordable price to farmers - both must be ensured by an independent regulatory authority. Lok Satta has sought such a direction from the Supreme Court in the application made in relation to the case pending before the Court
- Regulatory agencies in bio-technology need to be constituted only with individuals who are known experts with global exposure in the field. In order to prevent vested interest developing and to ensure keeping pace with changes in technology, the experts in regulatory agency should serve a fixed tenure – say, three years. No one should be allowed to continue for long term.
- Under Indian law, holders of patents are allowed monopoly of technology for 20 years from the date of registration in India – not 20 years from the date of first patent anywhere in the world. MNCs are using this provision to register patents in India only after commercialisation of products. Law needs to be amended to reduce such monopolistic tendencies. Also companies may resort to small, insignificant, cosmetic changes in existing technologies and file them as new patents to get extended patent life of 20 years. Safeguards should be institutionalized by patent Authority.
- All these and other necessary steps should be taken to protect our national interest as well as farmers' interests. However, rejection of technology because of our unease with MNCs is like cutting the nose to spite the face, and is not an option.

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- Mankind progressed and prospered through technological development, adaptation of proven technologies to improve production, creation of functioning free and fair markets, elimination of monopolies, and constant innovation. Indian agriculture needs such innovations and technologies. The scientific community and competent regulatory authorities must be entrusted with the responsibility to evaluate technologies and safeguard public interest. But fear, scare-mongering and aversion to monopolies cannot derail us, or deny us technologies. We need the best technologies in agriculture that modern age offers, but with two caveats: competent agencies should make informed decisions regarding safety and efficacy; and all effective steps should be taken to prevent emergence of monopolies to the detriment of farmers.

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