Preference towards Genetically Modified Organisms and Its Risk Factors.

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Abstract:

The impact of growing genetically modified crops and organisms has a long lasting effect in the future and existing generation. Generally GM crops are a plant used for agricultural purposes into which one or several genes coding for desirable traits have been inserted through the process of genetic engineering. The main objective of this study is to know the reason for genetically modified foods, to know the environmental risks involved in growing genetically modified crops. Socio legal research method is followed. 200 samples were collected through a convenient sampling method. The dependent variables used in this study are risks involved in growing GM organisms and crops, preference for GM products and its impact on human health and environment .The results obtained are that GM crops are healthy and environmentally friendly.

Keywords: GM organisms, environmental risks, health effects, agricultural purpose, Technology.

Introduction:

A Genetically modified organism is an organism whose genetic material has been altered using Genetic Engineering techniques. Genetically engineered crops are publicly the most controversial GMO's. The majority are engineered for herbicide tolerance and insect resistance. Animals are much harder to transform and the majority are at the research stage. Mammals are the best model organisms for humans, making one genetically engineered to human diseases important to the discovery and development of treatments. Livestock are modified with the intention of improving economically important traits such as growth rate, quality of meat, milk composition, disease resistance and survival. Genetically modified fishes are needed for scientific research as pets and as food sources. The Government initiatives for regulating Genetically Modified products include International Regulation for GMO Research and Development, US Department of Agriculture's Animal and Plants Inspection service under the Plant Protection Act and Food and Drug Administration under the Federal Food and Cosmetic

Act and The Public Service Act to serve the at most goodness of GM products. The factors that affect the growth of Genetically modified organisms are it results in Environmental effects and serious Environmental damage such as depleting populations of certain non targeted organisms. And without improved advanced technologies to reduce or solve the exploitation of such organisms. Pest and disease resistance in transgenic crops regarding cross pollination and some expression to inserted genes.The current trends in the field of GM organisms included Cotton, Corn, Soybeans which are genetically engineered resistant with one or more herbicides. Modern Plant genetic engineering include zinc finger nucleases, meganucleases, transcription activators like effector nucleases like TALENS and CRISPR. The study is compared with the Philippines. Philipino's breakfast includes hot dogs, cheese, coffee, fruit juice, eggs, etc; the corned beef which is genetically modified with a textured vegetable protein made from GMO Soybeans and TVP as a substitute for meat. Farmers switched to growing GM crops because of higher yield, immune and financial assistance and good product quality.

Objectives:

The main objective of the study includes:

- To study in detail about genetically modified foods and crops.
- To understand the environmental risk involved in growing the genetically modified crops

Review of literature:

Rodger schlick eisen(1994) found that the human generation has fundamentally lived in a natural estate, through its inheritance and activities of mankind. It depleted the Earth's Biological Wealth and World's Plant and Animal species.

Lawrence H. Goulder(1999) analysed the possibility of gene crossing in native soil of microbial communities through horizontal gene transfer which affects the soil ecosystem.He found that novel proteins in transgenic plants protects the soil ecosystem.

Kani E. Dumfield(2004) found that genetically modified plants possess novel genes of transgenic plants that consist of plant residues and microbial communities which affect the functioning of the ecosystem.

Suzanne Warwick(2006) found that these consist of environmental concern for Genetically Modified crops that have potential weediness and invasiveness in the crop itself. He also found

the existence of transgene movement through which pollen and seed gets mediated for the purpose of gene flow from GM crops to non GM Crops and vice versa .

P. P. Motaveli examined the environmental effects in rapid increase of global agriculture in areas cultivating transgenic crops that change soil microbially through mediated functions.

Alistan Munro(2008) found that the GM organisms attract the Public attention and result in economic impacts and reduction in Organic varieties. **J.M.Dunwell(1990)** observed the plant and ability to insert DNA in plant cells to recover the intact plants that encode DNA process transfer called Novel Technology.

