Regulations on genetically modified foods in the Netherlands and the United States

Should the regulations on genetically modified foods in the Netherlands and the United States be improved to be sufficient in protecting against potential dangers?

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Abstract

The global use of genetically modified organisms have led to a fear among society that it creates harmful risks for the public health. The United States is a country that is well-known for the use of GMO's in their food. While being aware of this, it does not stop other countries, such as the Netherlands, from importing these foods with the chance that is contains GM products. Despite the fact that the Netherlands does not produce GM foods itself, it does have regulations on GM foods, which are different compared to the GMO regulations in the U.S.

The aim of this research is to explore whether the regulations on genetically modified food in the Netherlands and the U.S. should be improved to be sufficient in protecting against potential dangers.

The literature review of this thesis sets out the basic structure on the theoretical framework of regulations on GM foods in the U.S. and the Netherlands, whereby differences in regulations are pointed out. Also, all theoretical dangers of GMO's are observed and explained.

The research findings, which are found through semi-structured interviews, demonstrated that GM products and plants provide consumer benefits due to less use of gasoline, less spraying and weeding. Since there is no credible publication that confirms long-term harmful effects on humans that is caused by GMO's, all GM foods are declared safe to eat. Furthermore, the testing of foods which were allowed entrance into the American market have proven that all GM foods, are safe to eat. Despite the fact that these GM foods are safe, they still undergo safety tests by European and Dutch authorities. The chance that any unsafe foods that contain GM products will appear on the Dutch consumer market is unlikely.

Through analyzing all research findings, this research concludes that the regulations on genetically modified food in the Netherlands and the U.S. should not be improved to be sufficient in protecting against potential dangers. Before any regulations should be improved, practical evidences which can back up the potential dangers of GM foods must be demonstrated. So far, only theoretical publications on the possible dangers of GM foods for humans exist, however these are not supported by practical evidence which leads to a battle between theory and practice.

List of abbreviations

EC	European Commission
EFSA	European Food Safety Authority
EPA	Environmental Protection Agency
EU	European Union
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FDA	Food and Drug Administration
GE	Genetically Engineered
GM	Genetically Modified
US	United States
USDA	United States Department of Agriculture

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1. Introduction

Genetically modified foods are important due to the fact that it is a worldwide topic that is feared for creating harmful risks for the public health (Lendman, 2008). GM food has been researched on a global level, although, not enough research has been conducted on whether the current regulations on GM foods in the Netherlands and the United States are sufficient enough to protect against possible dangers.

Scientific research shows known dangers of GM foods on public health worldwide. In Canada, researchers discovered pesticides and toxins in GM foods which have a dangerous effect on pregnant women (Walia, 2014). In India, employees who worked with GM seeds got allergies (Lendman, 2008). Therefore, the added value of conducting more research is to find out about the advantages of GM foods within the current regulatory framework and also to find out whether GM foods include possible dangers.

Once possible dangers have been identified, a determination must be made whether the current regulations are sufficient enough to protect the public health. This research will be specialized on the regulations of GM foods in the Netherlands and the U.S. The latter is well-known for its use of GM foods and the considerable resistance among citizens and politicians due to safety conditions. Despite the fact that the Netherlands has regulations on GM foods, it does not consume GM foods itself. However by importing food from the U.S. there is a possibility that it imports food that contains GM products without being aware of that. Following this research, a conclusion can be drawn which will have effect on whether American and Dutch citizens must be worried or not.

Genetically Modified foods are foods that have manipulated genetic structures that were created in an unnatural way, via laboratories (World Health Organization, 2015). The European Union introduced two regulations on these Genetically Modified Organisms. The first directive deals with GM plants and was introduced in 2001. The second regulation deals with GM foods and feed which was introduced in 2003 (GMO Compass, 2006). These regulations on GM foods were implemented to prevent harmful effects on humans and the environment by banning damaging GM foods (GMO Compass, 2006).

Moreover, the implemented precautionary principle empowers the European Commission to withdraw products from the European market that could be a potential danger to human beings or the environment, mostly proven by scientific data (EUR-Lex, 2011).

Newly introduced regulation on GM crops have given European member states more power on allowing or banning GM crops within their own borders (European Parliament, 2015). The Netherlands is the first member of the European Union that introduced coexistence rules on the regulation of genetically engineered foods (Library of Congress, 2015).

Despite the fact that the Netherlands does not produce GE foods for commercial use itself, it does import a generous capacity of food, such as GE crops. An important country for importing food is the US. In 2014, the Netherlands imported over 1,200 million metric tons of GE, mainly soybeans, and this number is expected to rise in the upcoming years (USDA Foreign Agricultural Service, 2015).

The safety practices for the import of these GM foods can be questioned, due to the fact that the U.S. uses different regulations compared to the EU. The EU uses the precautionary principle to protect its citizens and the environment, which is different compared to the regulations of the U.S. (EUR-Lex, 2011). The U.S. uses a substantial equivalence principle, whereby products with the same basic ingredients are treated the same (Meeus, 2015).

Such differences in regulations could lead to having GM products entering the American market without being labelled as GM products. They have the same basic ingredients as non GM products and are, treated as non GM products (Meeus, 2015). The Netherlands import GM as well as non-GM products from the U.S. without realizing that the non-GM foods possibly contains GM products (Burley & Schimpf, 2014).

Products that are labelled as GM foods are commonly known as safe products. The U.S. does not have to approve nor test the toxins and nutrients before entering the American market (Lau, 2015). GM and non-GM products will enter the Dutch market without further testing and without knowing the risks and dangers.

The raised doubts about the current set of regulations on GM foods in the Netherlands and the U.S. have led to one central question that needs to be addressed and answered within this research:

Should the regulations on genetically modified foods in the Netherlands and the United States be improved to be sufficient in protecting against potential dangers?

Dangers of GM foods have been discovered worldwide, whereby examples are given in the previous context. The sufficiency of the current regulations on GM foods in the Netherlands and the U.S. need to be researched in order to find out what can be improved to prevent further potential dangers.

1.1 Structure

The central question can be completed with a final answer, it is broken down into sub-questions. By answering these sub-questions, necessary information for this research will be retrieved. To answer the central research question these sub-questions, which will be answered in the literature review (chapter 2), are outlined as follows:

- *What are GM foods?*
  First, an introduction and explanation about the meaning and use of GM foods will be given in order to completely understand what GM foods are.

- *What are the Dutch and European regulations on the consumption and import of GM foods from the United States?*
  Secondly, the Dutch and European regulations on the import of GM foods from the US will be discussed and a close look will be taken whether the Dutch government and the European Union stimulate the progression of GM foods.

- *What are the American regulations on the consumption of GM foods?*
  Thirdly, the current set of regulations on GM foods in the U.S. will be reviewed, such as the labelling and testing before it enters the American market. Also, the considerable resistance among citizens and politicians due to safety conditions will be taken into account.

- What are the advantages and disadvantages of importing GM foods from the United States?
  Fifthly, the advantages and disadvantages of importing GM foods from the U.S. will be identified.

- What are the current holes in the regulations?
  Lastly, the current holes in the current Dutch / European Union and American regulations on GM foods will be discussed as well as what can be improved which will lead to giving a recommendation.

