



Forum: GC 3 - Natural Sciences

Issue: The issue concerning global food security with a special emphasis on the recent European egg crisis

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Introduction

The global food security situation and outlook remains delicately imbalanced amid surplus food production and the prevalence of hunger, due to the complex interplay of social, economic, and ecological factors that mediate food security outcomes at various human and institutional scales. Food demand has been more than food production for the past fifty years due to expansion in crop area and irrigation, as well as supportive policy and institutional interventions that led to the fast and sustained growth in agricultural productivity and improved food security in many parts of the world. The outrageous demand for biofuels, climate change and overpopulation which is rapidly growing day by day, are causes for food insecurity. Especially climate change, which poses a threat to food security due to increased variability which causes risk for food producers and the energy and water sectors.

When it comes to the issue of the European egg crisis, in July 2017, approximately one million eggs were denied at the German border. The shipment of the eggs was done by the Netherlands. Ever since the issue was first noticed and initiated, millions of eggs were noticed to be contained and therefore were removed from shelves. In fact, the European Union held an “extraordinary meeting” in September 2017 to discuss the issue of the contaminated eggs being shipped across Europe. The food safety agencies gathered to immediately try and solve the issue at hand.

Definition of Key Terms

Food security: It exists “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” as defined by the World Food Summit of 1996. In general, the concept of food security is considered to be including both physical and economic access to food that satisfies people's nutritional needs as well as their food preferences. Household food security exists when all members, at all times, have access to enough food for an active and healthy life.

Food access: Refers to the affordability and apportionment of food, as well as the preferences of individuals and households.

Food availability: Relates to the supply of food in sufficient quantities as well as on a steady basis through production, distribution, trade or aid.



Food utilization: Refers to the consumption of a diet that has a positive nutritional impact on people, which involves “cooking, storage and hygiene practices, individuals’ health, water and sanitations, feeding and sharing practices within the household” (World Food Programme).

Food stability: Refers to the ability to get food over time.

Food insecurity: Refers to the lack of available financial resources for food.

Hunger: Refers to the strong desire or need for food which is then followed by discomfort, weakness, or pain caused by insufficient food.

Malnutrition: Refers to the inadequate nutrition resulting from lack of food, unbalanced diet, or defective assimilation.

Undernourished: Being supplied with less than the minimum amount of the food needed for health and growth or an active life.

Genetically Modified (GM) Food: Refers to food produced from plants or animals whose DNA has been modified or changed through genetic engineering.

European Egg Crisis: A scandal concerning egg contamination in Europe which began on July 2017 after a large quantity of eggs contaminated with fipronil are found by government officials in Belgium. It caused tens of millions more eggs to be either destroyed or pulled from grocery stores across the continent.

Background Information

Global food security

Recent research conducted by the Food and Agriculture Organization (FAO) states that the food demand will grow by seventy percent by the year 2050 due to the fact that the population is growing rapidly, the income levels are changing and the diets are shifting immensely with added products and artificial hormones. The second of the 17 Sustainable Development Goals (SDGs) of the United Nations for 2030 is also set to be ending hunger, managing food security and enhancing food consumption.

The World Health Organization divides food security into three aspects: food access which is regarding the financial resources to obtain food; food availability which is regarding the production and import of food on a consistent basis; and food utilization which is regarding the appropriate use of food based on sanitation, nutrition and care.

Food security as a global challenge

With food being an indispensable part of our lives as a basic human need for the continuation of life, maintaining its security becomes more of a crucial issue because of the complicity of providing adequate food to people, which involves many different social and economic sides meaning that the

