An examination into the ethical acceptability of genetically modified foods in Kenya principled on Aristotelian Ethics (3002 words)

Introduction

Ethics is a branch of Philosophy which studies free human acts from the point of view of their moral value (goodness or badness) in relation with the last end of man(Debeljuh,2006). Ethics is able to ascertain what man's final goal is and to determine the type of behaviour that will lead him to that final goal which ultimately should give him happiness.

In this paper I would like to examine the ethical acceptability of GM foods in Kenya using the Aristotelian understanding of ethics. For Aristotle, ethics is based on achieving the chief good for man which he called eudaimonia ('happiness'). He said that eudaimonia is something that is "final and self sufficient and is the end that our human action tends toward. Aristotle discovered that this happiness if found by man exercising his rational nature which gives him the capacity to direct himself to the good in every action. Looking at the GM foods from this point of view, the paper will try to examine if GM foods enhance the nature of man by taking into consideration his rational nature as well as promoting the common good of man. Anything that goes against his nature would be considered morally unacceptable. Aristotle defines the common good as the perfect goal of the state which requires an admission of the individual's basic right in society. This basic right means the right of everyone to the opportunity to freely shape his life by responsible action, in pursuit of virtue and in accordance with the natural moral law.

The Moral Problem of GM foods according to the object

Each voluntary act has a particular object or content that is known and willed by the person who acts (Debeljuh, 2006). This moral dimension of the object considers the goodness or badness of the object in terms of the natural moral law and the final goal of man which is the good and consequently happiness. The natural moral law has a principle which upholds that "good is to be done and promoted and evil to be avoided' (ST I-II, 94, 2). This principle formally governs practical reasoning. In this way then it is possible to understand that the physical object can have different moral objects. Depending on the way in which it is carried out; some ways may be coherent with man's final goal others may not.

Genetic modification of crops takes place when only a small additional piece of information (foreign DNA/gene) is inserted into farmer preferred cultivars to control a specific trait within the selected cultivar. This foreign gene could be obtained from another plant, animal, viral or bacterial gene. Genetically modified crops acquire genes that can now confer resistance against pests, diseases and adverse environmental conditions such as drought(Nap, Metz, Escaler, & Conner, 2003b). Using Aristotelian ethics we can say that the physical dimension of the object in this case is the farmers' crop that needs to acquire some specific qualities. The moral dimension of the object refers to the proximate intention of the agent in this case who is the scientist who is inserting the gene to enhance the quality of the farmers' crop. From an ethical point of view the object of GM foods which contain genes with enhanced qualities are good according to Aristotle since they will provide a secure source of food and nutrients to man. Therefore this will help the common good since poverty is eradicated due to higher yields and more tolerant crops.

The Moral Problem of GM foods according to the intention/end

The end of the moral act is the objective towards which the person directs his acts.This contains the main intention of the agent, without which the act would not be carried out.The intention may coincide with the object of the action.If the moral object determines whether or not the act is ordinable to the final goal,it is due to the intention that the action is effectively directed or not towards the final goal. The intention I will look at is that of the scientists who insert these genes with the intention of improving crop production and enhancing food security as a result. For example insect resistance is achieved by incorporating into the crop the gene for toxin production from the bacterium *Bacillus thuringiensis* (BT). This toxin is currently used as a conventional insecticide in agriculture and is safe for human consumption. After several years of research, Kenya has finally started field trials of genetically modified maize. The Kenya Agricultural Research Institute (KARI) and the International Maize and Wheat Improvement Center (CIMMYT) began planting the maize modified to resist stem borers, which cause 20 per cent crop loss to farmers every year.

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This intention of the scientists can be morally evaluated as good since they are interested in helping farmers especially poor resource farmers achieve the common good.

The moral problem of GM foods according to circumstances

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In Aristotelian Ethics, circumstances are different factors or accidental aspects of the object or of the intention of the subject which affect the goodness of the action in some way. Human acts do not receive all their goodness from the moral object, rather it also comes from the circumstances which are like accidents that surround a moral action and can modify its object (Debeljuh, 2006).If the human act is good in its object and its intention, the circumstances can increase or decrease its goodness, and they can even come to transform a good act into an evil one.

In this paper I would like to review a number of circumstances that surround GM foods in Kenya. Firstly that there is a general skepticism from various stakeholders which includes farmers and consumers as to the safety of these crops. Secondly there seems to be lack of informed decisions by law makers and politicians on the possible advantages and disadvantages of GM food and this adds to the ranging debate on whether the country should embrace GM foods or not. Thirdly there appears to be poor governance in the implementation of policy on GM foods in Kenya.