Once all sub-questions are answered in the literature chapter, the research will pursue to the next chapter which will discuss the methodology (chapter 3). In this chapter the most suitable research approaches will be explained and justified. In the research findings section (chapter 4) all research outcomes will be presented. The discussion section (chapter 5) will link all literature findings and research outcomes followed by a conclusion (chapter 6).

1.2 Definition of key terms

For the reader it is necessary to understand the definition of the key terms which are mentioned throughout this research paper. These key terms do not only give a definition, they are also important for understanding the regulations on GM food in the EU and the U.S.

Genetically Modified foods: Foods that are genetically manipulated via gens that are created in an unnatural way in laboratories (World Health Organization, 2015).

Precautionary principle: This principle empowers the European Commission to withdraw products from the market that could be a potential danger to humans or the environment, which is mostly proven by scientific data (EUR-Lex, 2011).

Substantial equivalence principle: This is the principle that all products with the same basic ingredients are treated the same (Meeus, 2015).

2. Literature review

This chapter will give an oversight of all the literature review. Firstly, the term GM foods will be introduced and defined, together with some of its most important history points. In chapter 2.2, the Dutch and European regulations on GM foods will be reviewed and compared. Next, a framework of all American regulatory agencies on GM foods and the distrust in safety of GM foods among citizens will be reviewed. In chapter 2.5, the advantages and disadvantages of GM foods will be talked about. Specialized imports on GM foods from the U.S. and the holes in the current regulations of American and Dutch GM foods will be discussed, together with possible recommendations.

2.1 GM foods: an introduction

GM is the abbreviation of Genetically Modified (World Health Organization, 2015). Genetically modified foods are foods that come from plants which are modified by humans through genetic engineering (Paarlberg, 2007, p. 192). Through genetic engineering the original deoxyribonucleic, better known as DNA, of the plant is being merged with DNA from other plants (David Suzuki, 2014).

Even though genes were discovered a long time ago, it was not until 1973 that the first genetic engineering technique, invented by Stanley Cohen and Herbert Boyer, became successful in merging DNA species (GM Education, 2012). Thanks to this success, it became possible to breed plants which could be merged with the DNA of other plants. This resulted in the ability of choosing the most desirable traits that would be merged into plants. The merge of specific genes would lead to a better quality of food that is produced by the plants. For example, certain genes make the quality of meat or oil better than other genes (Paarlberg, 2007, p. 192).

In 1994, the first genetically engineered product, so called the *flavr savr tomato*, was ready for human consumption and appeared in the commercial supermarket shelves in the US (Paarlberg, 2007, pp. 192 - 193). From this moment, more and more genetically modified foods were developed and commercialized. Not only the US had approved GM foods, other parts of the world, such as the European Union, Australia, Japan, Mexico, and Argentina introduced GM foods in their countries as

well. However, their regulations on GM foods differ in many ways (Paarlberg, 2007, p. 193).

2.2 The Dutch and European regulations on the consumption and import of GM foods from the United States

2.2.1 The European Union

After the introduction of GM foods in the European Union (EU) it set up a strict process following severe rules when it comes to the consumption, import, and production of GM foods (Lau, 2015). In 2001, the EU created its first directive which deals with GM plants followed by a second regulation on GM foods and feed for all member states in 2003 (GMO Compass, 2006). These regulations were meant to prevent harmful effects on human beings and the environment by banning damaging GM foods (GMO Compass, 2006).

During these years, European citizens were still quite unfamiliar with the development of GM foods, but the fear of health risks among citizens about the dangers of GM foods increased. Therefore, the EU decided to make the precautionary principle its central focus which was introduced before any other regulation on GM foods. (Lau, 2015). The implemented precautionary principle empowers the European Commission (EC) to withdraw GM products from the European market that could be a potential danger to humans or the environment, mostly proven by scientific data (EUR-Lex, 2011).

Before any GM product can be authorized on the EU market, it must go through an application process. A clear overview of this process is given in figure 1 on the next page. The application process starts with a scientific assessment by the European Food Safety Authority (EFSA) (European Food Safety Authority, 2016). Through scientific research by independent researchers, EFSA has the opportunity to identify any environmental or animal and human health risks. This research has to be fulfilled within six months and after those months an opinion, possibly with some recommendations or suggestions, is given to the EC and member states (Lau, 2015).

The next step is the (dis)approval of the GMO by a majority of member states or the EC. Taking into account the opinion of EFSA, the European member states have three months to make a decision whether to approve or disapprove the use of

GM's. Whenever the member states cannot come up with a majority, the EC has the obligation to make the final decision within those three months (Lau, 2015).

Once a GMO product has been approved and contains over 0.9% GM material, it needs to be labelled mandatory. The label requires a clear text saying that GM materials are contained in this product (GMO Compass, 2007). Now that the consumer is aware of the GM material within the product, they can make the decision whether to buy the product or not.

Figure 1: The process of approval of GM foods in the EU (Lyon, 2015)

Nonetheless, not all member states are pleased with this way of decision-making. The EU decision-making, whereby the final decision of the EC has to be implemented into national laws, has led to controversy between the EU institutions and national governments of member states. For example, France, which has one of the world's largest agricultural industries, is a major opponent of GM crops and foods and wants to stay GMO free (Barbière, 2014). Its national government has, therefore, banned the use of GM crops.

Due to the controversy between the EU institutions and national governments, the EU decided to revise the regulations on GMO foods and feed. On March 2nd, 2015 new introduced regulations were adopted by the Council (Council of the European Union- European Council, 2015). These new regulations have given member states more power on allowing or banning GM crops within their own borders (European Parliament, 2015). This means that member states can only allow or ban GM crops that have already been approved by the EC or a majority of member states during the process of approval (figure 1).

Since the introduction of the first developed GM products, the Dutch government had an open-minded approach when it comes to using GM crop plants, despite the potential risks coming along with it. Before all European regulations about the use of GMO foods were implemented, the Netherlands decided to let GMO foods enter the Dutch market (Baram & Bourrier, 2011, p. 90). However, soon after the European laws were implemented, the Dutch got corrected by EU institutions and had to obey these new implemented laws.

2.2.2 The Netherlands

After the latest implementation of EU laws on GMO foods and feed in March 2015, the Netherlands was the first member of the EU to have coexistence rules, meaning that the Netherlands follows the exact same rules on GMO foods as the EU and does not carry out stricter rules, such as member states who are oppose GM foods (Library of Congress, 2015).

Even though the Netherlands does not produce GM crops itself, this does not mean that the Netherlands has no affinity with GM products. It imports and makes use of these products, but it also exports to other European and non-European countries. The Netherlands mainly imports GE crops from Argentina, Brazil, and the US. All imported products must follow EU legislation (Library of Congress, 2015).

The Dutch government's open-minded and positive approach on GM products raised resistance among local communities and local provincial parliaments. For example, in 2011 its northern province Friesland made the decision to not allow GM farming in their province for several reasons. Irona Groeneveld, leader of the Dutch political party Groenlinks in the province Friesland, stated that, ''Little is known about

the consequences of growing GM foods, both for consumers and farmers. A farmer wants to know the risks to his land the consumer wants to know what he or she eats.'' She also states that, ''little is known about the effects of GE on the environment. Agriculture is so important for Friesland, so we have to take into account the interests of the farmers.'' (A Seed Europe, The Netherlands, 2011). Friesland is not the only place where resistance is shown, more cities and organizations are showing resistance against GM foods.