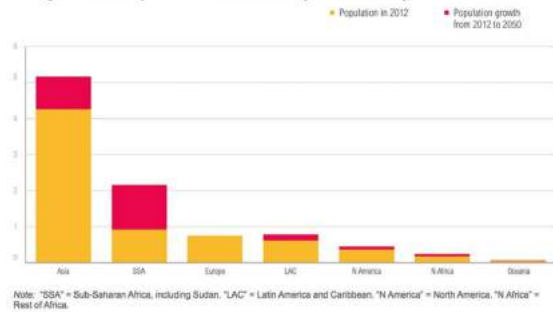




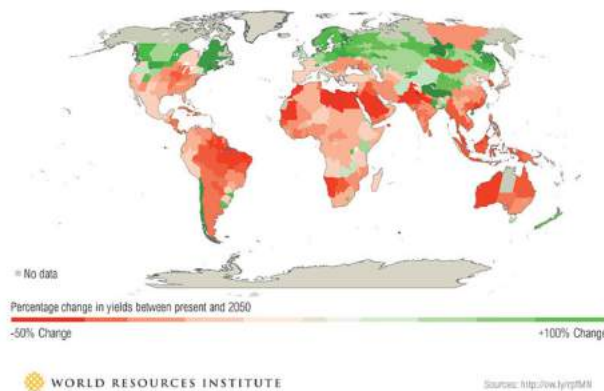
concept of food security cannot be considered independently. For example, the conditions that low-income families face such as social exclusion, health problems, unemployment and medical costs double the tendency of food insecurity to occur. This is what puts food security in a position that it is considered to be a serious global challenge.

What are the causes of this global challenge?

Projected Population Growth (in billions)



Most studies now project adverse impacts on crop yields due to climate change (3°C warmer world)



There are many causes of food insecurity, including population growth, change in food preferences, change in climate, water shortage and problems in agricultural sector. As the population grows, the number of people to feed increases, which deepens the complexity of this issue even more. While this factor changes from country to country, it is expected for Africa to have a population growth from 1 billion to 2 billion by 2050. Not only the world gets crowded with every passing second but also people's tastes start to evolve. Considering the fact that increase in

wealthiness results in a switch in people's diet, making it have higher amounts of processed food, meat and dairy, the need for growing grain also increases in this regard for the purpose of producing more meat. Another factor that should not be overlooked is the climate change and rising temperatures which challenges the maintaining of food security by affecting the crop yields on earth adversely. Due to these high temperatures in addition to the growing water use, water shortage also poses a great problem for food security since nearly 1,500 liters of water are required for the production of a kilogram of wheat, and 16,000 liters for the production of a kilogram of meat. Lastly, as countries develop further, the number of people working in that country's agricultural sector gradually decrease while the food prices go higher up.

Poverty and food security

Poverty and food security are very much connected to each other since the access to food is closely related with having enough financial resources. These two concepts are also linked in the United Nations Millennium Development Goal 1, which is to "eradicate extreme poverty and hunger". While approaching this issue, one should first comprehend the relationship between these two.

Genetically modified (GM) food and food security



The question of will the genetically modified food be a solution to this global challenge, food security, still remains unanswered and controversial. From one perspective, food production may benefit from GM crops, meaning a higher food availability and improved food quality thus eradicating hunger as the Millennium Development Goal 1 suggests. On the other hand, they are also considered to have health and safety risks which triggers this issue in terms of achieving food security.

Benefits of genetically modified food

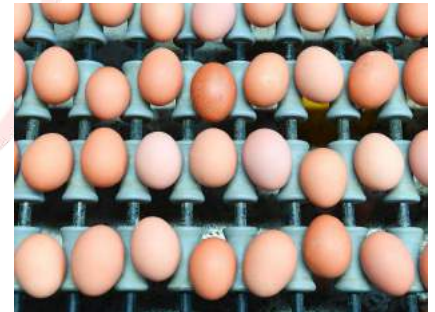
- increased productivity and yield
- reduced production costs (sprays, chemicals, stable prices for the consumers)
- improved monitoring of nutrition, allergy problems
- increased resistance to harsh conditions and disease

Adverse health effects of genetically modified food

- threat to biodiversity
- decreased participation of small-scale farmers in agricultural activities as being under the domination of a few private companies
- health risks such as cancer, respiratory diseases, abort

European Egg Crisis

On July 2017, the shipment of eggs from the Netherlands was declined because of contamination at the German border, which is the beginning of this crisis. After this egg contamination scandal, the countries in the Europe such as Poland, France and Denmark has recalled eggs which were thought to be affected from shelves. The importance and seriousness of this egg crisis can be demonstrated by the fact that the European Union held an “extraordinary meeting” regarding the issue.



The origin of the crisis is in Belgium where eggs contaminated with fipronil were first detected. The Dutch food safety authorities were also immediately involved as a Dutch company named ChickFriend was accused to use fipronil in their farms at Belgium. The crisis not only posed a health danger to the public but also led to some political tensions between these two countries, Belgium and the Netherlands, since they still continue to blame each other for this scandal.

Contaminated Eggs



Farm workers discarded eggs in Onstwedde, the Netherlands, last week after concern about insecticide contamination. Patrick Hilmann/Agence France-Presse — Getty Images



This massive recall of eggs was because of the fipronil presence, which is an effective and widely used insecticide on crops and pets; however, its usage with food-producing animals is banned by the EU. The reason behind this is that in case of consumption, fipronil causes many health problems such as nausea, vomiting, dizziness and even epileptic seizures. The chemical is classified as “moderately hazardous pesticide” by the World Health Organization.

