

China's crops at risk: Climate change boosts spread of crop pests and diseases

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Based on a unique, previously unpublished data set ranging from 1970 to 2016, an international team including the Potsdam Institute for Climate Impact Research (PIK) compared long-term statistical records about pest and disease occurrence in China with potential climatic driving factors—such as temperature, precipitation, humidity—as well as factors from farming practices, including for instance fertilizer application,

irrigation, use of pesticides. They found that, since the 1970s, the occurrence of crop pests and diseases in China has increased by a factor of four. Climate change is responsible for likely about 20 percent of the observed increase, with great variations between different Chinese provinces.

When looking closer into the climatic driving factors, especially warmer night temperatures are likely to foster an increased chance for crop pests and diseases, according to the scientists. Greenhouse gas emissions from fossil fuel use would increase the warming. The scientists therefore projected how future climate change in China might influence crop pests and diseases until the end of this century. They found that in a scenario of high [greenhouse gas emissions](#), the occurrence of crop pests and diseases would further increase. While the involved uncertainties are substantial, the scientists conclude that the occurrence, on top of the rise they found for the past half century, could potentially double.

PIK scientist and study co-author Christoph Müller states that their "study shows that climate change affects the occurrence of crop pests and diseases, which threaten global food production and food security. This also challenges existing crop protection systems and overall productivity. These findings should alert us that better data and more research is needed in this field to better mitigate the impacts of [climate change](#) on food production."

The research was published in *Nature Food*.

More information: Xuhui Wang, Occurrence of crop pests and diseases has largely increased in China since 1970, *Nature Food* (2021). [DOI: 10.1038/s43016-021-00428-0](https://doi.org/10.1038/s43016-021-00428-0).
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