

Review Article

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## A Study on the Relationship of Agriculture and Environment

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### ABSTRACT

It is widely known that most of the land approximately one-third of the land is covered by crops. Agriculture has a very worse effect on the environment and on the sustainable development of agriculture as it uses natural resources. Traditional farming methods will be unable to meet the needs of food of the rapidly growing population. Now the question arise that can we develop such techniques that will meet the growing food demand of the growing population and at the same time will sustain our environment. Soon a time will come when most of the land will become degraded and could no longer be used for further production and will be left on coming generation to find ways to restore and repair. New techniques and technologies are adopted by farmers but most of these are not environment-friendly. This paper highlights the relationship between agriculture and environment and the influence of agriculture on the environment.

#### Keywords

Agriculture,  
Environment and  
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### Introduction

Increasing demand for agricultural land for livelihood speculates the rapid increase in forthcoming years with persistent population growth. At present, some 11 percent (1.5 billion ha) of the globe's land surface (13.4 billion ha) is used in crop production (arable land and land under permanent crops). Worldwide there is a change in the environment every day which is creating problems for living beings. Hideous truth is

that every nation is striving toward the development without taking into account the deterioration caused to the environment and pollution to agricultural lands.

Daily, humans are using toxic products like plastic bags, which are causing a threat to the environment and end up polluting the environment and agricultural land. Nevertheless, both the professional sectors and the private sectors are playing a major role in bringing down the environment and

agricultural land pollution. However, professional sectors are trying rigorously to reduce the environment and agricultural land pollution but private sectors tend to do it more. However, apprehensions are made by the global community and the caring media around the world on the cynical environmental and agricultural land pollution.

### **Environment and agriculture**

Forests play a very vital role in a human's life and it makes a vital contribution to the planet also. But the world's population is growing at a very rapid pace it is estimated that it will increase from 7.6 billion to 10 million by 2050 and to meet the growing demands of the population enormous pressure comes on the productive land and unfortunately a large number of forests are cut to satisfy the needs of the growing population. According to the Global Forest Resources Assessment, it is found that the world's forest area decreased from 31.6 percent to 30.6 percent between 1990 and 2015. By 2030 forest lands will shrink to 24 percent. Fertilizers are also the main cause of degradation of the quality of the environment. Fertilizers like nitrogen and phosphate when used in excess they are washed off and degrade the land.

Developing and developed countries use insecticides and pesticides in a very heavy amount which pollutes freshwater with carcinogens and other poisons which have worse effects on human life and other life forms. Use of pesticides has been increased over the past 35 years and the recent usage of pesticides has gone from 4 to 4.5 percent in some regions. Pesticides reduce biodiversity by destroying weeds and insects. The increasing demand for irrigation to secure food for a growing population resulted in increasing salinity which further resulted in decreased leaf area index and plant dry weight. China and India have the highest

irrigated land which makes 21.3% and 20.6% of the irrigated land. In areas of deforestation and grassland, large quantities of carbon dioxide and other harmful gases are emitted.

In harmful gases, methane is the major greenhouse gas it is about 20 times more powerful than carbon dioxide in its warming action and thus is a major contributor to global warming. The emission of ammonia is likely to continue rising in developed and developing countries. Ammonia is more acidifying than sulfur-dioxide and nitrogen-dioxide and it is the major cause of acid rain which damages trees, soil, lakes, and rivers.

### **Associations between agriculture and environment**

Modern machinery and chemicals are being used which evidence the unviable usage of resources which consequences into an escalation of agriculture but badly influencing the environment. Soil, air, water, and biodiversity are the familiar area for all agricultural practice and any change in environment evidence from agriculture would reflect in these areas. In consequence of environmental change commenced by agriculture would show up in these domains (Soil, air, water, and biodiversity). It can be seen that climate change has huge effect on the quality and quantity of food produced globally.

It has become one of the major concerns with significant inference on agriculture. Climate change affects crop yields and often amalgamated by affecting water productivity and soil water balance. Global warming will influence temperature and rainfall which will directly have effects on the soil moisture and groundwater level. Similarly, Farauta *et al.*, (2017) inferences the challenging climate, affecting the crop production leading to the food crisis and its impact on agriculture in

some developing countries is being anticipated to get more critical.