2.3 The American regulations on the consumption of GM foods

2.3.1 Framework of agencies

Genetically Modified foods in the US are regulated by a framework of institutions which consists of three agencies, namely the Food and Drug Administration (FDA), the U.S. Department of Agriculture (USDA), and the Environmental Protection Agency (EPA) (Lau, 2015).

FDA is the most essential agency of the entire framework, because it needs to review all foods, including the GE foods in order to recognize its safety before it gets approval to enter the American consumption market (U.S. Food and Drug Administration, 2015). Due to the rise of new plant varieties, that are created via DNA engineering techniques, FDA set up a new policy in 1992. This policy includes a voluntary consultation program specialized for GE food developers. FDA will test the GE plants to ensure its legal and safe before it enters the market (Marden, 2003, p. 747). With this policy, FDA wanted to reassure the American citizens that the GE foods that appear on the market are safe for consumption.

Many citizens and companies were still anxious about the safety of these foods, because of the way FDA dealt with it through a voluntary program. Many science agencies also raised their concerns, not only about their voluntary program or lack of data and information, but also about the foods that were recognized as safe and allowed on the market (Marden, 2003, pp. 750-751). Also several national interest organizations, such as the Center for Science in the Public Interest and the Mothers for Natural Law, raised awareness about the lacks of the GE safety approval process by FDA.

Not only the safety process was doubted, questions were also raised about making the labelling of GM products mandatory since none of them were labelled (Marden, 2003, p. 754). This means that American citizens were already eating GM foods without knowing that their food contains GM substances. Several court cases against FDA raised even more awareness, but did not lead to a mandatory consultation program nor mandatory labelling. However, due to the ongoing technological developments of GE products, FDA decided to review its 1992 policy and proposed new rules in January 2001. Included in these proposals was a mandatory consultation program and the retrieval of data and information about the content of GE products (Marden, 2003, p. 758). Despite the proposals for a better regulation, FDA still faced a lot of criticism about being non transparent enough towards the public.

The second agency is the U.S. Department of Agriculture (USDA), which is responsible for the introduction of GM crops into the American agricultural market and its transport. USDA has to obey the regulations that are adopted in the Plant Protection Act of 2000 (Federation of American Scientists, 2011). This Act gives USDA the ability to check all incoming GE plants on diseases, damages, and viruses. Any plant that could potentially threaten the American market can be seized and if necessary be destroyed. These measures are taken to ensure that the American agriculture market is kept healthy (Marden, 2003, p. 768).

All incoming plants go through a process by USDA which can either be a regular notification process or a permit process. All low-risk plants, which are non-chemical corn and crop, go through the regular notification process and are obeyed to follow the standard import rules. Higher-risk plants, need to obtain a permit to enter the agriculture market. On the other hand, all high-risk plants, which contain any sort of chemical, a permit is mandatory(Federation of American Scientists, 2011).

The final agency that is part of the framework is the Environmental Protection Agency (EPA). This agency has to ensure that the limit of use of pesticides in GM products is safe for animals, the environment and human consumers. In order to ensure its safety, EPA regulates under the Federal Insecticide, Fungicide and Rodenticide Act (Gertsberg, 2009). Under this Act, EPA has to regulate GM products containing pesticides which will be distributed, sold, used, and tested. All GM products that contain pesticides need to be registered at EPA and will be

evaluated. The limit of used pesticides will be measured to ensure that the product will not cause any harm to the environment or humans (Gertsberg, 2009). GM products containing pesticides which are not registered at EPA cannot be sold on the domestic agriculture market.

A clear overview of the approval process of GM foods in the U.S. is given in figure 2 on this page.

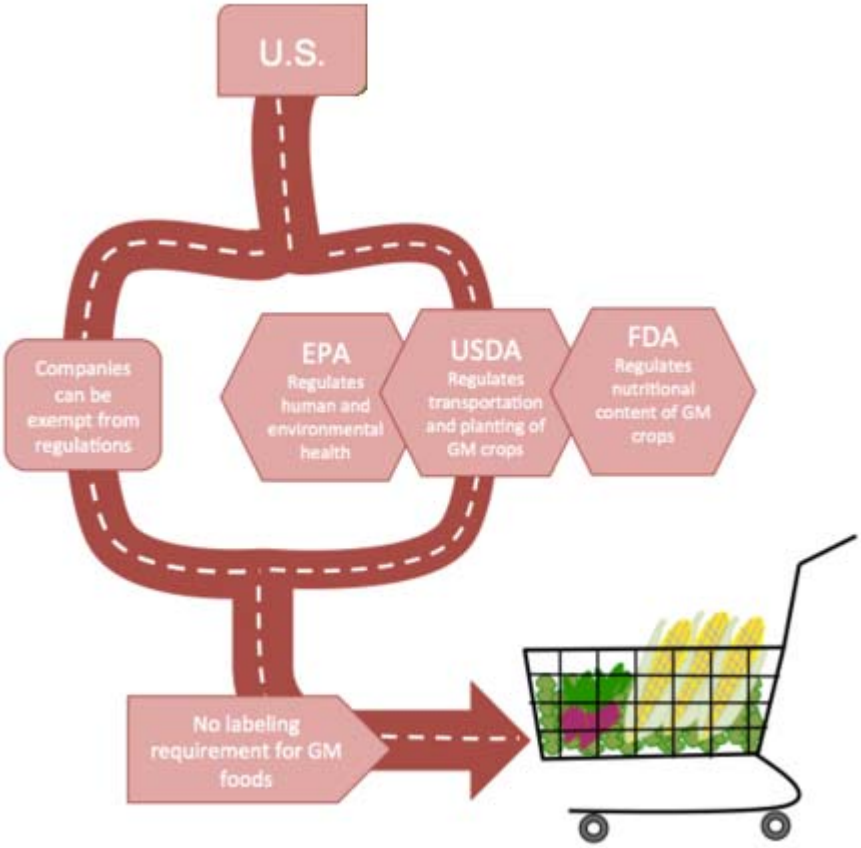

Figure 2: The process of approval of GM foods in the U.S. (Lyon, 2015)

2.3.2 The substantial equivalent principle and labelling

FDA, the most essential agency for the domestic market, makes use of the substantial equivalent principle (U.S. Food and Drug Administration, 2015). The substantial equivalent principle means that GMO crops that contain the same main components as non GMOs are not mandatory to further testing on safety (McCann, 2014). The non GMOs contain components, such as fat and proteins, are already available on the agricultural market. These components have been tested on safety before entering the agricultural market and are, therefore, legally safe. Thus,

GMOs that contain components which are equivalent to the components of non GMOs require no safety testing.

Till this day the U.S. do not make use of mandatory labelling of GM products. Based on the substantial equivalent principle no labels are required. The 1992 policy of FDA states that the labelling of foods as GMO free is misleading for the consumer, because, regarding the equivalent principle, GM products contain the same main components as non GM products and are all legally safe (Marden, 2003, pp. 759-760).

However, FDA has set up a voluntary labelling guidance about engineered food and all labels need to be truthful (U.S. Food and Drug Administration, 2015). For example, manufacturers are able to put labels saying that this product is genetically engineered. Only products that do not fall under the substantial equivalent principle and contain different components than non GMOs are mandatory labelled (Marden, 2003, p. 762).

The non-mandatory labelling of GM products has not only faced major criticism among citizens, it has also led to debates in U.S. politics. However, several bills to make labelling of GM foods mandatory have not been passed yet (Watson, 2015).