Wilhelm Klumper (2014) observes that rapid adoption of GM crops in countries by farmers which results in agronomic and economic impacts.

Bennet & Richard (2004) that this exists has an economic impact on GM Cotton where the farmers grow crops based on their market condition which results in positive impact of average yield and better economic conditions.

Martin Quin (2009) examined the preference for choosing GM organisms such as insect resistance, herbicide tolerance which are beneficial to farmers and consumers in producing large aggregate welfare gains.

Les G. Firbank (2000) found that GM crops on environmental rases and has an impact on genetically modified herbicide resistant Sugar beets.

Kansal Mesha (2013) observed the potential benefits in transgenic crops and analysed the possible economic and agronomic impacts and biodiversity implications of global attention in genetic biodiversity.

Methodology:

This study is based on collecting information from primary and secondary data. Here, the secondary data is collected from various books and literary works of scholars and researchers, whereas the primary data for the study is collected from 200 sample respondents through the convenient sampling method. The research instrument used to collect the primary data from the sample respondents is- well-structured questionnaire. Age, gender, educational qualification, and space of living are used as the independent variables, whereas the dependent variables are the opinion of the public on various questions related to PREFERENCE TOWARDS GENETICALLY MODIFIED ORGANISMS AND ITS RISK FACTORS. This study uses graphs, tables, and Chi-square tests for meaningful analysis.
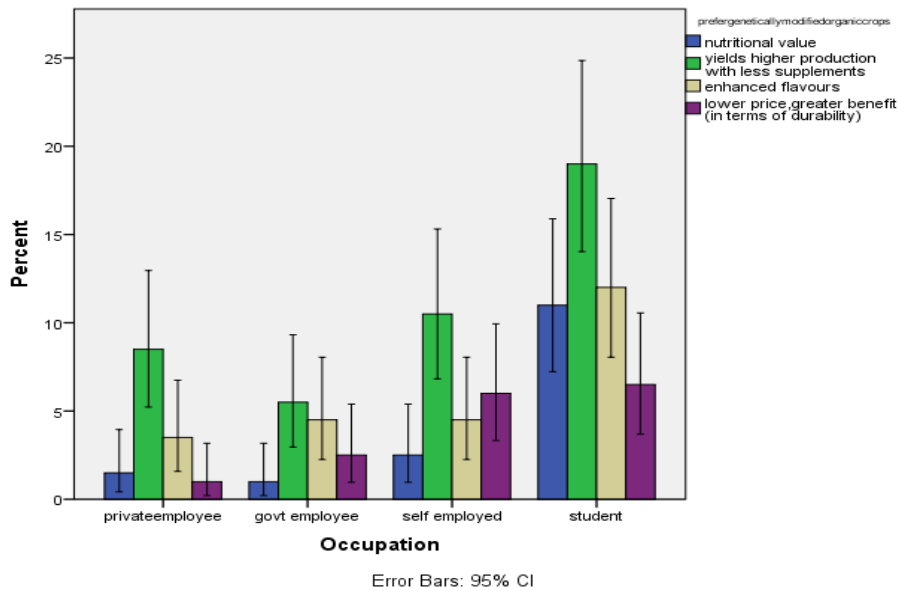
Analysis and interpretation

