Food and Agriculture Organization

Research Report

The Question of:

Minimizing the polluting effects of agriculture

Introduction

Agriculture is essential for our societies and life itself. It is the cornerstone of our way of living. Because of the enormous growth of humans, we had to provide more food. This is achievable by decreasing the number of crop losses. Crop losses are due to pests or diseases affecting the food and thus making it not available for consumption. By using chemicals to kill the pests, we were able to produce more food. This is vital to sustain the world. However, the usage of pesticides, herbicides and soil fertilisation affect the environment, and that effect contributes to the strengthening of the greenhouse effect. This eventually leads to the earth warming up far too fast. That is bad for animals, nature and us. Therefore, we should minimise the polluting effect of agriculture.

The Committee

Food and Agricultural Organization was established in 1945. In the early decades of the committee it faced issues concerning hunger and malnutrition. Since then the aims has been broadened by other goals, which are the followings; making agriculture, forestry and fisheries more productive, reducing rural poverty, enabling inclusive and efficient agricultural and food systems, increasing the resilience of livelihoods to threats and crises.

Food and Agricultural Organization has contributed to many achievements all around the world. The followings are just a few examples of the work of the organization.

- In 1963 Codex Alimentarius was established in order to ensure given standards of food, to protect consumers and to promote fair trade.
- Between 1974 and 2002, FAO worked on the eradication of river blindness in West Africa. A disease transmitted by infected flies has been eradicated by launching a programme, which provided eco-friendly insecticides with a large-scale treatment. This programme has saved millions of lives in Africa.
- In order to reduce the number of hungry in the region of Latin America and the Caribbean, FAO made food more available by strengthening political commitment and promoting access to food and nutritional wellbeing.
- A deadly virus called rinderpest, which killed many cows and buffalos was eradicated by a programme established by FAO and WHO in 1994.

Since the establishment of FAO the organization has supported many in need and promoted programmes that worked towards a less polluted environment and towards a world where the essentials for a living are provided for everyone.

Key Terms

Agricultural sector

A synonym for the agricultural sector could be farming. The sector contains everything from growing plants to the breeding of animals.

Agricultural pollution

This is pollution (damaging of water, air etc. by waste and/or harmful substances) caused by the agricultural sector.

Agrochemicals /agrichemicals
Agrochemicals are a conjunction of the words agriculture and chemicals. The word speaks fairly for itself; agrochemicals are chemicals used in agriculture. These chemicals are used to limit crop losses. These chemicals mostly consist of pesticides, herbicides, but also of growth hormones.

Eutrophication
Eutrophication is the addition of nutrients in bodies of water, causing plant growth, taking oxygen from the water, resulting in the death of fish and other animals. This process originates in the intensive use of agrichemicals.

General Overview

We rely heavily on the products of agriculture, as it is one of the most fundamental activities of the human species. Agriculture has enabled growth, which could not have been achieved with hunting and gathering. It is important to us in order to ensure us of money, sustainability and life. However, that does not mean that agriculture has no downsides. Earth's population has grown so much. During the 20th century alone, the population in the world has grown from 1.65 billion to 6 billion. This is an insane statistic. All these people need to eat, and a lot of this food comes from agriculture. Meaning that humans had to find a way to improve agricultural activities. We have produced pesticides, to kill the beasts that eat our crops, we have modified seeds so that the plants will be more resistant to diseases and we have improved irrigation systems for the perfect harvest. However, whilst focused on ourselves, we have forgotten that every action has a consequence. Pesticides have an effect on water, our health, biodiversity and so many other things. We should not focus on exploiting the earth and killing everything in our way, but on working with the earth.
Many people know about the greenhouse effect that affects climate change. Our cars, factories and cows have increased the amount of CO2 and methane in the air. This is also a problem that should be addressed in a MUN conference, but one does intend to forget about the somewhat more small-scale pollution. In this research report and the Lemun conference of 2019, we will focus on the small-scale pollution caused by agriculture.