2.4 The advantages and disadvantages of importing GM foods from the United States

As described in the introduction part of this report, the Netherlands imported over 1,200 million metric tons, mainly soybeans, from the US in 2014. This number is expected to rise in the upcoming years (USDA Foreign Agricultural Service, 2015). The huge import from the US and the open-minded approach of the Dutch government towards GM foods clearly show that the Dutch government finds it necessary to develop and continue to develop their interest and knowledge in the field of GM foods. Moreover, its pro-active approach means that the Dutch government sees more advantages in importing GM foods from the US than it sees disadvantages (Library of Congress, 2015).

2.4.1 Advantages

All GMO foods that are accepted on EU level also need to go through an accurate food safety examination which is done by the Voedsel en

Warenautoriteit, the Dutch food authority (Voedsel en Warenautoriteit, 2008). All products which contain GMO's that are not allowed on the Dutch market will not be accepted. Products that contain GMO's need to be labeled, however this only applies to products that have a higher GMO percentage than 0.9% (Voedsel en Warenautoriteit, 2008). Products that contain a lower GMO percentage than 0.9% do not have to be labeled, because most crops will be mixed with crops from other farms. This means that a small percentage of 'pollution' arises, which is allowed by the food authorities (Voedsel en Warenautoriteit, 2008). The pro-active approach and acceptance of GM products by the Dutch government enables consumers to have a free choice between GM products and non-GM products.

2.4.2 Disadvantages

However, importing GM foods from the US also has its disadvantages whereby potential health risks are a huge fear. The American government admitted that GM crops in the US contain a larger amount of pesticides. (Zwaan, 2013). This could possibly lead to health hazards. Nonetheless, scientists argue that GM foods have not undergone enough testing on humans yet, especially on a long-term period (Reynolds, 2015). It was not until the 1990's that the first genetically engineered product was approved for human consumption. Since that time, there has not been enough research on the potential health risks of GM foods and scientists can therefore not tell what the long-term risks are (Reynolds, 2015). Despite the fact that the long-term risks and direct effects for humans are unclear and uncertain, the testing of GM foods on animals have resulted in clear outcomes. The effects of animals eating GM foods has resulted in toxic effects. These effects include abnormal changes of the organs, immune system disorders, and accelerated aging (Zwaan, 2013). Even though the direct effects and long-term risks of GM foods on humans are still unclear, it cannot be said that GM foods are safe to eat and, therefore, importing GM foods from the US has its potential dangers (Reynolds, 2015).

2.5 The current holes in the regulations on GMO's

Every set of regulations has its holes, both found by supporters and opponents. This also applies to the current set of regulations on GM foods in the US as well as in the EU.

Supporters of GMO's state that the current regulations in the EU allow member states to deny GM foods despite the fact that they are approved by the EFSA. Member states could reject them based on non-scientific reasons, which have nothing to do with safety, such as economic and environmental reasons (Herling, 2015). On the other hand, opponents of GM foods state that the law has its weaknesses, whereby safety is their number one issue (Herling, 2015). The fact that member states have the ability to decide whether they approve or reject GM foods that have already been allowed on EU-level creates uncertainty in the internal European market (Herling, 2015).

Critics argue that the current regulations on GM foods in the US are not up to date with all new techniques on genetic engineering of GMO's. Agricultural companies that create GMO's constantly try to invent new techniques in which new genes are created (Zhang, 2015). These new genes ensure that the plants no longer have to be modified, which means that they are no longer covered by the current GMO regulations (Zhang, 2015). The US lacks a central regulatory system like the EU has. Currently, there are three different agencies that cover the regulations on GMO's in the US. All of them have their own field of authority and regulate GMO's in different ways. The American federal government recognizes this as a dilemma and directed the agencies to recall their regulations in July 2008 (Zhang, 2015).

Both, mandatory GM labeling in the EU as well as the voluntary GM labeling in the US, have holes in their current regulations and face criticism and challenges. The EU has a central regulatory system in Which the US has none. Currently there are 64 countries worldwide that require mandatory labeling and this includes all EU member states (Just Label It, 2016). However, the US is not part of this and does not require mandatory labeling of GM foods, which means that importing from the US comes along with different standards, especially safety related issues, such as potential health risks.

Since more and more countries deal with GMO's, it has become a worldwide issue that raises pressure on all political levels (AG Bio Forum, 2007). It is, therefore, desirable to have international GMO regulations on the labeling of GM foods.

Having all nations come to an agreement about worldwide labeling regulations on GM foods can bring difficulties since the current regulations are based on economic and political reasons for each country (Whang, 2016). For the US to

change their current voluntary labeling of GM foods to mandatory labeling can have adequate economic consequences.

3. Methodology

In this chapter, the methods of data collection that will be used to answer the research questions and establish the research findings of the dissertation will be discussed and justified.

3.1 Research methods

The first part of the data collection of this research consists of theoretical data, which is found during primary research. The research methods that will be used for the dissertation will be qualitative and quantitative based. This method is most suitable, because it will provide in-depth data (Guide to undergraduate dissertations, 2015). The data was retrieved by primary and secondary research. Most information was retrieved through secondary data (desk research), whereby the types of information sources consist of academic, articles, books, and documents. This data was retrieved during all phases of the dissertation project. The primary data research, which consists of the researcher's own data, was conducted by interviews which were held during the research phase.

3.2 Interviews

As a second research method interviews were held, and the outcomes can be found in the research findings chapter (chapter 4). The reason to use interviews as a second research method, is because interviews give the possibility to obtain more in-depth information, longer answers and can lead to discussions. Despite all advantages stated previously, using interviews as a research methods also has its limitations. When conducting interviews, participants are given the ability to give answers that can either be short or long. Longer answers made it more difficult to analyze the data (Palgrave Study Skills, 2015).

All three conducted interviews in this research are semi-structured, which means that the interview consists of open questions that were written down in a neutral way (Qualitative Research Guidelines Project , 2008). The transcripts of all conducted interviews can be found in the annex section.

The conduction of semi-structured interviews were chosen, because of the discussions that are likely to arise. Creating discussion by having open questions eventually provides more information to answer the central and sub questions of the dissertation project (Qualitative Research Guidelines Project , 2008). Semi-structured interviews offer participants the freedom to open up about issues that they address as important and state their opinions (Clifford, 2010, p. 142). To this day, conducting semi-structured interviews is still one of the most used methods that are qualitative based (Clifford, 2010, p. 144).

The interview participants were carefully chosen based on their experience and relation to the subject. All participants are researchers or research advisors and have their own opinions or views on GMO's, which makes them support or oppose the use of GMO's. Out of all three participants, one wished to remain anonymous.

Each semi-structured interview consists of eight questions and is structured in the same way and same order for each participant (Clifford, 2010, p. 145). The advantage of using semi-structured questions is that the participants are unable to answer the questions with a yes or no and actually have to come up with a response in their own words based on their opinion (Clifford, 2010, p. 145). Not all eight questions of all interviews are answered by each participant, since some may not have enough knowledge on specific questions. All eight interview questions are based on the central purpose of this thesis and the content of the themes that are discussed in the literature interview chapter (chapter 2). However, it is not until the research findings section (chapter 4) that the findings and results of the interviews are used. All findings are written down based on the same themes that are used in the literature review.

