RESEARCH BRIEF

HOW CAN A FEMINIST ETHICS OF CARE APPROACH BROADEN THE SCOPE OF RISK ASSESSMENT FOR GENETICALLY MODIFIED CROPS IN SOUTH AFRICA?

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INTRODUCTION

What do genetically modified (GM) crops and feminism have in common? The answer is not that much, but many people are looking for better ways to assess the risks associated with new and uncertain technologies such as GM. This research brought these ideas together to see how the process of risk assessment for genetically modified organisms (GMOs) can benefit from feminist thought.

Using themes from feminist literature such as **relationships**, **context**, **power**, **narrative** and **emotion**, new 'ways of seeing' risk emerge that illuminate issues that have been continuously ignored by the current science-based risk approach to assessment[i]. This research explored how a Feminist Ethic of Care could ask different questions and offer different solutions. Through interviews with government representatives, academics, scientists and non-governmental-organisations (NGOs), the research investigated the GM crop risk appraisal process in South Africa, which is the government's process of deciding whether or not to allow the sale and cultivation of GM seeds.

The following questions were asked:

1. How are GM crops in South Africa currently regulated?
2. How appropriate is the current system?
3. How suitable is a Feminist Ethic of Care for forming an alternative approach to regulation?

The South African system of apartheid, which was a system of racial segregation and discrimination, is mirrored by the agricultural system which is similarly segregated and imbalanced. In the former white areas, agriculture is on a large scale and highly mechanised. In the former homelands, areas that were set aside for black inhabitants, agriculture is on a smaller scale and less mechanised. The current science-based approach to GM crop regulation was designed with large-scale, mechanised agriculture in mind, a type of agriculture that functions very differently to the small-scale farming sector, especially with regard to social and economic issues. This shows how important it is to contextualise the risk assessment of GM crops because the effects of planting them will be different depending on the type of agriculture that is being practiced and the kinds of farmers that are involved.

WHAT IS GENETIC MODIFICATION?

Throughout history, farmers have always bred their best performing crops to make agriculture more efficient. This has included producing crops with shorter growing seasons, increasing resistance to pests, and developing larger seeds and fruits with higher nutritional content. This can happen in three main ways:

1. **Open pollination** - where seeds are produced from natural processes by wind, birds or insects, resulting in plants that are naturally varied.
2. **Cross breeding** - where the farmer chooses to breed parent plants with desirable traits, transferring the pollen from one plant to the other. This process produces 'hybrid seeds' that will have the traits from the parent plants.
3. **Genetic Modification** - allows scientists to directly transfer a single gene with a desirable trait from any organism to another cell (including all species). For example, taking a gene from a bacterium and inserting it into a maize cell to make the maize resistant to that bacterium. This does not naturally happen in nature[ii].

Virtually all of the permits that have been granted for GMOs in South Africa have been for crop traits for insect resistance and/or herbicide tolerance. South Africa has cultivated, imported and exported GMOs since 1998 and an estimated 86% of the maize produced, over 90% of soya and 100% of cotton is genetically modified[iii].

KEY ISSUES

Impacts of GM crops?

The impacts of GM crops are not just biological but social, political, economic, environmental and cultural too. Since the research needed to develop GM crops is very expensive, it's often only multi-national corporations that can afford to develop them. Corporations make money through patenting their GM seeds. A patent gives an inventor the exclusive right to commercially produce a product for a set period of time and prevents competitors from releasing similar products into the market.

As a result of this process, GM crops, like hybrids, are designed to produce seeds that cannot be planted in the next growing season. Since the patents are legally binding, it is illegal for a farmer to save GM seeds for the next growing season. This means that every season, farmers must buy the GM seeds from the companies that sell them[iv]. Many of these seeds cannot work on their own. For example, many herbicide resistant seeds are designed to work with the herbicide glyphosate, widely known as 'Roundup Ready'. This means that the farmer has to buy seeds and herbicide, often from the same company, every season.

Another fear is the development of 'super bugs' that are resistant to pesticides[v]. Insects are known to develop resistance to pesticides and this remains true even for GM crops. Genetic variability is present in any group of animals or insects. Where the same pesticide is used repeatedly over a long period of time, vulnerable pests are killed off and certain pests survive the pesticide exposure and continue to reproduce[vi].

How are GM crops regulated in South Africa?

