

# Engineered crops come creeping by ✓

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Transgenic cotton, brassica, melons, squashes, tomatoes and other "bio-engineered" crops are set to "invade" India in the wake of the GATT accord. How strong is our defence against the potential harmful effects of this invasion from the United States, Europe or other developed countries?

A very profitable product line has just been unveiled by bio-engineered crops, and private enterprise is expected to lap this up for use in this country.

India has already adopted a bio-technology safeguards regime which is much the same as in the United States. The bio-safety Committee is currently discussing review procedures for these safeguards to establish a workable protocol.

But an Indian American scientist currently helping Indian authorities to establish such procedures thinks that India must evolve its own safety structures which should be cost effective, not discourage innovation and must address itself to the specific Indian environment.

Transgenic plants, vegetables or fruits are those in which a desirable gene has been implanted to give a specific quality. Like insect resistant cotton, or the new "flavor-savor" tomato developed in the United States, a vast catalogue of bio-engineered crops are under development there.

Subject to our safety regulations, all of these products would have free access across national frontiers as a result of the new GATT accord.

Dr. Sivaramiah Shantaram, chief, micro-organism branch of the United States Development Agency bio-technology regulatory programme told this correspondent in an interview that the most important problem in dealing with these new commercial products of bio-technology was to ensure that the transferred gene did not escape into the environment. Such an escape could cause disaster.

For instance, if weed resistant gene transplanted in a new wheat variety escapes and gets embedded in the weed, it could lead to the weed having a better biological edge over wheat and devastate wheat cultivation. There are also uncertainties about what would happen when the transgenic product gets into the food chain.

All these bio-engineered products have certain market genes which help scientists to identify whether the desired genes have been ingested. Some of these market genes are antibiotic resistant. If these get into the human system, the system would become resistant to anti-biotics and thus endanger human health.

India would have to make independent assessment of such products for their allergic potential, toxicity, carcinogenic capacity. These questions must be addressed and evidence to answer them must be gathered specific to the Indian environment, Dr. Shantaram says.

"This debate about the long term safety of bio-engineered life forms is already going on in the West. As a result some of the bio-technology companies have joined together into a consortium to come up with strategies to use transgenic plants safely", the biologist who is teaching at Maryland University, says.

Though it is tempting to obtain insect or pest resistant crops using bio-engineering technologies which help transfer desirable genes from one organism to another, this is not the end of the search for pest resistant products. The pests in turn develop resistance against such transgenic crops also just as they do against drugs.

It means that transgenic plants alone could not make a pest resistant strategy. Integrated pest management which includes bio-engineering, should be available. For such strategies, lot of evaluation of different combination of weapons against pests would be needed including a well informed scientific debate.

Besides, India has to protect its bio-diversity from any fatal imported gene for which lot of evidence would have to be gathered.

Dr. Shantaram advocates a "properly structured" regulatory authority which should include experts from different disciplines including law. The regulatory process, he insists, should not be a means of discouraging innovation as it happens in this country but an informed process to rapidly help advent of bio-technology.

The biologist suggests that the use of bio-technology should also be accompanied by transparent processes of enforcing safety procedures. He also pleads for educating the public about such products and their potential benefits and dangers. All such procedures must be cost effective, matching regulations and costs. It is also important such regulatory bodies must have evaluation committees whose working should be transparent.

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