3.3 Ethical considerations

This research has its ethical considerations when it comes to protecting the interview participants. To prevent all interviewees from any harm, they were told their rights and were asked to sign an informed consent form which confirms that they are aware of the purpose of this research (Zeni, 2006). With this form, all participants know that they have the right to remain anonymous if they wish to. The signed informed consent forms of each interview participant can be found after the corresponding transcript of the interview in the appendices. One out of three

participants wish to remain anonymous and is, therefore, named as participant B. Also, the author has chosen to rename the other two participants and gave them a pseudonym name, such as policy advisor HollandBio and research advisor PlanetNL. However, pseudonym names are used throughout this research, the two participants are in fact introduced with their real names in the research findings chapter.

A copy of the interview transcript or the informed consent form was sent to the participant when asked for it.

4. Research findings

In this chapter, the findings of the conducted interviews will be discussed. All themes that will be discussed during these findings are based on the same themes as the literature review. Only the most relevant themes, which are opinion based, will be discussed and are focused on:

4.1 American vs Dutch / EU regulations
4.2 Advantages and dangers of the consumption of GM foods
4.3 GMO Labeling in the US
4.4 The Netherlands and its import
4.5 International GMO label policies

However, before the conducted interviews will be discussed, some background information of the interview participants will be provided. The first participant is Irma Vijn. She works as a policy advisor at HollandBio and deals with clinical research, GMO issues, and animal testing. The company she works at, HollandBio, is the pressure group for the Dutch biotech industry and supports 140 companies in this sector (HollandBio, 2016). This company believes that the Netherlands can profit from the biotech sector on all fronts. The second interview participant wishes to remain anonymous. Therefore, there will be no information provided of this person. The third interviewee is John Komen, who works as a research advisor in all parts of the world and deals with biotechnology, biosafety, policy, regulation, and has participated in multiple international organizations, such as the United Nations (Judith A. Chambers, 2014, p. 121).

4.1 American vs Dutch and EU regulations

The regulations on food in the US as well as in the Netherlands / Europe are practical and science-based (Research advisor PlanetNL, 2016, p. personal interview paragraph 1). The Netherlands follow the EU directives, which are strict (Research advisor PlanetNL, 2016, p. Personal interview paragraph 1). Also, it is based on existing environmental and food safety laws rather than on specific GMO regulations. The European regulations have been implemented years before the first commercial GM products were available (Policy advisor HollandBio , 2016, p. personal interview paragraph 1). The current EU regulations on GMO's should be

diminished, because the amount of safety testing is more than what is required at the moment and does not outweigh the potential risks (Policy advisor HollandBio , 2016, p. personal interview paragraph 1). The US does not have federal laws when it comes to the labeling of GM products.

4.2 Advantages and dangers of the consumption of GM foods

There are several advantages for the consumption of GMO foods. More and more literature confirms that recently developed GM products and plants provide benefits for the consumer (Research advisor PlanetNL, 2016, p. personal interview paragraph 2). When producing GM plants, less pesticides and less amounts of herbicides are used. Less spraying and weeding results in less use of gasoline and the harvests are normally larger than from non-GM crops (Policy advisor HollandBio , 2016, p. personal interview paragraph 2). This results in healthier foods. In addition, new crops are being developed which are nitrified with vitamins or can resist longer periods of submerging (Policy advisor HollandBio , 2016, p. personal interview paragraph 2).

There is no credible publication that confirms any dangers or harmful effects of GM foods caused to human and animal health or the environment at large (Research advisor PlanetNL, 2016, p. personal interview paragraph 3). All new technologies might have risks that come along with them and this also applies to the introduction of GM technology (Research advisor PlanetNL, 2016, p. personal interview paragraph 3). Without any confirmed risks all GM foods are safe.

4.3 GMO labeling in the US

The US should not make GMO food labeling a mandatory requirement. Most of the time, foods that are produced with GMO's are identical to foods that are produced without GMO's, so there is no reason for labeling (Research advisor PlanetNL, 2016, p. personal interview paragraph 4). In cases where GMO food has a new property or ingredient that is not present in its conventional counterpart, existing labeling regulations could be used to indicate that (Research advisor PlanetNL, 2016, p. personal interview paragraph 4). However, in case the US decides to make labeling mandatory it should be done at federal level (Policy advisor HollandBio , 2016, p. personal interview paragraph 4) .

Although the FDA has a stable reputation in assessing the safety of food products, this is not supported by a comprehensive law on food safety and could, therefore, be an area for regulatory improvement (Research advisor PlanetNL, 2016, p. personal interview paragraph 5). The testing in the US has proven that all foods which have entered the American market are safe, just like the European market. This means that further testing is not necessary and it might be taken into consideration to diminish the amount of testing (Policy advisor HollandBio , 2016, p. personal interview paragraph 5).

Nonetheless, the US could consider making GMO food labeling mandatory for its consumers. The mandatory labeling would provide them with an opportunity to choose between GMO and non-GMO foods (B, 2016, p. personal interview paragraph 4).

4.4 The Netherlands and its import of GMO foods

The authority on GMO foods and its import is managed by the EU and the EFSA,. However, the Netherlands could argue for improvements on the regulations of GMO foods at EU level, because the current system is confusing and based on politics rather than science-based safety assessments (Research advisor PlanetNL, 2016, p. personal interview paragraph 6). Europe should improve their performance by speeding up the authorization of pending import applications for new GM crops (Policy advisor HollandBio , 2016, p. personal interview paragraph 6).

The Netherlands already imports huge amounts of GMO's from the US which are used for food and animal feed. Every GM food that entered the American market is safe and should be handled like any other product (Policy advisor HollandBio , 2016, p. personal interview paragraph 7). Till this day, there have not been any negative effects on human nor animal health (Research advisor PlanetNL, 2016, p. personal interview paragraph 7). It is, therefore, highly possible that the import of GM foods from the US will increase.

4.5 International GMO label policies

Mandatory labeling or international GMO label policies would not be a solution in protecting against any potential dangers, because a label does not guarantee

safety. GM foods that have been assessed, tested, and declared safe by the EU, the US, or both, and entered the commercial market do not need to be labeled differently than an equivalent food product (Research advisor PlanetNL, 2016, p. personal interview paragraph 8). Labeling will not add up to more safety (Policy advisor HollandBio , 2016, p. personal interview paragraph 8).

The key findings from the conducted interviews can be found in the table below.

Regulations	• No federal regulations on labeling in the US • European GMO regulations are outdated
Advantages and dangers	• GM products and plants provide consumer benefits • No credible publication that confirms harmful effects caused by GM foods
Labeling in the US	• The US should not make GMO food labeling mandatory • In case the US changes its labeling system, it should be done at federal level
The Netherlands and its import	• The Netherlands should argue for improvements of GMO regulations at European level • Importing GM foods from the US is safe • Import of GM foods is expected to increase
International GMO policies	• Mandatory labeling or international label policies are no solutions in protecting against potential dangers

The findings of the conducted interviews will be compared to the outcomes of the literature review and will be discussed in the upcoming discussion chapter.

5. Discussion

Now that the results of the literature review (chapter 2) and the conducted interviews (chapter 4) have been provided, this chapter will discuss and compare both chapter results. These results will be discussed according to the themes that have been used in the literature review and research findings, which are: regulations, advantages and dangers, labeling in the US, the Netherlands and its import, and international GMO policies.