The GMO Act (15 of 1997) recognises the potential risks associated with releasing GMOs into the environment. It also acknowledges the potential risks to human and animal health. An application to release a GMO into the environment must therefore include a science-based risk assessment. If a risk is identified, ways to manage these risks must be developed. A public notice must be placed in a national newspaper to inform the public of the GMO release. If members of the public are concerned, they have 30 days to write to the government to outline their concerns. The Executive Council (EC) will then make a decision as to whether to approve or deny the application. The table below sets out the different components of the GMO Act and the two institutions involved in its governance: the EC, which makes decisions about applications, and the Advisory Committee (AC), which is a group of scientists that advises the EC on scientific matters relating to GMO applications.

<table>
<tr><th colspan="2">THE GENETICALLY MODIFIED ORGANISMS ACT (15 of 1997)</th></tr>
<tr><td colspan="2">• Ensures activities relating to GMOs are carried out responsibly
• Provides guidelines for import, export, production, use, release, distribution
• Limits adverse impact on environment, human and animal health
• Covers the management of waste
• Requires measures to evaluate and reduce potential risks
• Provides criteria for risk assessments</td></tr>
<tr><th>The Executive Council (EC)</th><th>The Advisory Committee (AC)</th></tr>
<tr><td>The decision-making body which approves or rejects GMO applications. The following government departments have a seat on the EC:
• Agriculture, Forests and Fisheries
• Environmental Affairs
• Science and Technology
• Health
• Water Affairs and Forestry
• Labour
• Arts and Culture</td><td>A group of scientists that advise the EC on scientific matters relating to GMO applications. Expertise on the AC can include:
• Bacteriology
• Virology
• Toxicology
• Molecular Biology
• Plan Physiology
• Biotechnology</td></tr>
</table>

WHAT IS A SCIENCE-BASED RISK ASSESSMENT?

The Cartagena Protocol on Biosafety (CPB), an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology[vii], provides international guidelines for GM risk assessment. A GM crop risk assessment is the process of evaluating the potential risks to humans, animals or the environment of planting the GM crop. The Protocol requires that risk assessments must be undertaken in a scientific manner. It states that a lack of scientific knowledge does not mean that a risk is present or absent. This means that even if all the scientists on the Advisory Committee say that a particular GM crop is going to do harm, the government does not have to accept their opinion and can still reject the application.

WHAT IS A FEMINIST ETHIC OF CARE?

In short, a Feminist Ethics of Care (FEoC) is a moral theory. A moral theory helps us to figure out whether actions are right or wrong. The development of moral theory can be traced back to the beginnings of Greek philosophy. Even though these theories were developed by men who held certain positions in society, who were alive at a particular time in history, and who lived in different places, these theories are said to apply to every single person who lives on the planet - right now. A Feminist Ethic of Care asks: why is this the case? It asks, what if you're a woman? What if you live in India, or in Zimbabwe? How can these theories be universal and apply to everyone? Academics who study Feminist Ethics of Care have come up with a set of themes that make us think differently about the world[viii].

RESEARCH FINDINGS

This section weaves together the ways in which the themes from a Feminist Ethic of Care and those from a science-based risk assessment emerged from the interviews.

Dependent on Science and Numbers	Relationships
Scientific calculations dominate risk assessments because science is thought to be objective and free from human values and preferences. This is why risk assessment is depended upon so heavily by the regulators of GM crops.	FEoC accommodates scientific information and methods, but questions how neutral these processes are. It emphasises how knowledge is socially constructed. FEoC acknowledges how culture and politics can sometimes influence scientific research.

The Principle of Substantial Equivalence: A genetically modified food is considered safe if the unmodified equivalent food is also considered safe

"When the context has changed, the risk has changed as well." Researcher, GenØk Centre for Biosafety, Norway

"We must stop thinking of ourselves primarily as consumers and individuals. We can't imagine different kinds of relationships with each other until we can reimagine ourselves." Anthropologist, University of Witwatersrand, South Africa

Isolation	Context
The Cartagena Protocol on Biosafety accepts that if the Principle of Substantial Equivalence is applied, then further safety tests are not needed. Comparing the unmodified and modified crops in this way ignores differences present in the various social-ecological, economic, political and cultural contexts that the new GMO will enter.	FEoC argues that without considering the context of the problem, the best solution cannot be found. In a risk assessment, the complex social-ecological context of the GM crop is not considered.

Power	Inequality
To take part in the regulation of GM crops you have to be able to communicate scientific ideas and processes. Effectively, those who can communicate in this scientific way can take part in the decision-making and those who can't - cannot participate. Regulatory processes that involve only those who know how to communicate and understand science means that decision-making power is distributed unequally.	The way that some risks are assessed and others are not isn't 'just the way it is' but is made so through unequal power relations. Power and politics are said to lie outside the scope of a risk assessment and thus remain unregulated and free to pervade the system.

