

# Anti-hail gun of Himachal Pradesh

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## In news

The Himachal Pradesh government will test the usage of indigenously made “anti-hail guns” to aid horticulturists who suffer crop damage due to hailstorms.

## About anti-hail gun

- It is a machine which generates shock waves to disrupt the growth of hailstones in clouds.
- The indigenous guns have been developed by IIT Bombay along with Dr Y S Parmar University of Horticulture and Forestry at Nauni (Solan).
- This gun fixed structure somewhat resembling an inverted tower, several metres high, with a long and narrow cone opening towards the sky.
- The gun is “fired” by feeding an explosive mixture of acetylene gas and air into its lower chamber, which releases a shock wave (waves which travel faster than the speed of sound, such as those produced by supersonic aircraft).
- These shock waves supposedly stop water droplets in clouds from turning into hailstones, so that they fall simply as raindrops.

## How Hail is formed?

- Hail is produced by cumulonimbus clouds, which are generally large and dark and may cause thunder and lightning.
- In such clouds, winds can blow up the water droplets to heights where they freeze into ice.
- The frozen droplets begin to fall but are soon pushed

back up by the winds and more droplets freeze onto them, resulting in multiple layers of ice on the hailstones.

- This fall and rise is repeated several times, till the hailstones become too heavy and fall down.
- It is this hail formation process that the shock waves from anti-hail guns try to disrupt in a radius of 500 metres, so that the water droplets fall down before they can be lifted by the updrafts.
- The machine is repeatedly fired every few seconds during an approaching thunderstorm.

### **Problem of hail in Himachal Pradesh**

- Hail Storms affect apples, pears, and other crops in Himachal's fruit-growing region every summer from March to May, causing enormous losses to farmers.
- For instance, in some hail-prone areas such as Narkanda and Theog, the entire apple crop in an orchard may sometimes get destroyed during such storms