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Effects Of COVID-19 Pandemic And Climate Change on Agriculture

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Introduction

Climate change is not a new concept worth debate but the Corona pandemic is undoubtedly an uncertain period for the world to experience. Sectors like agriculture which are themselves incalculable the pandemic has proved to be disastrous. When the world was not ready to address the medical instabilities caused due to the deadly virus issues like climate change, floods, droughts, fluctuations in the domestic and international market, price instabilities, raw material shortage and labour crisis arose.

Since the majority of the countries around the globe went into a complete lockdown situation during the first wave of the virus. The borders were shut and movement was restricted which ultimately led to the complete failure of the supply chain.The disruption was due to unavailability of raw materials, transportation and sale of goods across borders.

Corona Pandemic and Agriculture

When the first wave hit the nation there was a chaos about the unknown disease and the parameters that governed it. Amidst all this the labour force rushed back to their hometowns creating a shortage of manpower in the required areas. Agriculture is a key sector of Indian economy and engages the majority of our population. Over majority of the rural households depend on agriculture as it provides employment and a living to them. According to the Economic Survey of India 2021, the share of Agriculture in GDP is almost 20%. This means if we use all our resources optimally, we can generate greater productivity and a good foreign exchange for the country that helps improve the overall economy.

Effects Of Climate Change an Agricultural Operations

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The rising temperatures and climate change pose a serious threat to various agricultural operations and experts warn us of a negative impact on it and the allied sectors. Agriculture is highly dependent on climate and its unpredictable changes. Increasing temperatures, melting of glaciers, untimely and excessive monsoon, floods, droughts, rising sea levels all these are the effects of global warming. The effects of global warming on crops include reduction in yield and quality of the produce. The substantial reduction in the yields of the crops renders farmers in tremendous losses and debts. Marginal farmers are the worst affected since the amount of the land holdings and resources they have are limited. Most of them end up lending money and putting every resource at stake. After all this, if the crop fails due to any natural phenomenon the farmer bears the complete loss and ultimately gets trapped in the vicious circle of debt.

Reoccurring Floods

According to India's Disaster Management Division (DMD) report for August 2021 excess rainfall in Rajasthan, Madhya Pradesh and several districts in Uttar Pradesh experienced floods. Such floods account for huge losses to farmers and the overall production of food grains in the country. Many crops and recently harvested produce left out in the field is destroyed during such events. This further threatens the food security of the nation.

Water Crisis in Drought Prone Areas

On the other hand, India has a total 51.1 mha drought prone area according to RBIS India information on drought prone areas. Areas with such water shortages are unable to produce high yields of food grains. Thus, it is a huge constraint in the way of high production of crops.

Plants Using Carbon Emissions To Their Advantage

C4 plants like maize, sugarcane and sorghum show higher yields with rising carbon dioxide levels. This happens since these plants have Hatch and slack pathway. This is a photosynthetic pathway which shows a greater yield because they avoid photorespiration which is an energy consuming process. Greater efficiency is shown because of the presence of kranz anatomy and high affinity of PEP carboxylase present in them towards carbon

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dioxide. This mechanism is however absent in wheat and rice which ultimately feeds the entire population.

Thriving Insect Pest Populations

Warmer and humid climate favours the growth of various pests, insects, weeds and various harmful microorganisms. Scientists after years of research have introduced several varieties which are tolerant to the changing environmental conditions and show resistance to certain pests and diseases. But the rising temperature favours the growth of new and harmful pests and diseases to which the crop varieties are not tolerant. Even the pesticides and herbicides are not the complete solution to the problem as these degrade the food quality and increase the cost of production of the farmer.

Conclusion

Therefore, in the context of exploding population and a serious threat to national food security during the pandemic time, climate change poses a even bigger threat and effect on humanity. The world needs to understand the importance and implementation of ways of sustainable living. Initiatives by private organizations and individuals rather than solely government agencies would yield better results. The principles of organic and conservative agriculture need to be administered into the grass root level that is to the farmers.