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Climate Change and Crop Production

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According to a recent study, India's **grain production is vulnerable to climate change**, primarily because of the **decline in yield of rice crop during extreme weather conditions**.

- Researchers from Columbia University in the US studied the effects of climate on **five major crops in India**: finger millet, maize, pearl millet, sorghum, and rice.
 - These five grains are essential for meeting India's nutritional needs.
 - These crops make up the vast majority of grain production during the June-to-September monsoon season with rice contributing three-quarters of the supply for the season.
- It can be noted that recently, the **United Nations' State of Food Security and Nutrition in the World report 2018** said that climate change is already having a **negative effect on global agriculture** and is driving up the **number of hungry people around the world**.
- The study, however, found that **the yields from grains** such as millet, sorghum, and maize are **more resilient to extreme weather**.
- On the other hand, **yields from rice** experiences **larger declines during extreme weather conditions**.

By relying more and more on rice, India's food supply is **potentially vulnerable** to the effects of varying climate.
- Therefore, expanding the area planted with alternative grains like finger millet, maize, pearl millet, sorghum can reduce variations in Indian grain production caused by extreme climate.
- The study shows that **diversifying the crops** that a country grows can be an effective way to adapt its food-production systems to the growing influence of climate change.

It also offers benefits like **improving nutrition, saving water, reducing energy demand and greenhouse gas emissions from agriculture**.
- Of late, there has been growing awareness about these alternative grains, often clubbed as "**Smart Food**". Few important developments are:
 - **India celebrated 2018 as the national year of millets**. Moreover, India's

proposal to observe an **International Year of Millets in 2023** has been approved by the Food and Agriculture Organisation (FAO).

- **ICRISAT** which conducts research on six highly nutritious drought-tolerant crops, recently discovered important factors for **heat and drought tolerance in chickpea.**