

Opinion paper: Ethical Issues in the Use of Genetically Modified Organisms in Food Production in South Africa

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Introduction

The ethical arguments concerning genetically modified organisms (GMOs) and their use can be divided into fundamental matters of faith and those which can be addressed by public policy. Here I will only focus on the latter.

If the aim of a rule/policy is to ensure ethical behaviour, ethicality should be clearly defined. For the sake of this paper I will therefore define ethics according to Rule-utilitarianism, which states that acts are ethical if they lead to the greater good of the greatest number of people. Ethics therefore basically concerns our responsibility to the rest of society to act in a way that will be to the greater good of all - with the understanding that in a liberal society this will be balanced with the general rule which allows maximum self-determination and choice.

Based on this definition of ethical behaviour it is clear that there will be little difference in the ethical issues identified by the supporters and opponents of GM technology and its use in foodstuffs. Differences in opinion rather arise from how these basic principles should be applied practically and, more specifically, this often revolves around what could be considered as reasonable expectations. Here I will therefore, as a supporter of the technology, first identify what I consider the most important ethical issues relevant to the use of GMOs in food and then briefly discuss how these should be addressed and finally, at the hand of a contentious discussion point in each case, illustrate how the GMO debate is often based on different interpretations of what constitutes practical adherence to the ethical principle.

The key ethical issues regarding GM food are: (i) Access to and dissemination of information. (ii) Safety (potential health & environmental impacts). (iii) The right to choose. (iv) Accessibility to the technology and its benefits.

Access to and dissemination of information

Access to information is a basic right and is an obvious prerequisite for making informed decisions. All role players should therefore have access to all the relevant information - to both the more general aspects such as the underlying principles of the technology and also specific and detailed information regarding a particular GM product. This does not only mean that the “tenderers” of the technology have an obligation to make information available but also that they should actively communicate and interact with the potential “users” of the technology. Similarly, the “opponents” of the technology has the responsibility to convey information in a clear, honest and fair way.

Discussion point: Unfair generalisation and misrepresentation. GM is often only presented as the “unnatural” movement of genetic information between different organisms/species to emphasise arguments regarding the supposed “synthetic” and “unpredictable” nature of GM crops. Transgenic sequences can of course be composed of genetic material originating entirely from the target crop and ironical “natural” horizontal gene transfer is often used as an argument against the safety of transgenic crops. Moreover, research results are often criticised and interpreted out of context, e.g. making applied and commercial conclusions from early developmental work.

Safety

The safety of foodstuff is obviously of utmost importance and non-negotiable. In general, the safety of GM crops does not only refer to the health of the consumer but also to its potential impact on the environment. It is in the first place important to make a realistic estimate of the “theoretical safety” of a GM product. This should include the evaluation of aspects such as the nature of the crop plant itself (e.g. access to wild relatives), the nature of the transgene (e.g. endogenous vs. exogenous), its functionality (e.g. non-translated vs. translated), the presence of additional sequences (e.g. marker genes) and the nature of the final product (e.g. fresh fruit vs. refined sucrose). Based on this information, evaluation systems appropriate to each category should be put in place to ensure the safety of these products before commercialisation – an aspect that is currently regulated by the GMO Act.

Discussion point: Exaggeration of risk and unrealistic expectations. Unintended gene transfer, either through pollen or direct transfer, is often raised as a major risk associated with GM crops. Although this could represent a real risk under particular circumstances that should be managed carefully, the chances that this could happen and the possible implications thereof are often exaggerated. The antibiotic resistance marker *nptII* is, for example, already present in a large number of soil and gastrointestinal bacteria, which means that humans and animals are permanently exposed to it, but only when used in GM crops it is defined as a potential risk. In addition, unrealistic “guarantees” are often expected regarding aspects such as the possible long-term or unintended effects of GMOs – a trait GMOs share with all other biological systems.

The right to choose

Personal choice could impact on the production and use of GM food on two levels, i.e. the choice to buy or not to buy GM food and the choice to actively influence other people’s choices. Where the first choice has predominantly personal implications the second carries a much bigger ethical responsibility. Freedom to choose is one of the biggest privileges in a democratic society and should, according to the definition of ethical behaviour above, only be restricted if that choice impacts negatively on society in general. Transversely this means that we have an ethical obligation to choose what is best for society. This is especially relevant to opinion formers and care should be taken not to put personal agendas ahead of matter that could potentially benefit the whole society.

Discussion point: Labelling of GM food. Again it is not the basic right that is contested but rather the ways in which this should be made possible. It is obvious that labelling is not just about identification but also about issues such as identity preservation and its implications for production systems – all of which translates into costs. In addition, it is unfair discrimination to single out GM foods for labelling on the basis of safety, environmental and/or ethical considerations because many other production systems deserve the same scrutiny.

Accessibility to the technology and its benefits

Much more should be done to make biotechnology, its products and huge potential benefits more accessible to everyone. Unfortunately, because of its high-tech nature and the high costs associated with the development of products, commercial success has thus far been limited to large companies. Although commercial farmers and to a smaller extent also some small-scale farmers benefit from these products in South Africa much more should be done to develop products that will benefit not only commercial consumers but also subsistence communities. Especially in developing countries this would depend on public and humanitarian funding to ensure that the right types of products are developed and that the technology stays public property. I truly believe that as the technology becomes more advanced and less expensive products will be developed that will benefit small communities locally and then biotechnology will truly benefit all.

Discussion point: The current restrictive regulatory systems limit access to the benefits of biotechnology. Although GM regulatory systems are often criticised for being too lax, developmental work specifically aimed at addressing these issues, is already one of the major contributing factors to the development costs of GM crops. In fact, these costs are so high that it will severely limit the capability of most developing countries to develop their own GM crops. Regulatory systems should therefore be adaptive enough to be able to distinguish between GM crops with different potential risks to allow easier and more cost-effective approval of low-risk events.

Conclusion

The use of GMOs in food carries ethical responsibilities not too dissimilar to that of the rest of the food industry. I believe that both the supporters and opponents of this technology will identify similar ethical boundaries for the use of GMOs in food, but that our practical interpretation of when these boundaries are crossed differs. Per definition the abovementioned ethical issues should be clearly and scientifically defined, differentiated and honestly communicated to the potential consumer. Finally, the potential risks associated with GM food should be realistically defined in terms of general biological systems, weighted against the potential benefits and carefully managed where relevant.