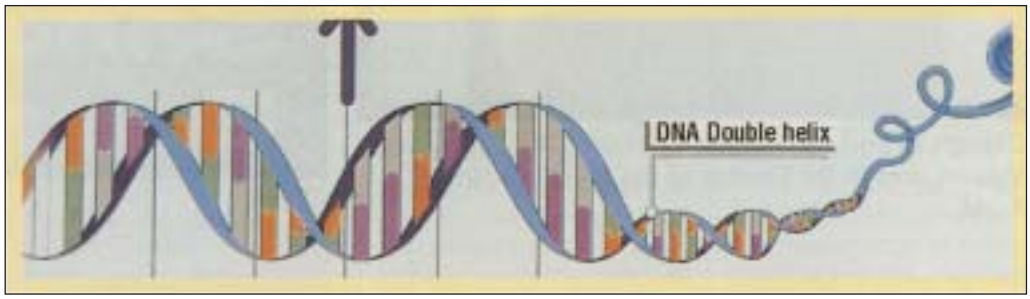
CLARIFYING COMMON CONCERNS ABOUT GMOs

According to the Food Advisory Consumer Service (F.A.C.S) a number of concerns have been raised about Genetically Modified Organisms (GMOs) and biotechnology. It is important to know that these are carefully considered by biosafety review teams for each and every GMO application. In this article we look at some of the responses received from scientists in the field of biotechnology.



Human and animal safety

There is concern that new genes will alter and/or increase the toxicity or allergenicity of common foods and that foods which were always considered safe may become allergenic. The safety of GMOs and their products to all consumers in the food web is a major priority in every biosafety assessment. Increases in allergenicity or toxicity of foods would not obtain biosafety approval.

For the last ten years the South African Committee for Genetic Experimentation (SAGENE) has advised government, industry and the public on the safety of GMOs. The GMO Act (No. 15, 1997) has been implemented in 1999, making provisions for new biosafety structures: an independent decision making body and a new scientific advisory committee. The South African consumer is also protected by existing legislation, Foodstuffs, Cosmetics & Disinfectants Act, 1972 (Act 54 of 1972) which oversees the safety of food in South Africa.

Transfer into natural flora and fauna

There is concern that the foreign genes will move from the crops or production animals into natural plants and wildlife and that this uncontrolled spread of the foreign genes may have a long-term impact on the health and balance of natural ecosystems.

It would be unacceptable to release any GMO that will cause long-term damage to ecosystems. Biosafety review committees carefully assess the potential for gene movement before approving commercial GMOs.

Long-term instability of foreign genes

There is concern that genetic modifications originally deemed safe, may with time become unstable in the host resulting in increased toxicity, allergenicity or threaten the environment. Stable, long term safety of GMOs and their products is a major issue in all safety assessments. Any sign of instability is considered unsafe for general release.

Stability in crops is assessed over six or more growing seasons. Additionally, a huge area in North America is now sown with GM crops and has been for six years.

'Terminator' (sterile) seeds

There is concern that the proposed technology to protect the intellectual property rights of commercial seed producers will cross into subsistence farmer fields. This outcrossing might prevent subsistence farmers from collecting seed to replant year after year i.e. seeds become sterile. Any GMO that will impact on rural farming in an adverse way will not get a biosafety clearance permit.

Antibiotic resistance

Genetic modification sometimes uses antibiotic resistance genes to trace gene movement and stability. There is concern that genes could move out of the GMO into other organisms in the environment and cause increased antibiotic resistance in ecosystems. This might add to an already serious resistance problem generated through the improper use of antibiotics.

Antibiotic marker genes (genes which have been visibly marked for easy identification) are highly unlikely to move into other organisms in the food web. These genes obtained from soil bacteria and fungi, already occur in high numbers in all ecosystems. However, all marker genes are carefully reviewed before general release permits are issued.

Ethics

There is concern that it is not ethical to move genes between organisms. Many scientists see gene modification as a natural progression in breeding, selection and drug development. However, this is a personal decision that will be made by individuals based on their religious, spiritual and personal beliefs. Consumers should be empowered to make informed choices about whether they chose to use GM products or not.

A workshop, organised jointly by the South African Department of Health and the National Department of Agriculture was held in Pretoria in August 1999, at which the general consensus reached amongst delegates was that the consumer had the right to be informed and that labelling of GM foods must be addressed.

Approved applications for use of GMOs in South Africa

Very few first time submissions are approved without the need for additional consultation.Applications are more likely to be approved quickly if they are repeats of previous work, or if they are submitted by an applicant who already has experience in submitting applications. There is no pressure to rush into GM technology. In South Africa over one hundred applications for the use of GMOs have been received, over a nine year period, which has led to only two commercial releases to date.

Unapproved field trials in South Africa

To grow GM seeds without approval transgresses the GMO Act which could lead to prosecution. At present the import of GM seed, fresh fruits and veg-

etables require biosafety assessments for GMOs and this is controlled with permits.

Reasons for rejection or acceptance of GM food crops

GM food crops are accepted if they have definite benefits for the country and are an improvement on conventional crops. GM food crops are refused approval for commercial release if their impact on the environment is unclear and unmanageable or if they are potentially more harmful to humans than the conventional crop.

Death by GMO-derived foods

The USA has been growing GM crops since 1992 and China since 1990. There has not been a single substantiated claim of GM food having caused death, neither is there any scientific data that such food could cause chronic diseases such as cancer.

Transfer of the genetically modified DNA to humans

The human body contains billions of micro-organisms, many of these existing in symbiosis with the body. In Addition, one ingests, inhales or absorbs alien organisms and their DNA every day. The human body has its own defense mechanisms which preclude incorporation of alien DNA. The chances of this happening is infinitesimally remote. There is no scientific evidence that the body will react differently to GM-derived foodstuffs.

Benefits of GM crops for commercial farmers at the expense of subsistence farmers

Products of biotechnological innovation are not necessarily the solution to all food production problems. They present additional technological solutions and their application will depend upon specific farmer needs, irrespective of the size of their operation.

In China some 600 000 peasant farmers are growing one million hectares of GM cotton. This has resulted in more efficient production and substantial decrease in chemicals used, benefiting users and environmental
safety.

Once European, Asian and African subsistence farmers gain access to modern seeds that are more resistant to pests, withstand drought, salt and cold, and have other superior performance characteristics, their agricultural output will benefit.