Regulations

The EU regulates GM foods through a strict process that follows severe rules (Lau, 2015). These regulations should ban any GM food that could damage the environment or that could cause any health risks for human beings (GMO Compass, 2006). Since the introduction of GM foods, the EU created its central principle, namely the precautionary principle (EUR-Lex, 2011). Before any GM product can enter the market it goes through an application process which includes scientific assessments by the EFSA (European Food Safety Authority, 2016). The new regulations, which have been implemented in March, 2015 gives EU member states the power to ban or allow GM crops that have been authorized by the EU (Council of the European Union- European Council, 2015). The interviewees argue that the regulations on GMO's have been implemented years before the first commercial GM products were available and are stated as outdated due to the constant development of techniques on genetical engineering (Policy advisor HollandBio , 2016). Nowadays, the safety testing is more than what is required and still does not outweigh any potential risks. The EU should, therefore, diminish its current regulations (Policy advisor HollandBio , 2016).

Advantages and dangers

The theoretical section recognizes both advantages and dangers when it comes to importing GM foods from the US. All incoming products that contain GMO's are not only examined on EU level authority, they will also be examined on a national level by the Dutch food authority named Voedsel en Warenautoriteit (Voedsel en

Warenautoriteit, 2008). The imported products which contain GMO's with a higher GMO percentage than 0,9% need to be labeled before being accepted on the commercial market (Voedsel en Warenautoriteit, 2008). The research findings, however, conclude that importing GM foods and plants actually provides benefits for the consumer. GM crops contain less pesticides, less amounts of herbicides, and are recently developed with vitamins. This all results in healthier foods for the consumer (Policy advisor HollandBio , 2016).

However, importing GM foods from the US also has its disadvantages whereby potential health risks are the main dangers according to the literature review. The US uses GM crops that have a larger amount of pesticides in comparison to regular American crops (Zwaan, 2013). Moreover, scientists argue that GM foods have not undergone enough testing on humans yet, especially on a long-term based period (Reynolds, 2015). Not enough research has been done since the first GE product was created and approved for human consumption. It is, therefore, unknown what the long-term risks are (Reynolds, 2015). Despite the fact that there are no clear results on the health effects of the consumption of GM foods, the testing on animals do have clear outcomes. The effects include the intoxication of the organs and immune system (Zwaan, 2013). The long-term risks of GM foods on humans are still unclear, but it cannot be said that GM foods are safe to eat and, therefore, importing GM foods from the US has its potential dangers (Reynolds, 2015). Remarkably, the interview respondents have a common opinion that GM foods are safe. Until there is no credible publication that confirms any dangers or harmful effects of GM foods caused to humans, the eating of GM foods is completely safe (Research advisor PlanetNL, 2016).

Despite the disagreement on the dangers and potential risks of GM foods on humans, both theoretical and research findings conclude that the Netherlands will continue its import of GM foods from the US and this is expected to rise in the upcoming years.

Labeling in the US

As described in the literature review chapter, the US does not require mandatory labeling. It's most essential agency, the FDA, makes use of the substantial equivalent principle (U.S. Food and Drug Administration, 2015). According to this

principle all GMO crops that contain the same main components as non GMOs are not mandatory to further testing on safety, because these components are not new on the market (McCann, 2014). However, products that contain different components than non GMOs are required to be labelled (Marden, 2003, p. 762). Despite its non-mandatory labeling, the US allows voluntary labeling, which means that manufactures have the choice to put labels on their products stating that their product is a GE product. However, its substantial equivalent principle has caused fuss among citizens, but this has not led to any changes on the labeling of GMO's.

According to the interviewees, the US should not make the labeling of GMO's a mandatory requirement. Only when new ingredients are introduced that have not entered the market yet, should be labeled, which is currently done by the substantial equivalent principle. However, in case the US ever decides to change their labeling regulations on GMO's, it should be done at federal level instead of having it regulated by the FDA.

The Netherlands and its import

The Netherlands has an open-minded approach when it comes to GMO's. Despite the fact that it does not develop GE products itself, the Dutch import GM products from all over the world. The US is one of their main countries where they import their GE products from, which are mainly soybeans (USDA Foreign Agricultural Service, 2015). However, being pro-active by developing its interest and knowledge in the field of GM foods is not enough according to the interview respondents. The authority on the import of GM foods is controlled by the EU and EFSA, which makes it impossible for the Netherlands to manage their own import of GM foods in order to keep developing. Therefore, the Netherlands should argue for improvements on European level when it comes to the regulations of GMO's. The interviewees argue that the current regulations are outdated and new developments have been made since the introduction of the regulations (Policy advisor HollandBio , 2016). Moreover, the lack of import applications of new GE crops keeps the Netherlands from developing on GMO's. As mentioned by the interviewees, all GM products that have entered the American commercial market have been tested on safety and should, therefore, be allowed on the EU market as well (Policy advisor HollandBio , 2016).

International GMO policies

Currently there is no worldwide GMO policy that deals with the labeling of GM foods. Therefore, countries have a free choice when it comes to the labeling of products that contain GMO's. The result of not having a worldwide policy is that a major difference in the regulatory systems exists between the EU and the US. The EU is included in the 64 countries worldwide that require mandatory labeling and has a central regulatory system (Just Label It, 2016). The US, which is not in this list, does not require mandatory labeling of GM foods. The worldwide use of GMO's made it a worldwide issue, because it puts pressure on all political levels (AG Bio Forum, 2007). It is, therefore, desirable to have international GMO regulations on the labeling of GM foods. The implementation of international regulations on the labeling of GM foods does not come without problems or difficulties. An international agreement on the labeling of GM foods is hard since the current regulations are based on economic and political reasons for each country (Whang, 2016). For countries to change their set of regulations may result in adequate economic consequences.

The interview respondents agree on the fact that international label policies are difficult to create. In addition to that, they believe that the international regulation of mandatory labeling would not even be a solution in protecting against any potential dangers. They argue that labeling does not guarantee safety. All GM foods that are allowed on the commercial market, whether the European or American market, have been assessed, tested, and declared safe. Therefore, the (mandatory) labeling will not add up to more safety (Policy advisor HollandBio , 2016).

When analyzing both literature and research findings, the author found out that there is a strong divergence between the theoretical and practical side of GMO's. In theory, there is a possibility that the imported food from the US, which finds its way to the Dutch consumer market, contain more GMO's than is allowed. This despite the food safety examination on EU and national (Dutch) level. However, in practice there have not been any negative findings in the Netherlands. Biotechnology researchers encourage the use of GMO's in food, because it provides multiple benefits.

To conclude this chapter, the safety issue on the import of GM foods is clearly a battle between theory and practice.

6. Conclusion

In this chapter a final conclusion will be given and the main question of the thesis will be answered:

Should the regulations on genetically modified food in the Netherlands and the United States be improved to be sufficient in protecting against potential dangers?

The literature review, research findings, and discussion section were important chapters in order to answer this central question.

The literature review explains the differences in regulations between the EU and the US and their use of GMO's in foods whereby labeling is an important aspect. Both, the EU as well as the US, have their own framework of agencies which are responsible for the authorization of the use and labeling of GMO's. Despite their differences in principles, all foods are tested on safety before entering the consumer market, whether that is the European or the American market. As for the Netherlands, the country where this case is about, imports many GM foods from the US. All incoming foods that enter the Dutch consumer market are tested on safety by the European and Dutch food authorizations. The chance of having unsafe products on the market is therefore slim. Even though the testing of GM foods on animals turned out negative and resulted in toxic effects, the long-term risks and direct effects for humans is still unclear. Therefore, in theory it can be argued that GM foods are not seen as completely safe until the long-term risks and effects are totally clear.