Affected Countries

Overall, the European egg crisis has showed its effect on Switzerland and 15 EU states: Netherlands, Belgium, Germany, France, Sweden, Britain, Austria, Ireland, Italy, Luxembourg, Poland, Romania, Slovakia, Slovenia, and Denmark. Apart from the European countries, Hong Kong is also affected by the contaminated eggs as Hong Kong's Centre for Food Safety (CFS) stated that it found “two samples of eggs from the Netherlands to have exceeded local fipronil limits.”

Timeline of Major Events

Date	Description of Event
1945	Food and Agriculture Organization (FAO) is founded.
April 1948	The establishment of the World Health Organization (WHO) occurred.
2008	Supplemental Nutrition Assistance Program (SNAP) is established in the United States.
November 2016	Dutch food safety agency receives a notice concerning fipronil in eggs. It holds inspections and concludes that there is no danger posed to consumers though it did not inform the other countries about the situation.
January 2017	A Belgian company named Poultry Vision starts using a detergent in order to kill chicken mites which contains fipronil.
May 15, 2017	A Belgian poultry farm conducts a test for fipronil.
June 3, 2017	AFSCA, Belgian food safety agency, receives a tip-off from a farm regarding fipronil.
June 14, 2017	After examining samples, the Belgian agency detects light contamination in eggs, showing the Netherlands as the main source of this.
July 6, 2017	Due to the lack of response from the Dutch authorities, Belgium officially asks for information via the EU's Administrative Assistance and Cooperation System against food fraud.
July 13, 2017	Dutch authorities inform Belgium that they have started to conduct a criminal investigation towards related business companies and farms.
August 8, 2017	AFSCA reveals that the eggs do pose a serious danger to the consumers' health.



August 10, 2017	Two people who work at the Dutch company ChickFriend get arrested by the Dutch police for being involved in the usage of fipronil.
August 11, 2017	The European Commission makes it public that toxic eggs are detected in 17 countries, which include Germany, France, Poland, Italy and many more.
September 2017	The eggs imported from the Netherlands are withdrawn from the shelves in the United Arab Emirates to ensure all markets in the country are toxic-egg-free.

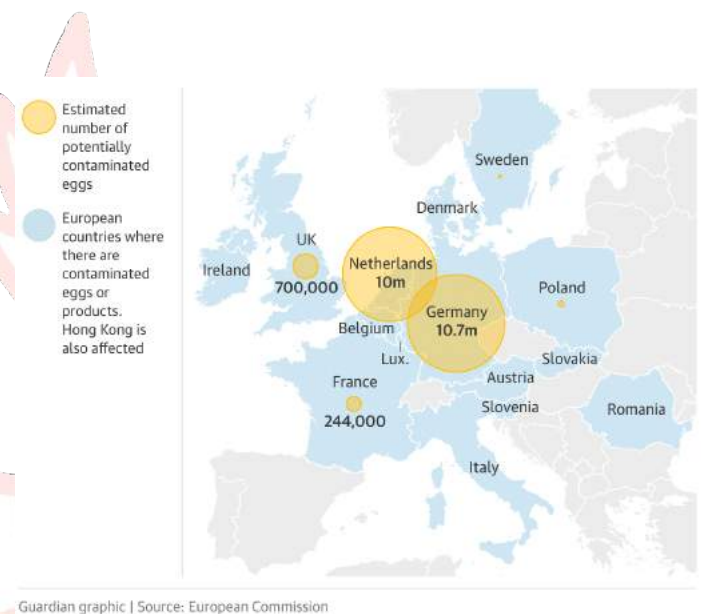
Major Countries and Organizations Involved

Belgium

Belgium is said to be the place of origin of the European egg crisis. On June 20, 2017, Belgium issued a rapid alert (an EU-wide notification) concerning the eggs containing fipronil in Belgium and possibly other EU member states. On June 3, the Belgian Federal Agency for the Safety of the Food Chain (AFSCA-FAVV) was informed about a contamination found while conducting a routine test at a Belgian farm. The scandal became publicly known in late July, and soon after eggs were recalled from supermarket shelves throughout the whole continent. Belgian government officials have faced harsh criticism for delayed communication between the first notification of contamination in lab results to issuing the EU rapid alert. While Belgium has also claimed that the Dutch may have known about the contamination as early as November 2016, a Belgian company (Poultry-Vision), based in Antwerp, has already admitted providing the insecticide called fipronil to Chickfriend, which is a Dutch company in Belgium allegedly using fipronil at their poultry farms. Belgium is now working to further test both chickens and eggs for possible contamination although almost all eggs have been found to contain very low levels of the insecticide.

