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Q4

Discuss the consequences of climate change on the food security in tropical countries.

UPSC Civil Services Mains 2023 · GS I · 10 marks · Geophysical Phenomena

Important Geophysical phenomena such as earthquakes, tsunamis, volcanic activity, cyclones etc., geographical features and their location-changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

Core demand of the question

- Discuss the consequences of climate change on the food security in tropical countries
- Cover availability, access, utilisation, and stability of food

Revision summary

Tropical staple crops already sit near heat and rainfall limits, so extra warming cuts yields.

Floods, droughts, and glacier-fed irrigation loss make supply unstable.

The poor lose access when local prices rise, even if global trade still moves grain.

Heat, pests, and disease reduce the nutrition that food can deliver.

Women, rainfed farmers, and small islands carry the first losses.

Flow diagram

Climate change -> Yield loss heat flood drought

Climate change -> Fisheries pests spoilage

Yield loss heat flood drought -> Price shock

Fisheries pests spoilage -> Weaker nutrition

Price shock -> Household hunger

Weaker nutrition -> Household hunger

Conclusion

- Expand heat-tolerant and short-duration varieties through public research such as IRRI and national systems like ICAR.
- Combine irrigation, crop insurance, and social grain stocks so access does not collapse when the monsoon fails.
- Protect mangroves, soils, and small fisheries because they are food systems, not only environmental extras.

In the tropics, climate change cuts harvests, raises prices, and spoils nutrition at the same time. Food security policy has to treat seeds, water, storage, and social protection as one climate task.

Facts & figures

Four pillars of food security

Availability, access, utilisation, and stability, as used in FAO assessments.

Rice and maize heat stress

Night heat and extreme days reduce grain filling in major tropical breadbaskets.

Sahel and monsoon drylands

Regions where rainfall variability already decides whether a staple crop is harvested.

Coral bleaching and fish

Warm seas damage reefs and shift stocks that coastal tropical people eat and sell.

Public seed systems

IRRI, CIMMYT, and national bodies such as ICAR breed stress-tolerant varieties for tropical farms.

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