### **Influence of agriculture on the environment**

Agriculture can either encourage or degrade the environment (Millennium Ecosystem Assessment) by pointing out the damaging effect on land and freshwater as well as the significance of productive land space which supports human existence, biodiversity and ecosystem. It has some harsh effects like cutting down the forest and Grassland and other habitats for agricultural use, polluting water bodies i.e. harming the aquatic life and coastal wetland by its rigorous use of fertilizers and pesticides which degenerates soil quality. There is also a huge amount of loss in crops and livestock because of the industrial growth combining with the impact of climate change.

Degradation caused to the environment due to Agricultural activities has a major effect on three main components of human life i.e. Land, air, and water. Based on the type of farming, the area under farms, fertilizers used for different farmings and many more affect the environment. It has been spotted that during water runoff from the field the important nutrients from the top layer of the soil as well as pesticide get dumped into water bodies which in turn sips into groundwater. Phosphorus loaded fertilizers used in agriculture have become a reason for the severe growth of Algal Bloom in both lake Erie and lake Winnipeg. Climate change directly affects the product of agriculture which shows variation from place to place. Climate change can increase the number of cultivable land in a higher altitude region by decreasing the number of frozen land. Hence affects differently to agricultural production and also because of the temperature increase over the decades it is expected that soil degradation and erosion will soon take place.

### **The damaging effect of agriculture on the Environment**

The agriculture has been practiced from the past 10 decades to fulfill the basic needs of the growing population. Gradually over the year's agriculture have flourished. Twentieth century saw a massive negative effect of agriculture on the environment due to the development and usage of new technologies. Pesticides are sprayed over a large area of land. Research has shown that over 95% of pesticides do not reach over the targeted areas and carried away by wind and water runoff. As these chemicals travel to other areas, it affects several plants and animals. Too much use of fertilizers to cater to the global demand for food which will have very negative effect on the environment in the long run. Excessive use of fertilizers depletes the quality of soil which changes the pH level of soil and makes the soil incompatible for further plantation. Excessive use of fertilizers leads to eutrophication. Fertilizers contain nitrates and phosphates when they are immersed into lakes and rivers it becomes toxic for aquatic life.

From the agriculture field, nitrogenous fertilizers leach into soil and contaminate groundwater. When nitrate level exceeds a particular value that is 25mg/l it leads to serious health hazards known as "Blue Baby syndrome". Due to the improper management of farm drainage, roots of plants that do not get enough air to respiration then it leads to low crop yield as well as low mechanical strength. For the world's total anthropogenic carbon dioxide emissions, agricultural activity is responsible for three-quarters of the total production of CO<sub>2</sub>. Due to the absence of oxygen in the wetland soils of rice paddies leads to the emission of methane gas. Rice production currently accounts for approximately 13 percent of global methane emission which has a worse effect on global temperature.

## **Policies adopted (National and International)**

### **Encouragement of national policies for sustainable development**

Agricultural national and international policies must accelerate all-round development and economic viability. The world's food security depends on sustaining environmental and ecological processes that support agriculture. Policy supports production strategies, research and extension of the crop, livestock, and fisheries. A nine prolonged strategy has been adopted in order to meet the challenges of enhancing production and strengthening rural economies. The unutilized wastelands will put to use into either agricultural lands or for afforestation. Survey and evaluation of genetic resources and safe conservation of both native and exotic leads to introduce genetic variability in crop productivity and utility needs particular attention.

### **Recommendation of Legislative, Institutional and economic nature**

In order to facilitate the adoption of appropriate technologies for production, it is necessary to develop guidelines for environmental management in agriculture. Non-governmental and social organizations should educate the public and create higher environmental awareness amongst the masses. A system of standards, criteria must be developed to assess the environmental impact of technological processes and production.

Economic levers should be applied, the main aim behind applying economic levers is that it will influence both consumers and producers to use natural resources efficiently and avoid waste and residue.

Considering India as a developing country got an opportunity to improve the condition of the

environment. By taking important steps towards the environment and Agriculture. Specifically, importance should be given to Agricultural infrastructure, laws, and policies should be made, better Technologies should be used for agriculture by keeping in mind the environmental effects. By adopting new technologies which will be environment-friendly in the field of agriculture will help in developing the good environmental condition.

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