

GREEN GENETIC ENGINEERING

Sustainable usefulness not yet proved

Abstract

Pressure for increased efficiency in agriculture is rising as global food requirements increase and the demand for agro-based products is growing. Genetic engineering can make a significant contribution to increasing and stabilising agricultural yields. But can genetic modified of agricultural crops also play a central part in providing food security for the rural poor? Facing the insufficiency of scientific knowledge in relation to the opportunities and risks of this technology and based on project experience of its partners in developing countries Welthungerhilfe has come to the following conclusion:

A sustainable increase in income for small-scale farmers in developing countries has so far hardly been proved; nor is there evidence of a significant contribution to reducing hunger. On the other hand, genetic engineering entails the risk of economic dependency and social exclusion. In addition, ecological diversity and sustainability are in danger due to uncontrolled transgenic releases, and health risks have not been sufficiently researched.

In view of the lack of consensus regarding the evaluation of benefits and risks of genetic engineering for agriculture, Welthungerhilfe promotes existing technological options for efficient site-specific agriculture and will continue not to recommend the application of genetically modified seeds in its projects and programmes until a broad consensus has been reached that their positive social, economic and ecological usefulness outweighs the risks. The dissemination of genetically modified food and seeds is excluded from our aid deliveries as far as possible.

The rising demand for agricultural goods is a real challenge for plant breeding. Scientists and politicians claim that genetic engineering will provide higher, more reliable yields despite shortages of fertile land and water. In the future, genetic engineering should make a decisive contribution to food security and to fulfilling the rising demand for agro-based resources. Plants have

already been genetically modified to enrich them with nutrients, to avoid nutrient deficiencies in people's diets.

From the perspective of development policy, agriculture must meet two main requirements: it must provide food for all and make a significant contribution to poverty reduction. This means that in addition to increased, reliable yields, additional basic demands are placed on new plant breeds (cf. Section 1 on agriculture):

- Seeds must be affordable to small-scale farmers with low purchasing power and they must lead to increased income.
- Seeds which cannot be reproduced by the farmers themselves create dependency on seed companies, a fact which needs to be taken into consideration; seeds must also be available in remote areas.
- Ecologically sustainable and socio-culturally adapted agricultural practices must not be adversely affected by squeezing out traditional cultivation methods.
- The coexistence of traditional and genetically modified plants must be ensured. Where both varieties are planted next to each other, it must be possible to distinguish between them. This also applies to separate processing of agricultural produce and food marketing. So far, the ecological and legal consequences of spontaneous out-breeding of genetically modified plants and mixing in food production are not fully clear.
- The risks for human health and for diversity of species must not be greater than for conventional breeds.

So far, green genetic engineering has produced very few products which fulfil these requirements. Hardly any long-term research in relation to sustainable poverty reduction for small-scale farmers in developing countries has taken place. Breeding genetically modified seeds usually focuses on resistance to insects and herbicides, which is mainly of significance in industrialised agriculture. Welthungerhilfe's target groups, however, produce primarily for their own requirements or local markets. They do this in diverse farming systems which are highly labour intensive, including diversified cultivation practises and a wide range

of species and varieties but using little capital. For this reason they cannot really benefit from the potentials of genetically modified varieties; income increases due to the use of genetically modified seeds are usually small; they may even be negative in the long run.

The introduction of breeding protection and patents on plants has resulted in a rapid increase in private company breeding in recent decades. For centuries, the results of breeding were a public good which could be used by all farmers. Nowadays, farmers are increasingly losing control of their seeds. This particularly affects women farmers in their function as the main preservers of seeds. The traditions of production and storage of seed and free exchange between farmers is becoming increasingly restricted. Patents protect genetically modified seeds from being reproduced; through hybridisation of seeds and terminating genes even for farmers' own use a reproduction is in most cases not possible. This creates a strong dependency on one or a few private seed producers (cf. Section 11 on agro biodiversity). This trend seems irreversible at present, because there is too little public research in genetic engineering to counter privately financed agricultural research.

The debate on green genetic engineering lacks transparency. Reliable information about the state of research, potentials, risks and approval procedures is hard to find. The public debate is dominated by the conflicting interests of research, marketing and environmental protection. It often takes place in a heated ideological context. This is not a satisfactory basis on which consumers, farmers and policy-makers in developing countries can make free, qualified decisions for or against genetic engineering. It is almost impossible for the respective bodies in developing countries to assess the benefits as well as ecological and health-related effects of genetic engineering due to lack of reliable information, let alone access to a suitable techniques for testing of the products.

Green genetic engineering is an expensive technology. Up to now, it has been designed for the requirements of agriculture in industrialised and emerging economies, with very few exceptions. In fact, most small-scale farmers could increase their yields and incomes more efficiently by using conventional farming practises and support structures. This would include improved local plant breeding, investment in infrastructure, water management, post-harvest protection, establishing sustainable production and marketing structures, and access to loans and increased value creation through processing and marketing (cf. Sections 2 on the economy and 5 on micro financial services).

Guidelines for Welthungerhilfe's involvement in rural areas in relation to green genetic engineering:

Promoting agriculture which focuses on site-specific cultivation methods and improved inputs for market production.

At present, no genetically engineered products will be used in our projects, nor will their use be supported until there is clear scientific evidence of an overall benefit for people and the environment from genetically modified plants and seeds.

Welthungerhilfe will exclude genetically modified food and seeds when distributing relief supplies (e.g. through spot checks).

Empowerment of local partner organisations in respect to site-specific agriculture will be supported. This also includes transparent discussion on genetic engineering.

Integrating experience and demands of local partners into the policy dialogue with industrialised countries (advocacy).

Welthungerhilfe's demands in relation to the role of green genetic engineering in rural development:

Politicians, scientists and private industry must hold an open, transparent debate on genetic engineering which can be followed by producers and consumers alike.

The safeguarding of biodiversity must be in the focus of plant breeding and cultivation. Risks (above all to health and environment) entailed in genetic engineering must be systematically determined through appropriate, neutral testing including long-term observations.

More research into green genetic engineering should be carried out with public funds in developing countries (e.g. by national agricultural research institutes) involving farmers. Research into genetic engineering, however, should not lead to the neglect of other plant breeding methods.

If both genetically modified and conventional plants are cultivated, it must be possible to distinguish clearly between them during cultivation and throughout the production and value chain process.

This section is an excerpt of the WHH Position Paper Rural Development. Please also consult all other sections at www.welthungerhilfe.org/position-paper-rural-development

Bonn/Berlin March 2012

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