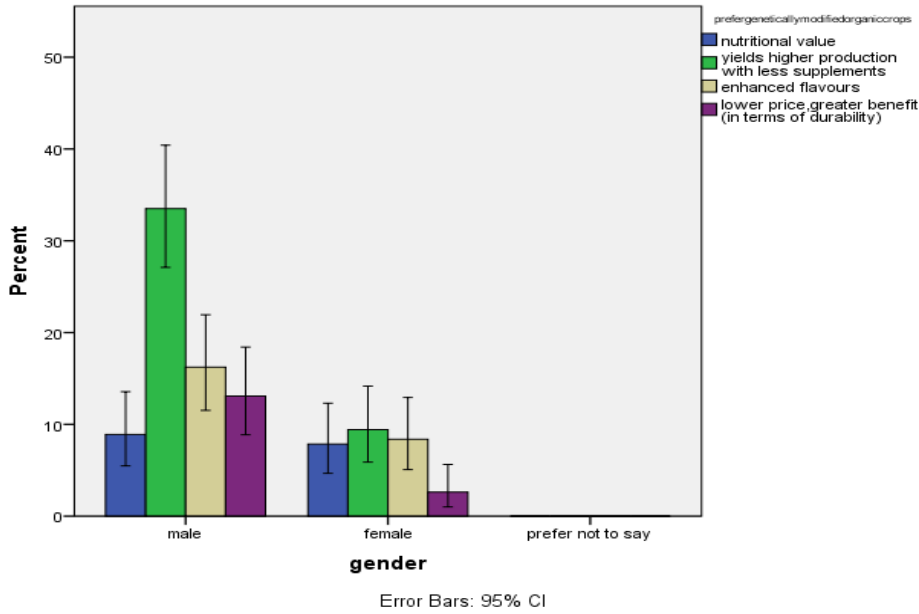**Fig : 1**
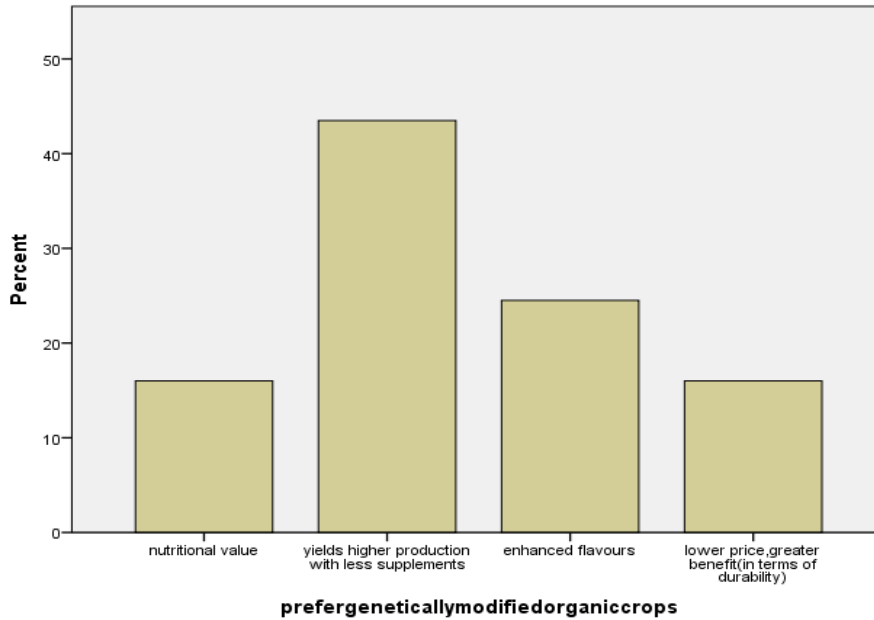
Legend : Fig 1 is the frequency graph of the responses.It depicts the preference of the respondents over genetically modified products.

