

IMPACT OF MODERN AGRICULTURE ON THE ENVIRONMENT AND HEALTH

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Agriculture is an essential source of income since it involves the process of growing plants and livestock to provide food, feed, fibre, and a variety of other desirable items. Agriculture and the environment have a strong and complex interaction. Agricultural practices that are environmentally conscious improve the environment, yet intense agriculture can have a negative influence on nearby ecosystems and the environment on a broader scale. Agriculture may have a big environmental impact. While the negative effects are severe, including pollution and degradation of soil, water, and air, agriculture can also have a positive impact on the environment, for example, by trapping greenhouse gases within crops and soils or mitigating flood risks through the use of certain farming practices.

Modern agriculture

Modern agriculture is a developing approach to agricultural inventions and farming practices that assist farmers boost efficiency and minimize the quantity of natural resources needed to fulfil the world's food, fuel, and fiber demands, such as water, land, and energy. Modern agriculture is also known as agribusiness, intensive farming, organic farming, and sustainable agriculture.

Impact of modern agriculture

As we all know, modern agriculture has increased food affordability, increased food supply, assured food safety, increased sustainability, and produced more biofuels. However, because it is based on a high input-high output technology that uses hybrid seeds of high-yielding varieties and sufficient irrigation water, fertilizers, and pesticides, it also causes environmental difficulties.

Soil erosion

Due to an abundance of water, the top productive soil of the agriculture is removed. This results in the loss of nutrient-rich soil, which reduces production. It also contributes to global warming because silt from bodies of water triggers the release of soil carbon from particulate organic material.

Waterlogging and eutrophication

The salinity of the soil is one of the causes of reduced production due to poor farm drainage management. In this condition, the roots of plants do not obtain enough oxygen to breathe, resulting in reduced crop output and mechanical strength. Eutrophication refers to the introduction of manufactured or natural compounds into a freshwater system, such as nitrates and phosphate, via

fertilizers or sewage. It causes an increase in the water body's primary production or the 'bloom' of phytoplankton. Excessive usage of nitrogen and phosphate fertilizers causes overnutrition of lakes and water bodies, resulting in the phenomena called eutrophication (Eu means more, trophication means nutrition).

Greenhouse effect

Food production in modern agriculture consumes a lot of energy. One of the negative consequences of modern agriculture is the impact of greenhouse gases on the environment. Agriculture contributes to global warming by emitting significant amounts of methane into the atmosphere as a result of cattle rearing (enteric fermentation), rice cultivation, and the burning of vegetation to create way for new fields. According to a recent assessment from the Centre for Biological Diversity, modern agriculture accounts for up to 25% of global greenhouse gas emissions. Carbon dioxide from soil respiration, nitrous oxide from fertilizers, methane from cattle digestion, and solid waste decomposition are all included in this figure. CO₂ emissions from deforestation are caused by the extension of farming operations into forests or other formerly uncultivated regions.

Excessive pesticides use

Many insecticides are used to eliminate pests and increase crop productivity. Arsenic, Sulphur, lead, and mercury were once employed to eliminate pests. Pesticides including DDT were utilized, but regrettably, they also targeted beneficial pests. Most significantly, many pesticides are nonbiodegradable and have been connected to food chains that are toxic to humans.

Groundwater depletion

Groundwater is one of the most important sources of irrigation water. Nitrogenous fertilizers from agricultural fields leak into the soil and eventually pollute groundwater. When the nitrate level in groundwater surpasses 25 mg/l, it can produce a major health concern known as "Blue Baby Syndrome," which mostly affects babies and can lead to death. Modern agriculture impacts on health

Modern agriculture has had both positive and negative impacts on human health. Here are some key points to consider:

Positive impacts:

- 1. Increased food production:** Modern agricultural practices have significantly increased food production, allowing for a more reliable and abundant food supply. This has helped to alleviate hunger and malnutrition in many parts of the world.

2. Improved nutrition: Modern agricultural techniques have allowed for the cultivation of a wide variety of crops, providing a more diverse range of nutrients in the diet. This has helped improve overall nutrition and reduce deficiencies in certain regions.

3. Disease prevention: Advances in agricultural technology have enabled the development of more effective pest control measures, reducing the incidence of crop diseases and insect borne illnesses. This indirectly contributes to better public health by reducing the spread of diseases.

Negative impacts:

1. Pesticide use: Modern agriculture relies heavily on pesticides to control pests and diseases. While these chemicals are effective in protecting crops, excessive and improper use can lead to environmental contamination and potential health risks for farm workers and consumers. Prolonged exposure to certain pesticides has been linked to various health issues, including cancer, reproductive disorders, and neurological problems.

2. Antibiotic resistance: In intensive livestock farming, antibiotics are often used to promote growth and prevent diseases. The overuse and misuse of antibiotics in agriculture contribute to the development of antibiotic-resistant bacteria, posing a significant threat to human health by reducing the effectiveness of these drugs in treating infections.

3. Environmental pollution: Intensive farming practices, such as the use of chemical fertilizers and the release of animal waste, can lead to water and soil pollution. Pollution can have adverse effects on human health when contaminated water is consumed or when pollutants enter the food chain.

4. Reduced nutrient content: While modern agriculture has increased food production, there are concerns about the declining nutrient content of some crops. Factors such as soil degradation, selective breeding for yield and reliance on synthetic fertilizers can result in lower levels of certain vitamins, minerals, and antioxidants in crops, potentially impacting human health.

5. Genetic modification: The genetic modification of crops has been a topic of debate. While genetically modified organisms (GMOs) have the potential to increase crop yields and enhance resistance to pests and diseases, concerns exist regarding their long-term impact on human health and the environment. However, extensive research and regulation are in place to ensure the safety of GMOs. It is important to note that the impact of modern agriculture on health can vary depending on the specific practices employed, the region, and various socioeconomic factors. Efforts are being made to address the negative impacts through sustainable farming practices, organic farming, and the promotion of

agroecology, which focuses on ecological principles to support both human and environmental well-being.

Conclusion

Modern agriculture has evolved over the previous century, and its environmental impact is enormous. Industrial farming, which comprises large-scale monoculture, and organic farming, which focuses on small-scale diverse farms, are the two primary types of modern agriculture. Industrial farming is a style of farming in which the goal is to maximize farm size and productivity. It largely relies on technology developments to boost farmer production and profit margins. The primary negative environmental repercussions of contemporary agriculture include soil deterioration, water pollution, and greenhouse emissions.