

In what climatic context does the evolution of agriculture take place?

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The IPCC has released, in march 2023, its 6th synthesis report¹. It shows that climate warming has reached 1.1°C during the decade 2011-2020 compared to pre-industrial times (1850-1900). The warming level is proportional to the cumulative anthropogenic emissions since 1850, and will only stop if we reach net zero emissions of this greenhouse gas (GHG). Projections show that 1.5°C of warming will likely be reached by 2030 and there are good chances that the warming level will exceed 2°C before the end of this century. Agriculture, forestry and other land uses have contributed 22% of the total GHG emissions in 2019, but also hold the potential to contribute significantly to mitigation.

Every increment of warming results in rapidly escalating hazards: more intense heatwaves and heavier precipitation everywhere on the globe, more frequent, intense and prolonged drought in many regions, and new compound events such as combined drought and heatwave. Those extremes are driving emerging risks for food production and accessibility.

Climate warming is also affecting production via the slower evolution of some climatic variables, e.g. mean temperature and evapotranspiration. Gradual warming lengthens the growing season for most natural ecosystems with earlier onset and later senescence. It displaces, geographically, some biotic stressors and sometimes desynchronizes the timing of phenological stages between pests/diseases and their hosts.

In this presentation I will give a quick overview of the present knowledge of climate change and its potential futures. I will also talk about observed and projected impacts on agriculture, at the global scale.

References:

1. <https://www.ipcc.ch/ar6-syr/>