Discussion

From what has been pointed out earlier, what determines the moral value of an action is the object. However the intention and the circumstances are also important since they modify the overall morality of the act

Table 1: Analysis of the overall moral value of GM foods

Scenario	Physical object	Moral object	Intention	Circumstances	Overall moral value of action
A	GM food (good)	GM foods have been inserted with genes from plants, animals ,bacteria or viruses that confer advantages such as drought, disease and pest resistances (good)	Scientists will engineer these crops so as to provide food security to Kenyan farmers(good)	Skepticism on the part of the Kenyan farmers and consumers on the safety of the GM crops (bad)	-Less good (annuls moral goodness)
B	GM food (good)	GM foods have been inserted with genes from plants, animals ,bacteria or viruses that confer advantages such as drought,	Scientists will engineer these crops so as to provide food security to Kenyan farmers(good)	Lack of informed decisions by law makers and politicians in Kenya on the possible advantages and disadvantages of GM food (bad)	-Less good (annuls moral goodness)

		disease and pest resistances (good)			
C	GM food (good)	GM foods have been inserted with genes from plants, animals ,bacteria or viruses that confer advantages such as drought, disease and pest resistances (good)	Scientists will engineer these crops so as to provide food security to Kenyan farmers(good)	Poor governance in the implementation of policy on GM foods in Kenya. (bad)	-Less good(annuls moral goodness)

Table 1 illustrates how varied intentions and circumstances may affect the overall morality of GM foods. In table 1 above,I have grouped the different circumstances that affect the morality of GM foods in the Kenyan scenario.The intention to be studied is the same in all the three scenarios.

In scenario A, the moral object is the GM foods containing genes that confer certain advantages to the crops such as drought, pest and disease resistant. The moral value of this object is good since GM foods containing these genes will result in more improved crops and therefore enhance food security thus contributing to the bodily well being of people and their common good. Agriculture remains the single most important sector in the economy, contributing approximately 25 percent of the GDP nd employing 75 percent of the labor force. The country suffers from persistent food and water crises, and the threat of climate change looms large in policymakers' minds (a report of the CIS).

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The intention of scientists who insert the genes is to provide enhanced crops able to withstand harsh environments thus helping to ensure food security. From a moral point of view this is good since it will also contribute to people's bodily well being and the common good. In Kenya, a project on insect-resistant (Bt) maize was launched in 1999 (Mugo et al., 1999).

The circumstance surrounding this action can be said to be that some of these genes might be harmful especially if they come from non plants such as bacteria and viruses. Morally this is bad since if such genes express themselves negatively they could be harmful to humans who consume the plants or to the environment where they are grown. In this scenario, it is possible to say that the overall moral value of having GM foods is less good. According to Aristotelian ethics, if the circumstances are bad, they modify the object, which in this case is good and therefore make the moral acceptability of GM foods in this situation less good. A consumer study done in Kenya to evaluate the knowledge consumers had about the effects of GM foods concluded that the government should aim to inform the public about GM food, based on extensive scientific testing (S. C. Kimenju, De Groote, Karugia, Mbogoh, & Poland, 2011).

In other countries,so far the hazard associated with GM content of foods in humans have been mainly speculative. Studies done on animal models for toxicity due to certain GM foods have shown that these foods may toxically affect several organs and systems(Dona & Arvanitoyannis, 2009).

In scenario B, the moral object is the GM foods containing genes that confer certain advantages to the crops such as drought, pest and disease resistant. The moral value of this object is good since GM foods containing these genes will result in more improved crops and therefore enhance food security thus contributing to the bodily well being of people and their common good. The intention of scientists who insert the genes is to provide enhanced crops able to withstand harsh environments thus helping to ensure food security. From a moral point of view this is good since it will also contribute to people's bodily well being and the common good. The circumstances are the lack of informed decisions by law makers and politicians in Kenya as regards the advantages and disadvantages of GM crops.This results in a lot of confusion in the public domain as to whether Kenya should embrace GM food.The circumstances can be termed morally bad ince there lack of scientific knowledge on the part of the law makers and politicians prevents them from making informed decisions on behalf of the general public.The country could be

losing in terms of not embracing this technology or it could be suffering potential harms through importation of GM foods to counteract food shortfalls.

A good example is when in 2011 the cabinet ministers in Kenya made a controversial move to allow the import of genetically modified (GM) maize from South Africa to fight hunger and starvation, even though GM crops cannot yet be legally grown in the country.They stated that GM maize could be imported on condition that it would not used as seed; that products were clearly labelled; and that the maize was certified by the National Biosafety Authority.The Science and technology minister in support of the cabinet move commented that embracing modern biotechnology crops was aimed at cushioning Kenyans against current drought and at gaining food sustainability.This sparked off a fierce exchange between proponents and critics of GM technology. Some politicians accused the government of using food security to force GM maize on the country.The Public health minister was also quoted as saying that Kenya had no capacity to test the safety of GM food.

