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Agricultural Practices Effects on the Environment

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ABSTRACT: The environmental impact of agriculture varies widely based on practices employed by farmers and by the scale of practice. Farming communities that try to reduce environmental impacts through modifying their practices will adopt sustainable agriculture practices. The negative impact of agriculture is an old issue that remains a concern even as experts design innovative means to reduce destruction and enhance eco-efficiency. Animal agriculture practices tend to be more environmentally destructive than agricultural practices focused on fruits, vegetables and other biomass. The emissions of ammonia from cattle waste continue to raise concerns over environmental pollution. The present paper aims to elaborate two types the use of indicators: **"means-based"**, which is based on the farmer's production methods, and **"effect-based"**, which is the impact that farming methods have on the farming system or on emissions to the environment.

KEYWORDS: environmental impact, agriculture, eco-efficiency, agricultural practices and environmental pollution.

I. INTRODUCTION

Agriculture is the world's largest industry. It employs more than one billion people and generates over \$1.3 trillion dollars worth of food annually. Pasture and cropland occupy around 50 percent of the Earth's habitable land and provide habitat and food for a multitude of species. When agricultural operations are sustainably managed, they can preserve and restore critical habitats, help protect watersheds, and improve soil health and water quality. But unsustainable practices have serious impacts on people and the environment.

The need for sustainable resource management is increasingly urgent. Demand for agricultural commodities is rising rapidly as the world's population grows. Agriculture's deep connections to the world economy, human societies and biodiversity make it one of the most important frontiers for conservation around the globe.

Agriculture is an important source of livelihood. However, modern irrigation techniques are largely impacting the environment. In this article, we shed some light on modern agriculture and its impact on the environment.

As environmental conditions effect to agricultural practices, agricultural practices also have effects on environment. Namely; agriculture affects to global flowing of greenhouse gases. The main reason for the destruction of forest land is to obtain agricultural land. As a result of agricultural land obtaining, greenhouse gases are created at the same time. These greenhouse gases Show the second major negative impact after the negative effects of greenhouse gases which created by the using of the fossil fuels. Forests collect carbon 20 or 40 times more than agricultural lands and most of the carbon is released into atmosphere when forests has been destroyed to open agricultural land. Environmental described as external medium where human, animals and plants triple live together. Environment consists from two pieces that human hand made and natural environmental. Environment pollution occurred by irregular urbanization and unconscious industry and applications. Also the balance between human and the natural environment where human live breaks. Main reasons of environment pollution are irregular and rapid industry, urbanization, organic and inorganic wastes that left in environment, unintended usage of agricultural lands and wrong agricultural applications. Erroneous using of pesticides and chemical fertilizers, irrigation, tillage, plant hormone applications are some of the wrong applications.

Agriculture is an important source of livelihood because it is the process of producing food, feed, fiber, and many other desired products by the cultivation of plants and the raising of domesticated animals (livestock). It is an art of managing the growth of plants and animals for human use. Let's study how the development in the agriculture techniques has impacted the environment and ecosystem.

Objectives:

- To study impact of agriculture on environment
- To Identify the better management practices that protect the environment



II. IMPACT OF MODERN AGRICULTURE ON THE ENVIRONMENT

As we know that modern agriculture improved our affordability of food, increases the food supply, ensured the food safety, increases sustainability, and also produces more biofuels. But at the same time, it also leads to environmental problems because it is based on high input–high output technique using hybrid seeds of high-yielding variety and abundant irrigation water, fertilizers, and pesticides. The impacts of modern agriculture on the Environment are discussed below:

Deforestation and Habitat Loss:

Agricultural expansion often involves clearing forests and other natural habitats, leading to habitat loss and fragmentation for many species.

Soil Degradation:

Intensive farming practices like tilling and monoculture can lead to soil erosion, nutrient depletion, and reduced soil fertility.

Pollution

Agriculture is the leading source of pollution in many countries. Pesticides, fertilizers and other toxic farm chemicals can poison fresh water, marine ecosystems, air and soil. They also can remain in the environment for generations. Many pesticides are suspected of disrupting the hormonal systems of people and wildlife. Fertilizer run-off impacts waterways and coral reefs.