"GM crops are part of the basket of technology that should be available to all farmers." Official, Department of Agriculture, Forestry and Fisheries, South Africa

"We want these people to get an active economic livelihood… saving seed is going to be suboptimal to the hybrid seeds, it won't help them become commercially competitive." Official, Department of Science and Technology, South Africa

"The GMO Act has complete power no one else has any power." Researcher, African Centre for Biodiversity, South Africa

A Single Story	Multiple Stories, Many Voices
The story of economic growth was told by many of the government representatives. Those who argued that economic growth is the most vital thing minimised the risk related to speeding up the uptake of technology.	Only telling economic stories implies that our value as humans is determined only by our economic activity, rather than by our social and cultural activity. FEoC emphasises that your level of income doesn't always determine your choices. Other factors are involved when making decisions. The economic story has many angles. For example, short-term economic growth may have negative long-term environmental, social and ecological consequences.

'Operation Phakisa', a programme launched by the Department of Science and Technology (DST) to boost economic growth and create jobs, was cited as important to reducing poverty

"Socio-economics was like the third person that came to the party." Representative, Biosafety South Africa

"The EC are dependent on the scientific expertise of their advisors because the value system of a scientist is to take subjectivity out of it." Official, Department of Science and Technology, South Africa

"There's this amazing technology and then, for some other, non-scientific reason it became a controversial thing." Representative, Biosafety South Africa

Reason & Rationality	Emotion, Identity & Values
The public are seen as making decisions on risk that are 'not real' because they are too 'emotional'. At the same time, scientific experts are seen as making 'real' risk decisions because they are objective and rational.	The current approach to GM crop assessment implies that if your reasoning cannot be quantified, then your perspective cannot be incorporated into decision-making. Other ways of knowing about GM crops are not taken seriously. In reality scientific experts, like the public, make decisions that are influenced by emotion. Studies have shown that factors like gender, race, trust, and worldview influence risk perception. Yet current regulations remain dependent on science because of its perceived objectivity.

In this research, **'story'** doesn't mean fiction, or someone's personal story, it uses the idea that if the same story is told by enough people then it becomes the only story that gets told. This theme looked at how dominant stories told about GM crops influence the way that they are regulated.

"The public are too emotional and uninformed to make acceptable risk decisions because they don't have a technical background." Official, Department of Science and Technology, South Africa

Separating Science from Society	Blurring the lines between Science & Society
In a risk assessment, science and society are considered as separate. Science contrasts itself to the value-laden, emotional and subjective 'messiness' of societal matters. A scientific risk assessment emphasises the risks to the environment, human and animal health, but does not explore social and economic risks. Many of the government departments interviewed for this research believed that social, economic, cultural and political issues should not be assessed in risk assessment.	FEoC presents a different way of thinking about problems that society faces, emphasising that the lines drawn between science and society should be reconceptualised. This approach acknowledges the inevitable interconnections between these spheres.

CONCLUSIONS AND POLICY RECOMMENDATIONS

This research has shown that the current system of GM crop regulation in South Africa is flawed and that many of the issues that have been raised stem from a particular way of seeing, thinking and speaking about certain risks. Resolving these types of embedded concerns will be a difficult challenge and will require fundamental, systemic change that genuinely seeks to alter our perceptions of ourselves, each other and the environment which we inhabit. Reforming a system that is so deeply entrenched in a neoliberal conception of nature and society will be gradual, developmental and require continuous reflection, but will also benefit from smaller, more incremental steps towards the wider goal.

Principally, focus should be placed on shifting perceptions of GM crops and broadening the lens through which they are seen; not as isolated events, but rather, as nodes of social-ecological relations that encourage the proliferation of industrial and mechanised farming.

Acknowledging that GM crops are contextually very different from conventional crops and can profoundly transform social arrangements, ecological systems and material structures[ix] is a vital first step that must be taken in order for this shift to take place.

In light of this, a transitional process is encouraged. Some steps might include;

1. Widening the panel of the AC to include social scientists, ecologists and interdisciplinary thinkers.
2. Including a representative from the Department of Land Reform and Rural Development on the EC.
3. Making the consideration of alternatives to GM crops mandatory in Risk Analysis procedures.
4. Seeking an engagement amongst stakeholders that is inclusive, democratic and does not require specialist, scientific or technical language.
5. Establishing an independently facilitated assessment by the EC of past GM crop permit decisions that have been issued as a result of the science-based risk approach. This could encourage the practice of reflexivity in the regulation of GM crops.

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This research was conducted by Jennifer Whittingham as part of her Masters Degree in Science, Society and Sustainability at the University of Cape Town, under the supervision of Associate Professor Rachel Wynberg.

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