However, the research findings show contradictory results. In practice, importing GM foods from the US and allowing these foods on the Dutch consumer market did not do any damage to humans till this day. All GM foods that enter the American and Dutch consumer market are regulated by the authorities and an entire framework of agencies make sure that every food which contains GMO's is safe before it is allowed on the commercial market.

When analyzing the literature review and research findings, the author found out that the situation on GMO foods is clearly a battle between theory versus practice, as described in the discussion chapter. Even though there is evidence that GM foods cause harmful effects, this was only tested on animals. So far, there are no

known cases, and therefore a lack of evidence, whereby GM foods cause any risks or long-term effects on humans.

This research demonstrated that the answer to the main question whether the regulations on genetically modified food in the Netherlands and the US should be improved to be sufficient in protecting against potential dangers is no, because there is no practical evidence that can back up the potential dangers of GM foods. All there is at this moment are theoretical speculations about the possible dangers of GM foods for humans, but this is not enough to improve the current set of regulations on GM foods in the Netherlands and the US.

This research is only based on the governmental / institutional side of GM foods, namely the aspect of regulations. However, this subject also knows other aspects for further research, as can be read in the attached interviews. GM foods included an economical aspect whereby millions of (agricultural) companies are involved in trade agreements, such as the TTIP agreement. It is recommended that research is done on the economic impacts for these companies when taking into account the TTIP agreement. Moreover, research on whether the use of GMO's can end in providing enough food to feed all citizens in third world countries and if it is possible to combat famine worldwide.

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Transcript Interview Irma Vijn (Holland Bio)

August 8th, 2016

(1) Both in the US as in Europe, Dutch law is based on European law, the regulations for GMOS foods have been put in place many years before the first products were commercially available. This was done to prevent any potential harm these products might cause to either the environment of human health. Therefore, both in the US and in Europe, extensive testing on safety is required before these products can be put on the market. At this moment billions of acres of GM crops have already been planted and products are consumed without any harmful event to the environment or the health of people or animals. Furthermore, the European Commission has invested over 300 million Euros in safety research of GM crops and foods. The conclusion of this research is that GM crops and food derived from these crops are save.

Therefore, instead of asking for more regulation what is now happening in the EU, the current regulations should be reconsidered to be diminished. The extensive amount of safety testing that is required at this moment does not outweigh the potential risks.

Furthermore, in Europe the regulation of GM food and feed is based on the technique used to produce the food or feed. With the upcoming new techniques for plant breeding, Holland BIO calls for a product-based regulation in which food or feed products are analyzed and tested based on their characteristics instead on the way they were produced.

Labelling of food is generally meant to give information about the ingredients or the origin of the food, not about the safety of food. All food on the market in the EU and US is safe to eat. Also food produced from GMOs. In that perspective we do not see a reason to label GM food, but we are also not opposed to labelling. If labelling is required, like it is in the EU and will become in de US in 2018, it is important that the regulation is arranged at European, or in the US at federal level.

(2) The GM food that is currently commercially available is derived from either herbicide or insect-resistant crops. The advantages of these crops are that less herbicides and insecticides are being used during the growing season, that their carbon footprint is lower (less spraying and weeding results in using less gasoline) and that harvests are generally larger than from non-GM crops. Especially farmers

in developing countries benefit from these advantages. In addition to less spraying, the larger harvests resulted in higher incomes which contributed to better health as well. With this higher income the farmers could afford to buy more and better food and use health care. At this moment also crops are being developed that are nitrified, like the vitamin A enriched rice ('golden rice'), or that can be grown on saltier soil or resist longer periods of submerging.

(3) All GM food that is on the market is safe to eat!

(4) Like mentioned above we do not see a reason for labelling GM food, but if the US makes GM food labelling mandatory it should be done at federal level. Therefore we support the bill that president Obama has just signed.

(5) Like in Europe current testing in the US has been proven that all food that has been put on the market is safe. Therefor more testing is not necessary. Just like in Europe it might even be considered to diminish the amount of testing.

(6) The Netherlands have to follow the European regulations concerning import and are not allowed to make their own regulation. To protect the internal EU market import of GM products should also in the future be arranged at European level. Therefore the Netherlands rejected the recent proposal of the European Commission on the import and use of GM Feed and Food.

However, Europe should improve their performance by speeding up the authorization of pending import applications for new GM crops.

(7) GM foods that are on the market in the US are save and should be handled like any other food products. Import and use of these products should be left over to the market and not be a political decision.

(8) Just like all food that is commercially available in the US and EU, GM food is proven to be save before being put on the market. Labelling will not add up to more safety.

Transcript Interview participant B (anonymous)

June 7th, 2016

(1) In my (being a non-expert) opinion, regulation of GMO's in food is well regulated. GMO's should be traceable and packaging materials should be labeled with GMO. However, (if I remember correctly) if the amount of GMO in food is below a certain percentage (0,9 % in Europe?) it is not necessary. It would be nice to if it was obligatory to add a text like: "Product may contain traces of GMO's, in the same way as consumers are notified about allergy-information.

(2) The advantages of the consumption of GMO foods are low prices and more continuous supply and availability, but only on the short term.

(3) The dangers of the consumption of GMO foods are the increase of pesticides, the exploitation of third-world farmers, stimulating the destabilization of ecosystems, Stimulating the destabilization of cultures and increase in dependence of third-world countries to multinationals, the increase of food prices on longer term, the increase of plagues, loss of food, and enhancing the negative effects that TTIP will have on food prices, safety and dependence on multinationals.

(4) For export, the US should make GMO food labeling mandatory, however it depends on the ideas of the American citizens. Do they want to have a choice and does labeling provides a choice? Thus, not necessarily. I may also be an option to label some (biological?) products as GMO-free.

(5) No insights on the American regulations on GMO's.

(6) I think it is quit inconsistent that it is not allowed to grow GMO crops for food productions in the Netherlands, because of all the well-known negative (ecologically and other) effects, while we have no apparent problems with importing GMO products and thus causing problems elsewhere. Although I do not see it happen, the Netherlands should stop importing GMO food.

(7) A decrease of the amount of GMO foods that the Netherlands imports from the US would be nice, because of the reasons stated above.

(8) Mandatory labeling or international GMO label policies are not a solution in protecting against any potential dangers. Not as long the main focus of the public

remains food safety. Ecological, cultural and financial consequences remain nearly invisible although effects are much larger than those of food safety.

Transcript interview John komen (Planet NL)

June 6th, 2016

(1) In principle, GMO food regulations in both countries are practical and science-based, and based on existing environmental and food safety laws rather than specific GMO legislation – which I think is an efficient approach. As far as I'm aware, the US do not have federal laws on GMO labeling; this is now evolving at individual state level. For the Netherlands, labeling regulations follow the relevant EU Directives, which are very strict indeed.

