

# NATIONAL BIOETHICS COMMISSION

## RECOMMENDATION ON GENETICALLY ENGINEERED PLANTS

The National Commission of Bioethics in a series of meetings has discussed the subject of genetically engineered (GE) plants (via recombinant DNA technology) and their products.

GE plants, in contrast to plants resulting from conventional breeding (including the interspecific hybrids), are organisms that have received and expressed alien genetic material (isolated from bacterial, viral, plant, or animal DNA) through a variety of molecular techniques known as recombinant DNA (rDNA) technology. By these techniques one could either inactivate or delete a gene or he could incorporate a new alien gene(s) in the genome of a given variety. However, together with the alien gene(s) that offer an agronomic advantage to the variety used, scientists are incorporating in the recipient genome proper virus promoters to facilitate optimal trait expression in the new genome and antibiotic resistant genes to act as markers. Consequently GE technology has opened the way for gene transfer from taxonomically distant organisms to plants, something which was impossible via conventional breeding, leading to rather faster genetic changes than before.

The production of GE plants of agronomic interest and their release in the environment and the market has raised public concern and protest. Pro-GE arguments focus on the nutritional advantages that could be attained through genetic modification of crop plants, the advantages from reduced use of pesticides due to insect resistant GE crops and the advantages of herbicide resistant GE crops since they require less labor intensive practices during cultivation although they may lead to an increased use of herbicides. In addition, pro-GE's arguments propound the potential benefits of GE products, such as vaccine administration through food, and their contribution to global food, feed, and fiber security. In contrast, anti-GM arguments stress the threat to biodiversity that is imposed by the GE plants, the farmer's dependence on the biotech companies that provide the GE-seeds, the potential allergic reactions that GE-food could cause since the presence of alien genes could produce new proteins causing allergies to some people. Furthermore anti-GE campaigns raise concerns about the possible acceleration of the process that leads to the development of bacterial resistance to antibiotics due to the presence of antibiotic resistant genes in the GE plants and their products. Finally, anti-GE arguments stress that the major cause for famine today stems from the unequal global distribution of food rather than limited food production on the planet.

There is a limited number of scientific studies to date concerning the potential benefits and risks of GE plants whilst results are often controversial. This uncertainty fuels rather sentimentally charged debates leading to public confusion, which in turn prevents citizens to reach an objective decision as to whether they will consume or reject the consumption of GE plants and their products.

Based on these considerations the National Commission of Bioethics proposes:

1. A temporary moratorium concerning GE crop field trials and cultivation in Greece. In addition, the small land share regime, and the fact that exports correspond to both primary and processed agricultural products, together with the substantial number of tourists visiting the country suggest that a delay in the cultivation of GE crops could only be to the country's interest. In contrast, in the short term the Commission suggests that State agriculture should be directed towards integrated and sustainable agricultural practices. In any case the attempt to keep Greece a GE free country should conform to E.U. legislation.
2. Research on the production of GE plants and their short and long term impact on health and the environment should be encouraged only after the development of a proper draft regulating the experimental terms and the ways needed to control the research carried out and the results obtained. The research concerning the impact of GE crops could also be conducted abroad.
3. Compulsory labeling of the primary GE products and the processed ones originating from GE crops or containing GE products.
4. Because the issues raised by the applications of biotechnology are controversial from a social and ethical point of view, it is advisable that a group of specialists be formed who would report on each specific case to the Commission so that the decisions and recommendations are scientifically sound and objectively grounded.