Netherlands

The Netherlands, one of the world's biggest exporters of eggs, is also directly involved in the European egg crisis by not only being a neighbor of Belgium but also being accused of not passing on early discovery of fipronil in eggs, which deepens this food safety scandal even more. The Belgian agriculture minister, Denis Ducarme, revealed during a parliamentary hearing that his officials had





received an internal Dutch report stating “the observation of the presence of fipronil in Dutch eggs at the end of November 2016”.

On August 10, two Dutch men who work for ChickFriend were arrested under the accusation of playing a major role in this scandal.

Authorities in the Netherlands requested the recall of eggs from supermarket and grocery shelves, and impermanently shut down roughly 180 farms.

Germany

While the diplomatic conflicts and clearing of shelves continued in Europe, Germany, where the average person eats five eggs a week with anxiety, was agitated with anger and anxiety as having imported three million of egg from the Netherlands. The supermarket chain called Aldi withdrew all eggs from sale after the authorities confirmed that the eggs from the Netherlands had been contaminated. Following this, fipronil contamination has been detected at four farms in the German state of Lower Saxony and they were forced to be closed.

France

In France, a stack of 196,000 contaminated eggs was imported from Belgium and swept to the market between April 16 and May 2, and another stack of 48,000 eggs from the Netherlands reached shops between July 19-28. France's Agriculture Minister Stéphane Travert announced that eggs from the first stack and some from the second would have been consumed by now, however, it also stated that the actual level of contamination does not pose any dangers to consumers. Still, the remaining eggs from the second stack has been taken off the shelves.

Later on, one farm in the Nord-Pas de Calais region was found to have used fipronil, via a Belgian subcontractor, and it is now not allowed to sell any eggs. France is currently collaborating with Belgium in order to inspect the risk to the country.

United Kingdom

The United Kingdom is also among countries that are involved in this egg contamination scandal. After the crisis has started in July 2017 at Belgium, the UK Food Standards Agency stated that only 21,000 eggs were contaminated. However, later it turned out that nearly 700,000 eggs imported to the UK from Belgium were affected, which were not all raw since some of the contaminated eggs were detected in sandwich fillers and salads. The agency is investigating the problem although the government claims that the affected products are no longer on shelves and that the eggs are very unlikely to harm any consumer.

Hong Kong

Despite the fact that Hong Kong is geographically quite far from the Europe and the affected countries mentioned above, toxic eggs are found to be reaching over the continent as Belgium announced that Hong Kong had received some contaminated eggs from the Netherlands, making the southern



Chinese city becoming the first place in Asia known to be affected. After this announcement, Hong Kong health minister Sophia Chan said that the authorities were working to strengthen the inspections of eggs imported from Europe.

Even Hong Kong being affected by this egg scandal demonstrates how large the scope of this issue is and how food security has an essential role throughout the world.

Food and Agriculture Organization (FAO) of the United Nations

Having founded in 1945, the Food and Agriculture Organization (FAO) of the United Nations is an agency which operates with the purposes of fighting against global hunger and promoting rural development. FAO's aim for combating hunger merges with sustainable agricultural and rural development by targeted programs for improving direct access to food for the people in need.

In 1996, the World Food Summit (WFS) appointed the target of "eradicating hunger in all countries, with an immediate view to reducing the number of undernourished people to half their present level no later than 2015". In 2000, the Millennium Declaration (MD) determined the target to "halve, between 1990 and 2015, the proportion of people who suffer from hunger". FAO is the organization which was made to be the mandate of checking the progress regarding the objectives set by the WFS and the MDGs.

Through its Committee on World Food Security (CFS), the Organization has an essential place within the United Nations in maintaining world food security and in developing national and international actions to respond to long- and short-term food security threats. Although it is not directly involved in the European egg crisis, FAO plays an active role in this food security issue overall, having a large part of its resources devoted to solve this problem. The Organization also annually reports its progress in its publication "The State of Food Insecurity in the World (SOFI)".

The World Health Organization (WHO)

The World Health Organization (WHO) is a specialized agency of the United Nations concerning the international public health, established in April 1948. Its aims include maintaining the food safety and handling food-borne diseases.

