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**ETHICS IN CROP PRODUCTION AND AGRICULTURAL BIOTECHNOLOGY**

Crop production has been advanced through technology enabling scientists to develop more accurate and powerful tools (biotechnology) to yield crops with selected traits to benefit farmers and consumers. Developments and applications in biotechnology must include ethical considerations because food that has been genetically modified or engineered, either directly through recombinant DNA (rDNA) methods or by selective breeding, impacts on humankind, society and the environment.

To quote Thompson (2000): “Those who call for attention to ethical issues appeal to many diverse values. Their concerns can be classified into two broad categories. On the one hand, some see the very act of using genetic technology raising ethical issues that would not apply to other applications of food and agricultural technology. On the other hand, some believe that specific applications of biotechnology raise ethical issues that are not being adequately addressed, even if these issues may be raised in connection to other, more conventional types of agricultural technology, as well.

*Special Arguments Pertaining to the Use of rDNA Technology*. There are several types of concern noted by those who question whether the use of biotechnology may be intrinsically questionable. - Genes and Essences. Longstanding religious and cultural traditions associate the idea of a particular Aessence@ with different species of living organisms, and specify an obligation for human beings to respect these essences. Some may associate the modern notion of genes with this traditional notion of essence.

- Species Boundaries and Natural Kinds. The idea that there is a specified order of nature@ may involve the belief that the species of plants and animals we find around us represent natural “kinds”. Some may fear that biotechnology disturbs this order and thereby violates absolute limits on what human beings are ethically permitted to do.

- Religious Arguments. Many religious traditions prohibit acts that involve transspecies reproduction, or ban the consumption of some species groups for food, and the mixing of foods from different groups. Biotechnology may be interpreted as contrary to some of these religious traditions.

- Emotional Repugnance. Cultural traditions dictate that some potentially consumable substances (e.g. species such as cats and dogs, or particular parts of plants and animals) are not suitable for use as food. Western food systems currently respect the repugnance that people feel toward these substances as a sufficient ground for policies that help people avoid consuming them. Some individuals may feel a similar repugnance toward bioengineered foods.

*General Technological Ethics*. There are a number of ethical questions that can be raised with respect to virtually any new food or agricultural technology. As they are raised in connection with biotechnology, these questions suggest the following types of ethical concern:

- Environmental Ethics. Technology raises environmental issues when there are environmental exposures that pose risk to humans, wildlife or to ecosystem integrity. It has been alleged that agricultural biotechnology may pose risks to wildlife in or near farm fields. There are also issues associated with the question of whether agricultural ecosystems can themselves exhibit features of ecological integrity.

- Food Safety. Many of the issues associated with the safety of eating bioengineered foods are technical, but the question of whether regulators should make this decision based on an assessment of the risks, or whether individual consumers should be placed in a position to make the choice themselves is an ethical one.

- Moral Status of Animals. If genetic engineering of livestock would compromise animal welfare, there are ethical questions that can be raised. There are also questions about whether it would be ethical to use biotechnology to make animals more tolerant of production settings that are currently regarded as inimical to animal welfare.

- Impact on Farming Communities. Some critics of agricultural biotechnology have alleged that it will contribute to farm bankruptcies and the depletion of farming population in rural communities. There has been a longstanding ethical debate as to whether technology or policy that has these effects on farming communities can be ethically justified in virtue of offsetting benefits in the form of efficient production and lower food prices. The concern is particularly relevant to the impact of biotechnology in developing regions where many farm at the subsistence level.

- Shifting Power Relations. Related to the concern on farming communities, some have argued that biotechnology will help a few well-capitalized firms control decision making in agriculture (including future research), and limit farmers’ ability to choose from an array of production possibilities. This concern is related to a general ethical concern with the distribution of economic power and wealth in democratic societies.”

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| **INSTRUCTIONS**   * The application must be typed * The following documents must be attached: * Proof of Registration (If applicable) * Registration of the Project **(R1)** * Approved Project Proposal **(Including Tools e.g. Questionnaire)** **If applicable** * FHDC Recommendation letter * Letter of information and consent (Appendix **B**) If applicable * Conflict of interest form (Appendix **C**) If applicable * Other information being supplied to participants * Other documentation necessary for the RECs to make an informed decision regarding the research. * Recommendations (With all relevant signatures) |

**INITIATING DEPARTMENT:**

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| **DEPARTMENT** | **Submitted** | **Day** | **Month** | **Year** |
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| **……………………………….**  **Recommended** |  | | |
| **Authorized by: Head of Department** | | | |
| **FACULTY** | **Submitted** | **Day** | **Month** | **Year** |
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| **………………………………**  **Approved** |  | | |
| **Authorized by: (Faculty Executive Dean)** | | | |

1. **TITLE OF PROJECT** (Max. 50 characters including spaces)

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1. **DETAILS OF APPLICANT**

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| **Title (e.g. Dr)** |  |
| **Surname and full name** |  |
| **Student / Staff Number** |  |
| **Faculty** |  |
| **Department** |  |
| **Email** |  |
| **Cell No** |  |

1. **SUPERVISOR’S DETAILS (if applicable)**

|  |  |
| --- | --- |
| **Title (e.g. Dr)** |  |
| **Surname and full name** |  |
| **Student / Staff Number** |  |
| **Faculty** |  |
| **Department** |  |
| **Email** |  |
| **Cell No** |  |

1. **PROJECT**

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| --- | --- |
| **Start date and anticipated completion date** | |
| **Start:** | **Completion:** |
| 1. **Rationale and objectives: Briefly explain why the study will be conducted and which kind of scientific question(s) will be addressed. Who will benefit from the results of this project?** Suggested length: 200 words | |
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| 1. **Explain briefly which methods will be used for your study.** | |
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| 1. **How are the potential risks to human health determined?** | |
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| 1. **What are the main issues of concern for human health?** | |
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| 1. **How is the risk assessment for the environment performed?** | |
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| 1. **What are the issues of concern for the environment?** | |
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| 1. **How are GM foods regulated nationally?** | |
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| 1. **Are there implications for the rights of farmers to own their crops?** | |
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| 1. **Is genetic engineering (GE) the only way of increasing food production?** | |
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| 1. **Is it possible to deal with widespread malnutrition with genetic engineering?** | |
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| 1. **If food security is primarily a question of distribution insecurity, then how can increased production using GE address the question of food security?** | |
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| 1. **How can GE ensure environmental sustainability as well as increase food production when pressure on environmental resources like land and water is growing?** | |
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| 1. **Won’t herbicide-tolerant and pesticidal GE crops lead to intensified use of agro-chemicals?** | |
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| 1. **What is the sound scientific basis for considering GE to be safe?** | |
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| 1. **Is there a difference between applications of biotechnology in agriculture and medicine? Why are the two perceived differently?** | |
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| 1. **How can modern profit-driven agricultural biotechnology meet the basic needs of the poor?** | |
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1. **SIGNATURES**

I have considered the design of this project, and in my opinion, this is the most effective and feasible protocol that has the lowest impact on the animals and the environment. This work is being conducted according to the ethical standards accepted in this field of research.

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**Applicant’s Name** **Signature Date**

**Other researchers involved in this project:**

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Name and Surname Signature Date

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Name and Surname Signature Date

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Name and Surname Signature Date

**Project supervisor** *(Applicable for Student Projects)*

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Name and Surname Signature Date

**Research Ethics Committee resolution:**

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| **Approved** |  |
| **Not Approved** |  |

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Name and Surname Signature Date

Chairperson, REC