Agriculture interferes with the quality of water, mainly by the use of agrochemicals. It is a common practice to control pests chemically. Countries where agrichemicals are not widely used suffer from crop losses. In India, the losses due to pests go as high as US$ 42.6 million! These statistics show that it is logical, if not necessary, to use agrichemicals.

Furthermore, the market for these chemicals is a highly competitive one, bringing much money. However, this competitiveness is not represented in domestic prices, which have risen significantly over the last five years. So not only are the agrichemicals horrible for the environment, but they are also costly.

The effects of agrichemicals
Pesticides and herbicides have several effects. Its main effect in agriculture is the killing of pests and unwanted weeds. Due to their nature, they are harmful to organisms and should be used carefully. The chemicals can stay on the food, and this residue can have short-term and long-term effects. For example, our health is at risk when eating pesticide-residue. The pesticides kill pests by disrupting their nerves system. However, as there are some similarities between humans and pests, these pesticides can affect our health. The effects can vary from DNA mutilations to poisoning. It depends

on the dose, the exposure and the chemical, e.g. insecticides tend to be more harmful to humans than herbicides.

Some agrochemicals even affect the DNA. There are called genotoxic. Luckily, these are prohibited. That does not mean that much exposure to agrochemicals can eventually cause the mutilation of DNA and cancer. A lot of the older off-patent agrochemicals could remain in the soil and water for years, causing huge problems for future generations. All countries that signed the 2001 Stockholm Convention have banned these older pesticides. The constant use of pesticides can leave traces in the soil, killing soil microorganisms and beneficial insects and contaminating water and the earth.

Furthermore, pesticides can affect water and biodiversity. For example, these chemicals could contaminate the water leading to the death of animals who drink that water. Of course, the contamination of water can lead to the same circumstances for humans. Also, the use of fertilisers adds extra nutrients to the soil. When these concentrations are too high for the ground to assimilate, rain carries the nutrients to rivers. These nutrients, such as phosphor and nitrogen, cause an explosion of algae. When these die, the bacterial degradation of their biomass leads to the consumption of oxygen. Then, fish die due to lack of oxygen, also known as hypoxia. The death of all the organisms in water cause a disturbance in biodiversity.

Holding cattle

Another cause of pollution in agriculture is the holding of cattle. Holding cattle have several effects, which will be discussed in this paragraph. 40% of the agricultural output is actually the raising of animals for human consumption. It is not a sector of agriculture to be overlooked. For example, free-range animal production needs a lot of space for grazing. Often, this space is not available and one has to “make” space. This deforestation is one of the main causes of loss of unique plants and animal species, which we need for biodiversity and photosynthesis. Grazing can also lead to land quality decline. The animals can remove the nutrients from the soil so fast that the land has no time to recover. This phenomenon is known as overgrazing. This is especially important in the dry regions of the world. But, grazing can also have good effects on the soil, as it leads to higher soil nitrogen content. This can help mitigate greenhouse gas emission effects. Not only grazing has an effect on the environment, livestock holding also affects water quality. Livestock can easily contaminate groundwater (e.g. faeces) and this groundwater can contaminate other water bodies, such as rivers. This leads to a decline in water quality and this water is used for the animals. The animals need a lot of water, which leads to water shortages. Furthermore, meat production also affects air and human respiratory health. The animals produce endotoxin, hydrogen sulphide, ammonia, particulate matter and the known methane and CO2. These gasses are associated with respiratory diseases and enhance the greenhouse effect.

The farmers

The last problem that I wish to address is the ignorance under the farmers.

A lot of farmers have no clue of the danger the utilisation of pesticides is to their health. By raising awareness and teaching these farmers how to most effectively use their land, without risking their health and the health of other is necessary to minimize the polluting effects of agriculture. Seeing as pesticides and herbicides are almost necessary to not lose money, it is better to help them use it wisely than to prohibit it entirely. For example, by using "better" agrochemicals and teaching them which chemicals actually better. Also, teaching them the effects of contamination and eutrophication can help them understand the problem. Furthermore, though not as important for this issue, one could teach them how to improve their water usage and waste less water. Having a better irrigation system is helpful for the environment as well.