Water Pollution:

Excessive use of fertilizers and pesticides can contaminate water sources through runoff, causing eutrophication and harming aquatic life.

Greenhouse Gas Emissions:

Agriculture contributes to greenhouse gas emissions through deforestation, livestock production, and the use of fossil fuels for machinery and fertilizer production.

Biodiversity Loss:

Monoculture farming and habitat destruction reduce biodiversity, impacting the variety of plant and animal species in agricultural landscapes.

Water Scarcity:

Irrigation practices can deplete groundwater resources and lead to water shortages in some regions.

Salinization:

Poorly drained agricultural lands can become salinized, reducing crop yields and making the land unsuitable for agriculture.

Excessive use of Pesticide

There are many pesticides that are used for destroying pests and boosting crop production. Earlier arsenic, sulfur, leads, and mercury was used to kill pests. For Example- Dichloro Diphenyl Trichloroethane (DDT) content pesticides were used, but unfortunately, it also targeted the beneficial pests. Most importantly, many pesticides are non-biodegradable, which also linked to the food chains which are harmful to the human being.

The fertilizer which are used to improve plant growth, more and qualified product and some features of soil like physical, chemical and biological structure cause to environmental pollution in case of excessive or wrong usage. Using high amounts of nitrogen fertilizer results to soil washing, contaminates to ground water, drinking water, stream and sea nonetheless it increases nitrogen amount. This also affects the water organisms and when that kind of waters used to somewhere they break the natural balance of environment. Additionally the lettuce and spinach that are grown in the high amount nitrogen applied soils accumulate NO₂ and NO₃ and some carcinogenic substances like nitrosamine. Drinking waters shouldn't contain more than 20 ppm nitrate. For this purpose many European countries makes limitation to nitrogen fertilizer usage in ground water conservation regions. Unconscious using of phosphorus fertilizers also breaks natural balance due to increasing phosphate value in water. Excess micronutrient elements in soil are much more important than nitrogen, phosphorus and it is harmful to the domestic plants.



We create financial incentives to encourage biodiversity conservation, improve agricultural policies, and identify new income opportunities for producers. When agricultural operations are sustainably managed, they can preserve and restore critical habitats, help protect watersheds, and improve soil health and water quality. WWF works in collaboration with a wide range of players to:

- Convene multi-stakeholder roundtables that define and measurably reduce the impacts of growing priority commodities
- Identify and implement better management practices that protect the environment and producers' bottom line
- Create financial incentives to encourage biodiversity conservation
- Improve agricultural policies
- Identify new income opportunities to ensure producers' economic viability

Agricultural revolution brought about improvements in crop and livestock husbandry, while early German chemists and soil scientists proposed the idea of soil exhaustion (Moola, 2019). These ideas eventually led to the establishment of the conservation model of agricultural development. The conservation model focused on the development of a series of progressively complicated agricultural systems that required a lot of land and labor, the creation and application of organic manures, and labor-intensive capital formation in the form of physical infrastructure to make better use of available land and water. For the majority of farmers around the world, this paradigm represented the sole options for intensifying agricultural productivity (Nicholson, 2019). Clearly, agricultural development that fell under the purview of the conservation model was able to sustain rates of growth in agricultural production for comparatively lengthy stretches of time in many parts of the world. This pace of increase is incompatible with current rates of demand growth for agricultural output, which normally decline in developing nations. We can establish the impact of agriculture on the environment by using this model to better comprehend the interaction between agriculture and the environment.

III. METHODOLOGY

This study adopted a desktop methodology. This study used secondary data from which include review of existing literature from already published studies and reports that was easily accessed through online journals and libraries.