Regarding the European egg crisis, the World Health Organization stated in its reports that in large quantities fipronil can be harmful to humans' kidneys, liver and thyroid glands even though the European Union insisted on calling it safe to consume.

European Food Safety Authority (EFSA)

European Food Safety Authority (EFSA) is a European agency which is funded by the European Union. It provides independent research and scientific advice as well as carries out risk assessments regarding food and feed safety. It is described as showing "openness and transparency", which is the key part in this issue. The report of EFSA on the insecticide fipronil states that fipronil content below 0.72 mg/kg eggs do not pose any risk to consumer health and safety, meaning that eggs containing fipronil above this value are not permitted to be marketed.

The World Economic Forum



The World Economic Forum is an independent international organization which works for the improvement of the state of the world through public-private cooperation. After the sudden increase in global food prices in 2007, the Forum has come up with the New Vision for Agriculture (NVA) initiative to enhance the food security as well as sustainability and economic opportunities. Its action plan gathered over \$10 billion, reaching over 9 million farmers and small-farm businesses. Overall, the Forum has established five initiatives focused on bridging the gap between farmers, government, private sector and also the public, which work at both regional and country levels.

Previous Attempts to Solve the Issue

The issue of global food security has been clearly recognized by the international community as being involved in the second of the 17 Sustainable Development Goals (SDGs) of the United Nations for 2030 and also in the Millennium Development Goals 1. This was an important step which actually made the progress begin.

Many initiatives were established by the World Economic Forum regarding food security, which are described above in detail. Furthermore, the Supplemental Nutrition Assistance Program (SNAP) was launched in the United States which offers nutrition assistance to millions of low-income people. Peace Corps, a volunteer program run by the United States government, also work within different communities to find food security challenges while providing help to “school garden projects, agricultural micro-enterprises, and nutrition education initiatives”. These foundations do serve as beneficial contributors to the issue, showing improvement in food security.

Another solution that is thought to be useful and started to be newly implemented yet have not become common is biotechnology, meaning genetically modified food. Though it plays a crucial role in combating food insecurity through increasing the global food supply and decreasing the production cost, this solution is still in controversy because of the health risks it poses and the small-scale farmers it damages.

Concerning the European egg crisis, several measures for the immediate response to the crisis and also for preventing such future scandals were taken by the European countries as well as the European Union and European Commission. These include closing the affected farms in the countries, rapidly recalling all contaminated products from the shelves, exercising an EU wide monitoring on the possible use of illegal substances, and holding criminal investigations in the Netherlands, Belgium and Germany.

Possible Solutions

Global food security is an issue which needs to be addressed in three different aspects as described by the World Health Organization (WHO): food availability, food access and food utilization; in the following order since food cannot be utilized if there is no access to it and cannot be accessed if there are no available sources to produce or import it.

A useful strategy may include accelerated agricultural intensification as a way to reduce poverty and protect the environment. This also means improving the productivity of the agricultural sector with a



special focus on small-scale farms, which can also solve the problem of hunger and malnutrition considering that the farming societies in rural areas have the highest rate of poverty and hunger. To make this happen, the agricultural sustainability comes into play with problems that also need to be solved concerning freshwater withdrawals, greenhouse gas emissions and waste.

Regarding the European egg crisis, as the European Commissioner for health and food safety Vytenis Andriukaitis said: “Blaming and shaming will bring us nowhere.”. The countries, especially the European countries if we focus on the egg contamination scandal, should eagerly collaborate with each other while paying attention to the collection and share of data, lab/test reports and further inspection. However, transparency is a key issue here since the countries may disregard, distort or hide information regarding the fipronil levels in their farms or refuse to take part in multilateral research for their own sake. By this means, criminal investigations should also be held by the countries under their own jurisdiction but also under the supervision of objective institutions such as the European Commission or the United Nations so that there will not be such cover-ups and the secrecy of the judicial investigations will be reconciled with the transparency on public health problems.

Enhancing the efficiency of the Administrative Assistance and Cooperation System (AAC) and Rapid Alert System for Food and Feed (RASFF) as well as bridging the gap between them should also be considered in case of another possible crisis concerning food security.

Useful Links For Further Research

- <http://www.myrecipes.com/extracrispy/european-egg-crisis>
- <https://www.politico.eu/article/timeline-europes-egg-scandal-fipronil-contamination-belgian-dutch-authorities/>
- <https://www.express.co.uk/news/uk/838278/Eggs-egg-contamination-UK-fipronil-chickens-Belgium-Netherlands-Germany-FSA>
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