Fig : 2

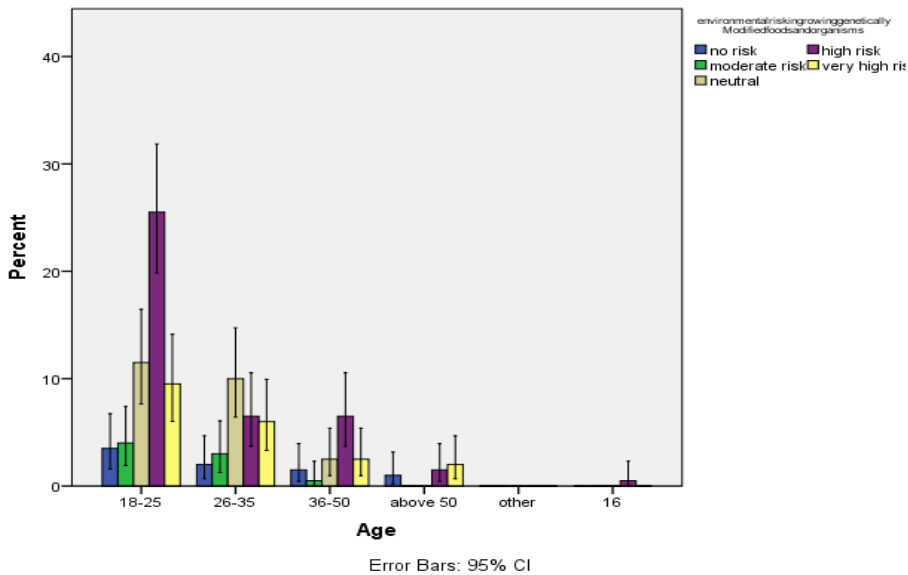

Legend : Fig 2 Shows the preference of different occupation groups over genetically modified crops.
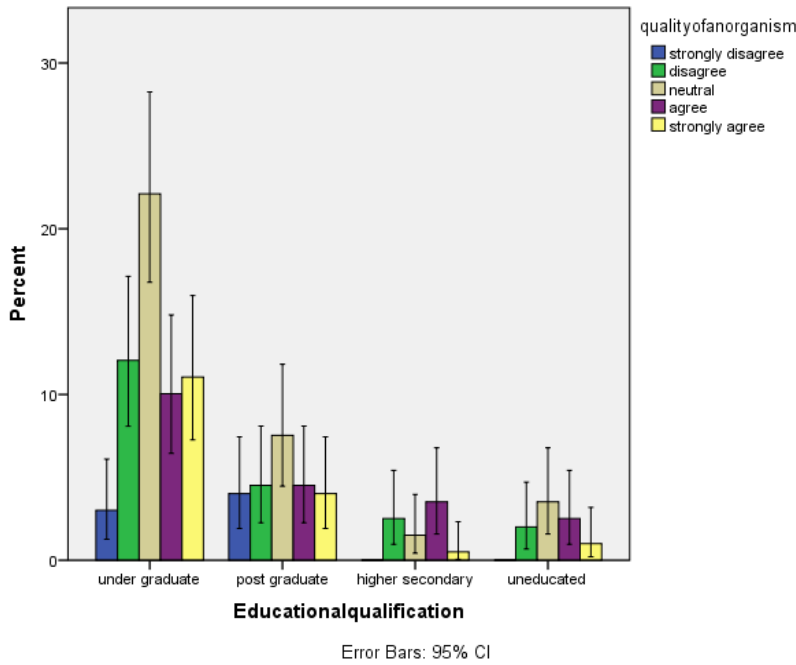
Fig : 3

Legend: Fig 3Shows the percentage level of preference for genetically modified crops among the gender group.
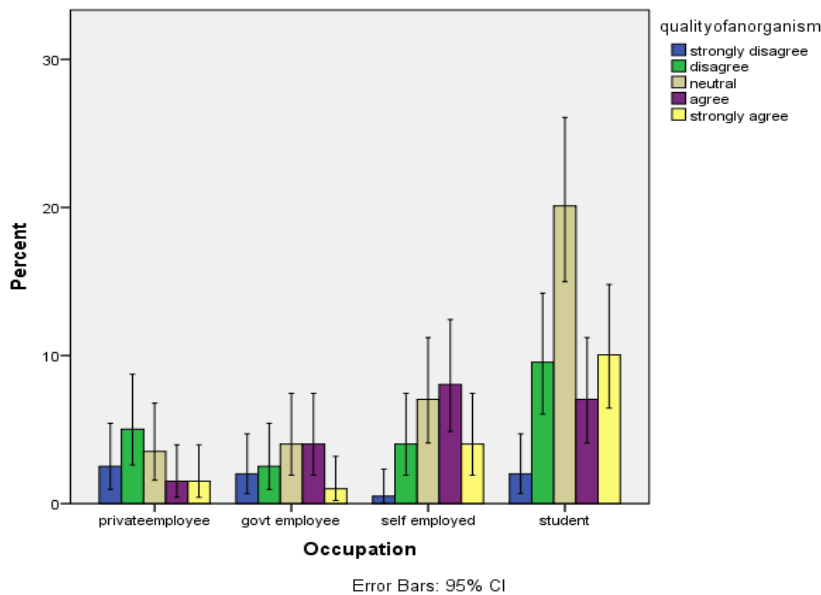
Fig : 4