IV. RESULT & FINDINGS

The study found that human involvement in agriculture has a negative impact on the physical environment leading to issues like soil erosion, loss of land cover, water pollution and air pollution. These activities include building residential structures, building public infrastructure, and engaging in agriculture. Unique Contribution to Theory, Practice and Policy: The conservation model and diffusion model served as the study's pillars. This study suggests that project managers for agricultural development make sure those environmental concerns are addressed as a project gains momentum through implementation and that the Environment Impact Assessment process takes into account environmental issues raised when a project or plan is first discussed. Water quality can be greatly impacted by untreated livestock excrement. High levels of nitrogen, phosphorus, and potassium are present in manure, which can either enter water directly when animals graze close to streams or indirectly through runoff or groundwater percolation. As a result of the challenges in managing and treating huge amounts of manure, confined livestock systems pose particularly high risks of water pollution. For instance, industrial swine waste from China, Thailand, and Vietnam pollutes the South China Sea more than domestic human sources do in those three nations. Eutrophication, often known as high nutrient concentrations in water, can cause excessive bacterial and algal development as well as the extinction of local fish and plant species. Humans who utilize the water for drinking and for home purposes could also be at danger from health problems as a result of poor water quality. Currently, farming is a major contributor to water pollution, which is a concern locally in Australia, Canada, and New Zealand as well as in some parts of Europe and the United States (Feio, 2021).

In some OECD countries, the use of fertilizers in agriculture and animal waste from livestock is responsible for up to 40% of the nitrogen and 30% of the phosphate emissions in surface water, significantly adding to the issues of eutrophication, which causes the depletion of oxygen in water. Aside from harming aquatic species, pesticide runoff from agricultural land also reduces the quality of drinking water.

Major concerns include soil erosion brought on by both wind and water in the United States and in the Canadian wheat belt, as well as water-related erosion issues in Australia, New Zealand, and Mediterranean countries. Agriculture has contributed to soil erosion through certain practices like land-use conversion, tilling, or overgrazing .



The human activities on wetlands have an impact on the physical environment, leading to negative effects like soil erosion, a loss of vegetation cover, water pollution, and air pollution. These activities include agricultural activities, the construction of public infrastructure, and the construction of residential structures. The study also came to the conclusion that the majority of urban farmers used urban garbage to carry out farming, hence reducing pollution. Crop rotation, intercropping, and other soil conservation techniques are used, but mostly by those who have access to their own property and extension services. The study comes to the conclusion that environmental impact assessments are crucial and that efforts to enhance agriculture in this region took into account potential air pollution-causing emissions.

The association between diffusion rates and the personality, traits, and educational achievements of farm operators was highlighted in the development of the model. Since the development of agriculture economics as a distinct sub-discipline linking the agricultural sciences and economics in the later 19th century, the diffusion model serves as the primary intellectual foundation of much of the research and extension effort in farm management and production economics. When active farm management research and extension programs were first established, experiment-station research was only having a little impact on the increase in agricultural productivity. The study of the diffusion process by rural sociologists contributed further to the efficient spread of recognized technology. As technical assistance and community development programs, based explicitly or implicitly on the diffusion model, failed to result in either rapid modernization of traditional farms or rapid growth in agricultural output, the limitations of the diffusion model as a foundation for the design of agricultural development policies became more and more clear.

V. CONCLUSION

Modern agricultural practices use many kinds of chemicals such as fertilizers, pesticides, cleaners, crop preservatives to produce and keeping large amount of high-quality food. But every single of these chemicals has dangerous and unforeseen side-effects as like toxicity to non target organisms which causes to ecological imbalance. As described on the top, wrong agricultural practices cause to environment pollution in important dimensions. In other words, agricultural technical especially modern technical could make environment pollution in the event unless human would sensitive. For this reason humanity developed a new perspective to decrease the negative effects of agriculture. Sustainable agriculture which is a new agricultural technique seems environmentally friendly and it is supported by developed countries. Environmentally friendly agriculture has three common applications. These are good agricultural practices, organic agriculture and precision agriculture. Also rotation, sowing of legumes that able to nitrogen fixation and fallowing reduce the negative effect of agriculture on climate change. We suppose to make many researches about the agricultural practices which are featured by sustainability and ecologically friendly methods. As we know, water and air are the abandonment sources of agriculture and all vital activities. Environment that comprised by unpolluted air, water, soil, far from noise and other dirtiness, clean, beautiful, green and healthy is the biggest demand of present day human and guarantee of future.

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