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THE MORAL DIFFERENCE BETWEEN INTRAGENIC AND TRANSGENIC MODIFICATION OF PLANTS

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ABSTRACT. Public policy on the development and use of genetically modified organisms (GMOs) has mainly been concerned with defining proper strategies of risk management. However, surveys and focus group interviews show that although lay people are concerned with risks, they also emphasize that genetic modification is ethically questionable in itself. Many people feel that this technology "tampers with nature" in an unacceptable manner. This is often identified as an objection to the crossing of species borders in producing transgenic organisms. Most scientists reject these opinions as based on insufficient knowledge about biotechnology, the concept of species, and nature in general. Some recent projects of genetic modification aim to accommodate the above mentioned concerns by altering the expression of endogenous genes rather than introducing genes from other species. There can be good scientific reasons for this approach, in addition to strategic reasons related to greater public acceptability. But are there also *moral* reasons for choosing intragenic rather than transgenic modification? I suggest three interrelated moral reasons for giving priority to intragenic modification. First, we should respect the opinions of lay people even when their view is contrary to scientific consensus; they express an alternative world-view, not scientific ignorance. Second, staying within species borders by strengthening endogenous traits reduces the risks and scientific uncertainty. Third, we should show respect for nature as a complex system of laws and interconnections that we cannot fully control. The main moral reason for intragenic modification, in our view, is the need to respect the "otherness" of nature.

KEY WORDS: biotechnology, ethics, intragenic, natural, species, transgenic

1. REGULATION OF GMOs – ETHICAL ARGUMENTS

1.1. *Regulation and Risk Assessment*

Regulation of the development, release, and commercial production of GMOs has mainly concerned questions of environmental and health risks. A typical example is EU Directive 2001/18/EC, which states that "[t]he protection of human health and the environment requires that due attention be given to controlling risks from the deliberate release into the environment of genetically modified organisms (GMOs)." Limited experience with GMOs and insufficient understanding of the complexity of nature has lead

to a focus on the scientific uncertainty and even ignorance of hazards related to the use of these organisms. The European Commission accordingly requires the use of the precautionary principle in the implementation of the Directive. This and similar regulatory principles reflect major concerns within the GMO debate. Several scientists have participated in this debate, arguing either for precautionary approaches or for quantitative risk assessment procedures. European regulation, as expressed in the Directive, follows the first line of reasoning, whereas regulation in the USA takes the second approach. Despite disagreement regarding the basic principles of regulation, both approaches express what are generally termed extrinsic ethical concerns.

The focus of extrinsic approaches is on the preconditions and consequences of an activity. In addition to the risks to health and environment emphasized in the Directive, extrinsic concerns include all the benefits and disadvantages of the activity, such as the economic and social impacts on the different stakeholders. Neither the scientific debate nor the regulatory procedures give much regard to intrinsic concerns, i.e., concerns about the moral status of the activity itself or of the entities involved in it. Although the Directive mentions the importance of respecting "ethical principles recognized in a Member State," no example of such principles is given. This seems strange considering the fact that intrinsic concerns are often considered to deal with more profound questions than extrinsic ones (Reiss and Straughan, 1996: 49) and are regarded as especially important by lay people (Knox, 2000: 103f). Generally, these arguments are more often discussed by philosophers and theologians than by scientists and lawmakers, and have little impact on the political regulation of biotechnology. A frequently mentioned reason for the view that genetic modification is morally questionable, is that it is contrary to nature, i.e., that it is unnatural. Given that controlled breeding is regarded as acceptable, it seems that the problem is not human intervention in organisms in general, but intervention on the DNA level.

1.2. *"The Natural" and Crossing Species Borders*

Claiming that something is unnatural is notoriously ambiguous, and this argument against GM technology is easily, and frequently, ridiculed. Holland (2003: 152f) points out that the argument from nature is open to abuse (for example to justify discrimination against homosexuals) and can be invoked to support contradictory views. We can claim that living in an environment entirely shaped by humans, such as a large city, is unnatural, but reshaping nature according to our needs and desires is an expression of the essence of human nature. For humans, "the artificial is natural."