(2) At this point, there are not so many direct advantages of the consumption of GMO food, although a number of products were recently developed that provide immediate consumer benefits. For example, the *Arctic Apple*[1] or *Innate Potato*[2]. In addition, there's a growing body of literature confirming that GMO plants are produced using less pesticides and less amounts of herbicides, resulting in healthier foods. See the following recent report by PG Economics: http://www.tandfonline.com/doi/abs/10.1080/21645698.2016.1192754?journalCode=kgmc20

(3) So far, there is no credible, peer-reviewed publication that confirms dangers or harmful effects of GMO foods, to human or animal health or the environment at large. As with any new technology, there may be risks associated with the introduction of GM technology in agricultural and food production, and these should be weighed against its benefits. The US National Academy of Sciences recently published an excellent synthesis report confirming GMO food safety: https://nas-sites.org/ge-crops/

(4) In general, no this should not be a mandatory requirement. In cases where GMO food has a new property or ingredient that's not present in its conventional counterpart, existing labeling regulations could be used to indicate that. In most cases, however, foods produced from GMOs are identical to non-GMO, conventional foods so no need for labeling.

(5) Although the Food and Drug Administration (FDA) of the US government has a solid reputation in assessing products for food safety, this is not supported by a

[1] http://www.arcticapples.com/arctic-apples-r/arctic-apples-benefits/
[2] http://www.simplotplantsciences.com/

comprehensive law on food safety. This could be an area for regulatory improvement.

(6) As a great deal of authority on GMO foods is transferred to the European Union, and managed by EU directives and the European Food Safety Authority (EFSA), the Netherlands could argue for improvements in GMO food regulation at the EU level. The current EU system is confusing and based on politics rather than science-based safety assessments.

(7) The Netherlands already imports massive amounts of GMOs from the US, for use in food processing and as animal feed. So far, this has not lead to negative effects on human health or animal health. So as long as there are economic benefits to importing GMO foods from the US, this might increase.

(8) Mandatory labeling or international GMO label policies would not be a solution in protecting against potential dangers. A label does not guarantee safety. So, in cases where GMOs and GMO food are assessed, tested and declared safe by the EU, the US or both, there is no need to label it any differently than a conventional food product.

Informed Consent Form Irma Vijn – Holland Bio

Informed Consent Form

Informed Consent Form

1. Research Project Title: Genetically modified food: Should the Netherlands and the United States improve their regulations on GMO to be sufficient in protecting against potential dangers?

2. Project Description (1 paragraph)

   For this dissertation research will be done on GMO foods in two countries; the United States of America and the Netherlands. It will focus on the consumption, export, and regulation of GMO foods in the U.S., the import and regulation of GMO foods in the Netherlands, and the advantages/disadvantages of the consumption of GMO foods. Finally, the following central research can be answered: *Should the regulations on genetically modified food in the Netherlands and the United States be improved to be sufficient in protecting against potential dangers?*

If you agree to take part in this study please read the following statement and sign this form.

I am 16 years of age or older.

I can confirm that I have read and understood the description and aims of this research. The researcher has answered all the questions that I had to my satisfaction.

I agree to the audio recording of my interview with the researcher.

I understand that the researcher offers me the following guarantees:

All information will be treated in the strictest confidence.

My name may be used in the study provided that citations have been approved by me.

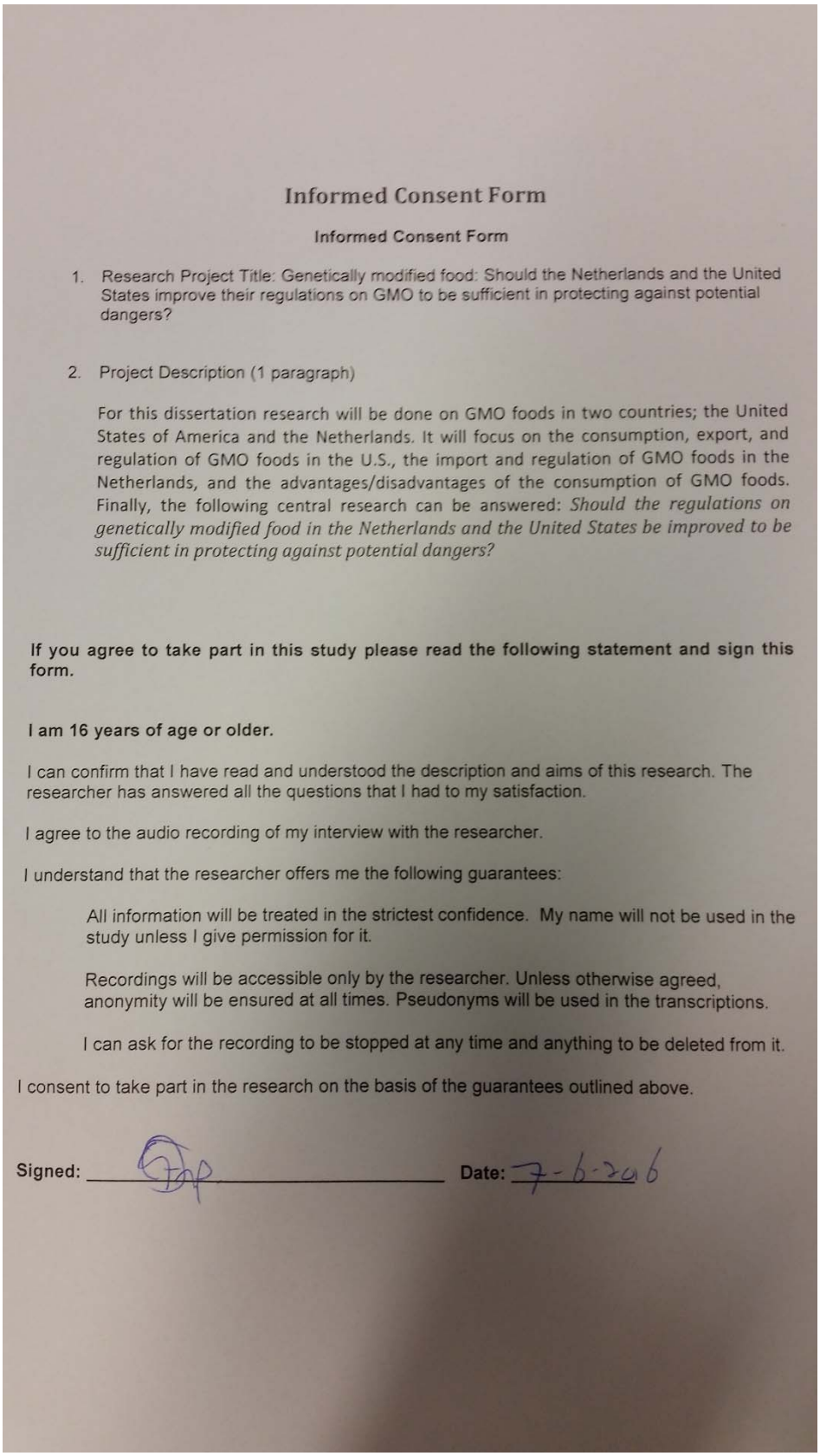
Recordings will be accessible only by the researcher. Unless otherwise agreed, anonymity will be ensured at all times. Pseudonyms will be used in the transcriptions.

I can ask for the recording to be stopped at any time and anything to be deleted from it.

I consent to take part in the research on the basis of the guarantees outlined above.

Signed: _____ **Date:** 15 aug 2016

Informed Consent Form Participant B



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Informed Consent Form John Komen – Planet NL

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Signed: _____ **Date:** JUNE 6, 2016

JOHN KOMEN