

*Perspective*

# Effects on crop productivity due to climate change

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**ABOUT THE STUDY**

Agricultural production is very climate-sensitive. Long-term developments in mean rainfall and temperature, inter - annual climate changes, disruptions in particular developmental stages, and extreme weather events all have an impact on it. Several kinds of impacts have diverse impacts on every different crop at each morphological and physiological stage, and some crops are more resistant to specific circumstances than others. Crop production methods must change with the evolving climate. Modeling the various interactions between agricultural production and potential climate changes will always include some variability. Various crops will be impacted differently by an increase in carbon dioxide in the atmosphere. If all other conditions remain suitable, a rise in atmospheric carbon dioxide will have a minimal fertilizing effect on these crops. This impact could be eliminated by adverse moisture levels during the growing season, a shortage of nitrogen availability, or temperature being excessively high.

**Temperature alterations**

Variations in the median temperature, changes in daytime high and night time low temperatures, and variations in the frequency, intensity, and length of rather hot or cold weather are just a few instances of how temperatures can change. In general, the proliferative and grain-filling/fruit maturation stages are when crops are most vulnerable to elevated temperatures. Moreover, plant reactions to various temperature changes vary based on the species and are affected by both morphological and physiological and morphological modifications that occur throughout plant development as well as photosynthetic activity for vegetative growth, which is what promotes crop production. The duration of the crop and the overall productivity of the plant are impacted differently by each form of temperature changes. The effect will depend on how susceptible each creature is at that specific time in their development to the change in temperature.

**Changes in precipitation regimes**

Differences in the seasonal mean, the duration and intensity of specific rainfall events, and the duration and frequency of droughts

are all indications of changes in precipitation regimes. All of these components is essential for crop productivity. When temperature changes that affect the crop's osmotic requirements are combined with precipitation shifts, the effects of these changes will be very significant.

According to the morphological and physiological stage the crop has attained, this may lead to different kinds of drought. The general consensus is that as a result of climate change, regions which already absorb a lot of rain will get even more rain, and areas that are already dry will get even drier. More impacts of the seasonal average precipitation reduction will be observed in regions with degraded soils. At low moisture potentials, soils with lower amounts of biological carbon absorb less water. Producers may no longer be capable of counting on their awareness of the periodicity of climatic variables as rainfall becomes more unpredictable. Farmers will face greater challenges to organize and regulate production as a result of changing planting seasons and climate patterns.

**Pests**

The interactions between plants and their pests in space and over time are affected by climate change. In general, plants which have previously been harmed by acute climatic conditions are more susceptible to indirect effects.

For instance, plants that are hydrated are less resistant to viruses, and plants that are water shortages are less capable of competing with weeds for nutrients and soil humidity. Also, the effectiveness of biological control will decrease if pests migrate into regions outside of the range of their plant pests unless a growing community of rivals will be able to maintain some level of control.

Climate has an impact on where insect pests are located. Insects whose core temperature varies with the ambient of their environment are more likely to migrate higher latitudes and to higher elevations as a result of global warming. In response to modifications in crop production made to cope with climate change, pest distribution will also change rapidly.

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