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Climate Change Impacts on Global Food Security

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Extended Abstract

Climate change is an existential threat to humanity and our fragile ecosystems. Climate change and poor management practices threaten the world's farmlands and food security. In the 2019 Intergovernmental Panel on Climate Change report [1], "food security will be increasingly affected by future climate change through yield declines (significant in the tropics), increased prices, reduced nutrient quality, and supply chain disruptions". This paper will address four pillars of food security: Availability; Access; Utilisation; and Stability. Climate change impacts on food availability via the production of food and its storage, processing, distribution, and exchange. For example, from 1981 to 2010, climate change has decreased global mean yields of maize, wheat and soybeans by 4.1, 1.8 and 4.5%, respectively [2]. In New South Wales (Australia), high temperature and low rainfall episodes during the reproduction stage of crop growth were found to have negative effects on wheat yields. Details of climate change impacts on the other 3 pillars, and adaptation measures will be further discussed.

In Singapore, due to climate change and geopolitical risks, we have set a "30 by 30" goal to be able to produce 30% of our nutritional needs by 2030 [3]. This is an extremely ambitious goal given that only <5% of food is currently produced locally in land scarce Singapore. This paper will describe our long term food security plans such as food innovation technologies (plant and cell-based proteins; vertical farms); grow more with less; and exciting agri-food tech case studies.

References

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