



## Climate-Resistant Chickpea Varieties

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An international team led by the **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)** has discovered important factors for **heat and drought tolerance in chickpea**.

- The study has identified **four important genes for heat tolerance** and **three important genes for drought tolerance**.
- The study was based on **complete genome sequencing of 429 chickpea lines from 45 countries**.

By using such genomics-assisted breeding approach, the **time taken to produce a new heat- and drought-tolerant chickpea variety can be halved from about eight to four years**.

- The study has found that chickpea **originated in the Mediterranean/south-west Asia** and migrated to south Asia.  
It reached India about two centuries ago, **apparently through Afghanistan**.
- The study provides insights into **chickpea's genetic diversity, domestication too**.

### Advantages

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- World is already witnessing **increase in temperature because of climate change**. So a new variety with heat and drought tolerance will be **highly useful to Indian farmers**.
- In India, chickpea is **generally sown in September-October and harvested in January-February**.
  - When heat-tolerant chickpeas are developed in future, farmers in India may have a **possibility to go in for a second round of cropping**.
  - Though the yield will be less for the second crop, **farmers will still stand to gain**.

### Chickpea

- Chickpea grain is an **excellent source of high-quality protein**, with a wide range of

essential amino acids , but low in fat. The crop also **fixes relatively large amounts of atmospheric nitrogen.**

- More than 90% of chickpea cultivation area is in **South Asia, including India.**  
India is by far the **world largest producer but is also the largest importer.**
- Chickpeas are susceptible to several major diseases and insect pests and yields can fall precipitously if the crop is **exposed to extreme temperatures or drought.**  
Globally, **more than 70% yield is lost** due to drought and increasing temperatures.
- Chickpea is a winter season crop, so in general any further increase in temperature is expected to **further reduce the yield.**

## International Crops Research Institute for the Semi-Arid Tropics

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- The **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)** is a non-profit, non-political organization that conducts agricultural research for development in the **drylands of Asia and sub-Saharan Africa.**
- It was **founded in 1972** and is headquartered in **Hyderabad, Telangana State, in India,** with **two regional hubs (Nairobi, Kenya and Bamako, Mali).**
- ICRISAT conducts research on **six highly nutritious drought-tolerant crops,** also known as **Smart Food: Chickpea, Pigeonpea, Pearl Millet, Finger Millet, Sorghum, and Groundnut.**  
Smart Food is food that is define as **good for consumer, the planet and the farmer,** and is one of the solutions that contributes to addressing all these **issues in unison.**