The chairman of the parliamentary committee on agriculture,told *SciDev.Net*: "GM maize is not even consumed in South Africa — why should we introduce it here?"Mututho said non-GM maize could be imported from countries such as Malawi, as well as parts of parts of Kenya's central province where rain has been normal. (http://www.scidev.net/global/biotechnology/news/drought-persuades-kenya-to-import-gm-maize.html). Maize is Kenya's staple food with it milled flour being used to make maize pulp popularly known by Kiswahili word ugali.

In November of 2012, the Kenyan government banned importfs of GM foods, a move that took the country's National Biosafety Authority by surprise. The Cabinet did not consult the country's biosafety experts before making the decision. The Kenyan government's decision was a result of a controversial paper by French scientist, Gilles-Eric Séralini and colleagues in Food and Chemical Toxicology that claimed a link between long-term GM maize diets and cancer in rats (Seralini et al.,,2012) Elsiever, the publishers of this article retracted it in 2013.

After the retraction of the publication,n, a Kenyan minister in January 2014 asked the government to lift the ban on GM foods.He also asked the National Biosafety Authority to sensitise Kenyans on GM foods.The claim was that some medicines being used in hospitals are also GM but there is no controversy

regarding them.This shows that there are inconsistencies in Kenya's GM policy which if not resolved impact negatively on the common good since the stakeholders are left without knowledge of the truth in this matter.This makes the circumstance of ignorance of law makers morally bad since they could harm the common good due to their decisions on the matter of GM food.

According to Aristotelian ethics, if the circumstances are bad, they modify the object, which in this case is good and therefore make the ethical acceptability of GM foods in this situation less good.

In scenario C, the moral object is the GM foods containing genes that confer certain advantages to the crops such as drought, pest and disease resistant. The moral value of this object is good since GM foods containing these genes will result in more improved crops and therefore enhance food security thus contributing to the bodily well being of people and their common good. The intention of scientists who insert the genes is to provide enhanced crops able to withstand harsh environments thus helping to ensure food security. From a moral point of view this is good since it will also contribute to people's bodily well being and the common good.The circumstances to be considered in this scenario refers to the poor governance which affect the implementation of policies governing GM foods in Kenya. Kenya was the first country to sign the Cartagena Protocol on Biosafety in the year 2000 (M.Karembu,Otunge,D & Wafula,D 2009).

In 2006, a National Biotechnology Development Policy was approved, emphasizing the potential opportunities of adoption. The policy states that "the Government's position and commitment to provide an enabling environment for the acquisition and development of the biotechnology industry for fast exploitation of the immense potential in agriculture,environment, bioresources, health, and manufacturing industry is clear." The problem arises when biosafety policies such as the Kenya Biosafety Act are ignored so as to solve the emergency. This is what happened in 2012 when the government imported GM maize so as to make up for the shortfall in production. The intention of the government was to import GM maize to feed starving populations.

According to Aristotelian ethics this circumstance would be morally bad since poor governance results in neglecting the common good and affecting the dignity of the human being.Hence given such a scenario,the ethical acceptability of GM foods in Kenya less good.

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Conclusion and recommendations

If I look at the case of Kenya which falls under one of the few countries in Africa to come up with the Biosafety Act which embraces, genetic modification of crops, I would urge for the government to ensure an ethical/moral education of all the stakeholders involved: scientists, farmers, biotech companies, policy bodies etc. These people need to understand the importance of GM foods but always keeping in mind the dignity of the human person outlined in the NML and the common good. I propose the government because from my analysis done earlier, in any country their intention in permitting GM foods is for the common good of their citizens which leads them to ensure that policies that guide this technology are in place. They are the only ones with the mandate to enhance the following of these policies in any country.

If this then falls on the government, in collaboration with other stakeholders in the public and private sector from this paper I can also suggest the following ideas that would go a long way to enhancing the moral acceptability of GM foods to all people who are interested:

The government should ensure that food safety measures of GM foods require that toxicity and allergenicity tests are carried out. Each GM food is assessed for safety, including its toxicological, nutritional, and allergenic potential, on a case by case basis before it can be approved for marketing (Artemis Dona & Ioannis S. Arvanitoyannis, 2009)

The government should establish what to do in case of an emergency such as a drought or crop failure. If they are to import food, they should ensure that at least this food has passed safety and environmental standards in the country of origin.

All the stakeholders need to come together and educate the public about the potential benefits of GM foods and clarify possible fears that may arise.

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