

Weighing the GMO arguments: for

Food and Agriculture Organization of the United Nations

Potential benefits for the environment

More food from less land: Improved productivity from GMOs might mean that farmers in the next century won't have to bring so much marginal land into cultivation.

GMOs might reduce the environmental impact of food production and industrial processes: Genetically engineered resistance to pests and diseases could greatly reduce the chemicals needed for crop protection, and it is already happening. Farmers are growing maize, cotton and potatoes that no longer have to be sprayed with the bacterial insecticide *Bacillus thuringiensis*- because they produce its insecticidal agent themselves. Scientists are developing trees that have a lower content of lignin, a structuring constituent of woody plant cells. This could reduce the need for noxious chemicals in pulp and paper production. These developments could not only reduce environmental impact - they could also improve the health of farm and industrial workers.

Rehabilitation of damaged or less-fertile land: Large areas of cropland in the developing world have become saline by unsustainable irrigation practices. Genetic modification could produce salt-tolerant varieties. Trees might also be improved or modified to become more tolerant of salt and drought. They might also be selected or bred for rehabilitation of degraded land. While there is some advanced research in this area, salt and drought tolerance are the result of quite complex gene combinations, and positive results will take longer than those providing insecticide and herbicide resistance.

Bioremediation: Rehabilitation of damaged land may also become possible through organisms bred to restore nutrients and soil structure.

Longer shelf lives: The genetic modification of fruits and vegetables can make them less likely to spoil in storage or on the way to market. This could expand trade opportunities as well as reduce massive wastage incurred in transport and supply.

Biofuels: Organic matter could be bred to provide energy. Plant material fuel, or biomass, has enormous energy potential. For example, the waste from sugar cane or sorghum can provide energy, especially in rural areas. It may be possible to breed plants specifically for this purpose. And other unexpected, useful products could prove of huge value.