A question that could be raised, is why do the farmers use agrichemicals? Isn't it far better to just not use them? Of course, such as mentioned before, there is a certain ignorance, which leads to farmers not knowing that there are other options. However, that is not the only reason why farmers keep using chemicals. There is an advantageous side to it. Agrichemicals do kill pests, who would normally destroy the harvest. Now, the farmers can produce more and lose less money. It is almost essential to use products in agriculture. One loses so much money and is not able to compete with others.

Major Parties Involved

Africa and Asia

Both these continents have a lot of agriculture. In most of these countries, agriculture is the main ... and it is normal to become a farmer. Most MECD's in the Western world, see agriculture as a branch underneath them. This issue can better be addressed by nations in Asia and Africa. However, one should not dismiss other countries. Agriculture is important to all and all should work together.

WHO

The World Health Organization is the main authority in the UN system to improve international health. Therefore they are essential for this issue. They do research and provide leadership on health matters. They also shape the agenda for the UN. Most of all, they provide support.

FAO

This organization is vital to this issue, seeing as their name is the Food and Agricultural Organization. The FAO mostly concentrates on developing, protecting and restoring sustainable livelihoods in order to help

societies that depend on farming, fishing etc. The FAO works on long-term solutions as well as short-term solutions.

Previous attempts to solve the issue

The UN has had a Stockholm convention, which focuses on human health and the environment from persistent organic pollutants. This convention regulates the use of chemicals in agriculture and is vital to this issue. Furthermore, the UN has several organizations that are active in this issue. They do research and consult the UN-bodies on how to minimize polluting effects. Several governments and organizations have strict regulations concerning the use of chemicals.

The Future

No big events are planned, but the UN will continue working on this issue. It is an issue that is regularly on the agenda. Also, the organizations active now, will keep working and helping the UN. Furthermore, the UN wants to achieve the Zero-Hunger goal in 2030. This is important for this issue, as it discusses the sustainability of humans without polluting the environment.

If we don't address the problems mentioned in the General Overview, there will be consequences. Consequences for human health, but first and foremost to the environment. Water will be polluted, resulting in the death of fishes and less biodiversity. The biodiversity is essential for the eco-system.

Important Decisions a Resolution Must Take

First, I would like to make clear that the suggestions made in this paragraph, are solely suggestions. It gives you an idea of what a resolution should include. Please do not refrain from including other solutions. Every work is good work as long you keep the goal in sight. Having said that, I'll now continue with possible questions and solutions.

In your resolutions, you should focus on several questions. Should we focus on the farmers or the consumers? It is important to look at what perspective you want to address the problem. Therefore it is our important to look at the farmers and/or the consumers. The second question you should attend to is: should we raise awareness and keep using chemicals or should we ban it? What is more effective? Banning can be better but is also hard to achieve and does not go without consequences. The disadvantages of using chemicals are clear but they are still important for agriculture. One could also think about the question if we should ban agrochemicals or regulate the use of agrochemicals. This question, though similar to the latter, is not to be dismissed.

When addressing the issue of pollution in agriculture, one should always consider the risk and the need. There is a need for food, but there is a risk of contamination. There is a need for clean air, but there is a risk of famine.

These should be kept in mind when writing resolutions and amendments. Other questions are: should we educate the farmers and if yes, how? Should the UN do this, or an organization or maybe the governments? What should the farmers learn, how to avoid the use of chemicals or how to use the least amount of chemicals. Furthermore, one could ask oneself if there should be more research. Should every country inform organizations on their use of chemicals in agriculture? Is there enough research or should we continue? Should we invest in "better" chemicals or in natural farming?

Please do not refrain from addressing other problems, seeing as this issue is far bigger than just these questions. If one believes that something else should be added to the resolution, please try to do so.

Further Reading

http://www.worldometers.info/world-population/

https://www.researchgate.net/publication/323028689_Pesticide_Use_in_Indian_Agriculture_Trends_Market_Structure_and_Policy_Issues

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