Legend : Fig 4 Shows agreeability level of risk in growing genetically modified organic crops among the different age groups of the respondents.

Fig : 5

Legend : Fig 5 Shows the agreeability level for destruction in quality of an organism due to GM technologies among the educational qualification group.

Fig : 6

Legend : Fig 6 Shows the agreeability level for destruction in quality of an organism due to GM technologies among the occupation group.

Results :

In Fig 1, the standard opinion of the respondents is that 45% of the respondents prefer genetically modified organisms and crops.

In Fig 2, by correlating the occupational factor with their preference towards GM crops, it is found that most prefer GM crops due to its higher yield with less supplements.

In Fig 3, by correlating the gender factor with their preference towards GM crops, it is found that mostly male prefer GM crops than females.

In Fig 4, by correlating the factor of age with the agreeability level towards the risk involved in growing GM Products, it is found that people agreed that there exists a high risk in growing GM products.

In Fig 5, by correlating the educational qualification factor with agreeability level of destruction in quality of an organism due to GM technologies, it is found that GM technologies neither destructs nor encourages the quality of an organism.

In Fig 6, by correlating the occupation factor with agreeability level of destruction in quality of an organism due to GM technologies,it is found that students agree that GM technologies neither destructs nor encourages the quality of an organism.

Discussion:

Most people prefer GM Organisms and crops because of higher production with less supplements and most for its enhanced flavours. This might be due to people in the modern generation prefer varieties rather than quality. (Fig 1)

Mostly private employees and students prefer GM products. This might be due to people's opinion on products influencing their mindset. (Fig 2)

Male prefer GMO products more than females. And the least female respondents also prefer GM products due to its enhanced flavours. (Fig 3)

People between the age group of 18-25 agree with the existence of risk involved in growing GM organisms and add that it affects the evolution of existing organisms and human behaviour. (Fig4)

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Undergraduate students agree that GM Technologies neither destructs nor encourages the quality of existing organisms. This shows their awareness towards genetic technologies and its impacts. (Fig 5)

Every group of people in the occupation group have various opinions about the destruction of the quality of an organism. This might be due to the problems faced by different groups of people in their life due to genetic technologies. (Fig6)

Limitation:

The major limitation of this study is the sample frame. The major samples collected within the sample frame is 200. The various social, economic and environmental factors also affect the study. It is clear from the data collected that the respondents have the awareness of risks and impact in growing genetically modified organisms and foods.

Conclusion:

From the analysis done it is found that there exists an environmental risk in growing genetically modified organisms. It affects the environment directly or indirectly in such a way it gives an adverse impact on future generations. It is also found that the quality of the organisms is being distincted or destroyed due to advanced technologies that change the genes of the organisms. The study also reveals that the general public were well concerned about the environment and its evolution. It is clear from the study that with manmade or artificial technology, demand for existing products is being created in each country.

It is evident that the impact of growing genetically modified crops and organisms has a long lasting effect in the future and existing generation by the research done. People these days are much aware of the fact that genetically modified foods are sold at higher levels in markets, risks involved in growing GM organisms and crops. Hence it is the need of the hour to enact laws which covers the wide areas of GM organisms and crops.