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## The Impacts Of Wastewater On Agriculture In India

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**Abstract :** Agriculture has been one of the most important area in the development of India's Economy and the health of people. Nevertheless, from the last few decades, like every sector it has also been impacted by the ongoing issue of water pollution. The treated or untreated wastewater discharged from municipalities and industrial areas has been thrown into the water bodies which then used by the farmers in the country. The farmers use the wastewater for several reasons, sometimes due to the unavailability of water in nearby areas and other times due to the desire for higher production of crops. This shift in the agricultural sector has some positive implications but at the same time has adverse implications on the health of humans and plants.

**Keywords :** Wastewater, Impacts, Agriculture, India.

### Introduction

Like every developing country, agriculture plays a crucial role in the growth of India. There are above than 50% of population relies on agriculture for their livelihood. The flourishing of agriculture is dependent on several factors like climate, quality of water, technical advancement etc. Amongst them the requirement of water gets fulfilled either by surface and groundwater or both. There are several rivers in India like Ganga, Yamuna, Godavari and Krishna which provides water to farmers for the irrigation of their agricultural areas for their better productivity and high nutritional values. Nevertheless, the reports, researches, articles and newspapers depicts the another story regarding the scarcity of fresh water for the regular use due to several anthropogenic activities. The decreasing level of water has led the people to use wastewater for their daily purposes and agriculture is one of the part of it.

Wastewater can be described as the water that carries waste releases by the residential, commercial and industrial settlements and get further used by humans for their several purposes.

### The Status of Using Wastewater for the Irrigation of Agriculture in India

India has always been a land of agriculture. Agriculture has been one of the main sources of food and income in the country. In ancient India, cows and bulls were used by the farmers for ploughing the fields. Fresh water from the rivers and the ground was used for the irrigation of plants. But, with the passage of time the way of doing the agriculture has changed. Pesticides, fertilizers, fungicides and insecticides have begun to be used in agriculture to increase the yield and to protect the crops from fungus and insects respectively. Thereafter wastewater has begun to be used for irrigating fields in order to cut the use of fertilizers in agriculture which is now affecting the agriculture and the health of people. However, the use of wastewater is not a new practice. This method of irrigation was used by the Egyptians, the Mesopotamians, the Minoans and Indus Valley Civilizations. As per historical evidences, Minoans began to use wastewater for the irrigation of agriculture from 3000 BC. In Crete, it was used for the purpose of fertilizing the crops and fruit trees in 1700 BC.

Wastewater was also used by the Romans and in 1531 and 1650 Germany and Scotland had wastewater irrigation farms respectively.

Today, wastewater has been used by the developed and developing countries as well due to its some positive effects on agriculture. In world, about 20 million hectares land gets irrigated either by treated or untreated wastewater. In India, “According to the Central Pollution Control Board(CPCB), approximately 61754 million litres per day wastewater was generated during 2015 out of which 22963 million litres per day(MLD) was treated and 38791 MLD which is 62% was drained into water bodies.” This has contaminated the crops. According to the study done at the Environmental Science Laboratory of Maharishi Dayanand College, Sri Ganganagar, Rajasthan, the heavy metals were found in vegetables. “The concentration of Manganese and Iron was high in mint and spinach, while the presence of Copper and Zinc was higher in Carrot. However, the presence of these metals was lower than the suggested levels by the WHO experts of the Committee on Food Additives, 1999”.

### **Impacts of Using Wastewater in Agriculture**

The use of wastewater in agriculture has some good as well as bad implications which can be discussed in the following ways.

- The positive implication of using wastewater in agriculture is that it can help in conservation of freshwater resources. It also ensures the regular supply of water for the irrigation of crops which will increase the productivity, employment and security of food for the local people. The use of expensive methods to search for water resources can be also reduced by using the wastewater. It also reduces the use fertilizers to increase yields. For instance, in Jordan, the use of fertilizers has been reduced to 75% in agriculture.
- Despite of having several uses of wastewater, there are also some bad effects. The consumption of crop irrigated from wastewater can cause excreta related disease due to presence of pathogens in it. The diseases caused by pathogens can turn into endemic or epidemics. Additionally, the availability of heavy metals such as lead, cadmium, mercury, as well as pesticides released from industries can cause carcinogenic diseases. The growth of plants can be also disturbed if the wastewater is high in salinity or has high amount of boron, heavy metals and other industrial toxicants. In a long run, the use of wastewater can also contaminate the surface and groundwater. According to the assessment done by NITI Aayog, the surface water and groundwater in India has been polluted by 70%.
- It can also put a negative impact on the country's growth. Countries export their native crops to another in order to boost their economy, which can be affected due to contamination of crops. “For example, a few years ago, the UAE interrupted the import of Indian food such as mangoes, chili peppers and cucumber until the analysis of its report due to the presence of pesticides in them. The renowned newspaper of the UAE, ‘The Nationals’ has warned regarding the shortage of regulatory inspection in food sector. It has also argued about consistent failure of Indian crops in meeting the international quality standards which would scare the farmers and food companies in India.”

### **Conclusion**

The use of wastewater has been increased in developing and developed countries in order to preserve the sources of freshwater and to increase the production of crops. There is no doubt that use of wastewater in agriculture has produced a good results. For example, in Jordan, it has reduced the dependency on fertilizers for higher yields. At the same time it has the capacity to generate the employment in this sector by recruiting the people to treat the wastewater, but the negative side of using wastewater in agriculture cannot be ignored. There have been several data and the research studies indicating its potential adverse effect on the growth of plants and on the health of human beings. However, the government of India has legislated several plans in this area to reduce the negative impact on the health of plants and humans like Water Act in 1974 and Water Cess Act in 1976. Apart from it, the Central Pollution Control Board and the State Pollution Control Board has been also established at the national as well as the state levels.

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