

UPSC Mains Content Builder Series

Video 3



LOCUST ATTACKS



Our Interests

- ▶ Agriculture.
- ▶ Ecology & Environment.
- ▶ Food Security
- ▶ GS III - Disaster and disaster management.



Context

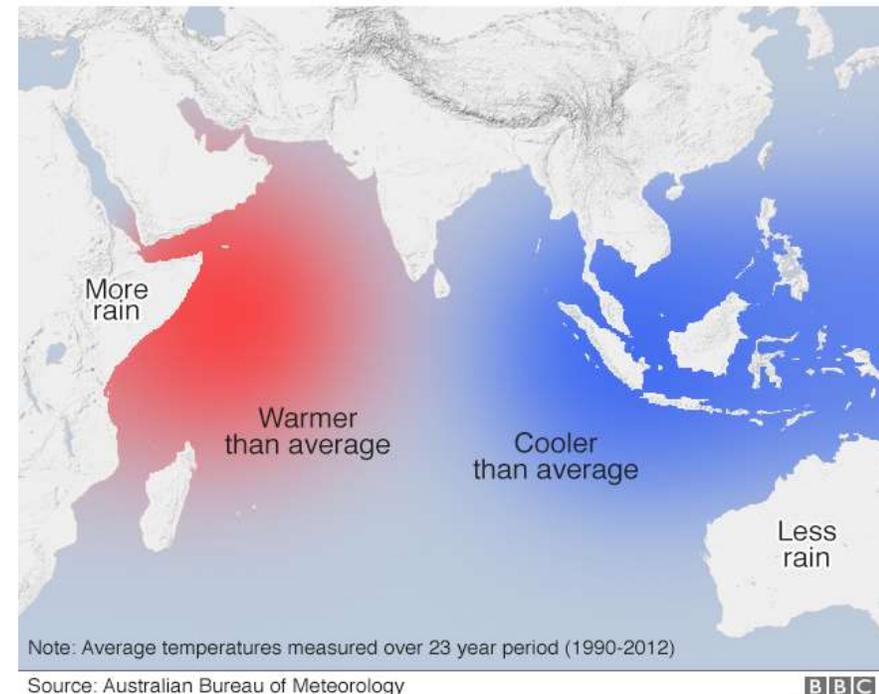
- ▶ Several parts (western / central) of India have experienced heavy infestations of locusts – an insect that devours crops and foliage, often leaving devastation in its wake.
- ▶ Outbreaks of the insect attack have been reported from Gujarat, Rajasthan, Maharashtra, Madhya Pradesh, Punjab, Haryana and Uttar Pradesh.
- ▶ Last year, Gujarat and Rajasthan had reported infestations.



Reason

- ▶ Differential heating of Indian Ocean may be a trigger, known as IOD (Indian Ocean Dipole)
- ▶ A 'positive' dipole is when the western part is hotter by a degree or more than the eastern.
- ▶ Tends to bring excessive rains to India and West Asia.

A positive Indian Ocean Dipole means a wetter west and drier east



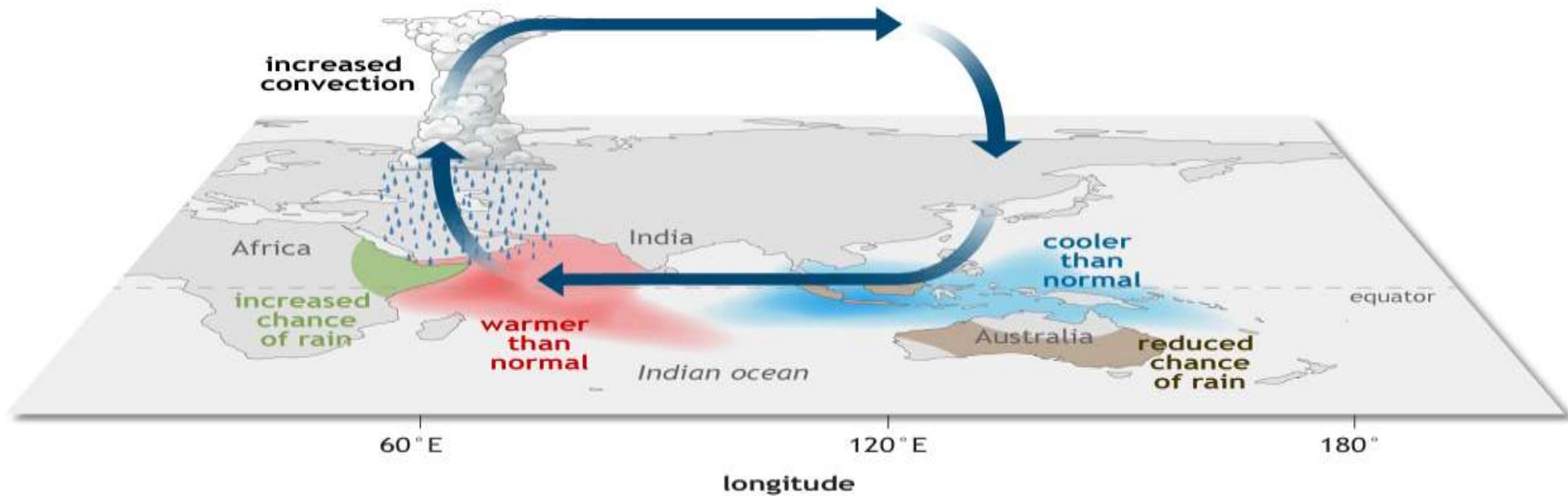
Catalysts – That aided the locust swarms

- ▶ As per Anil Sharma, a desert locust expert
 - ▶ Understanding cyclonic patterns in the Middle East in 2018 is vital to understand what has triggered locust attacks in India.
 - ▶ Rainwater had gathered in different parts of the arid desert that sprawls over Saudi Arabia, Oman, the United Arab Emirates and Yemen after it was hit by **Cyclone Mekunu** in May 2018.
 - ▶ In October 2018, the Arabian Peninsula was hit by **Cyclone Luban**, which created more favourable conditions for locusts to breed.



IOD in Detail

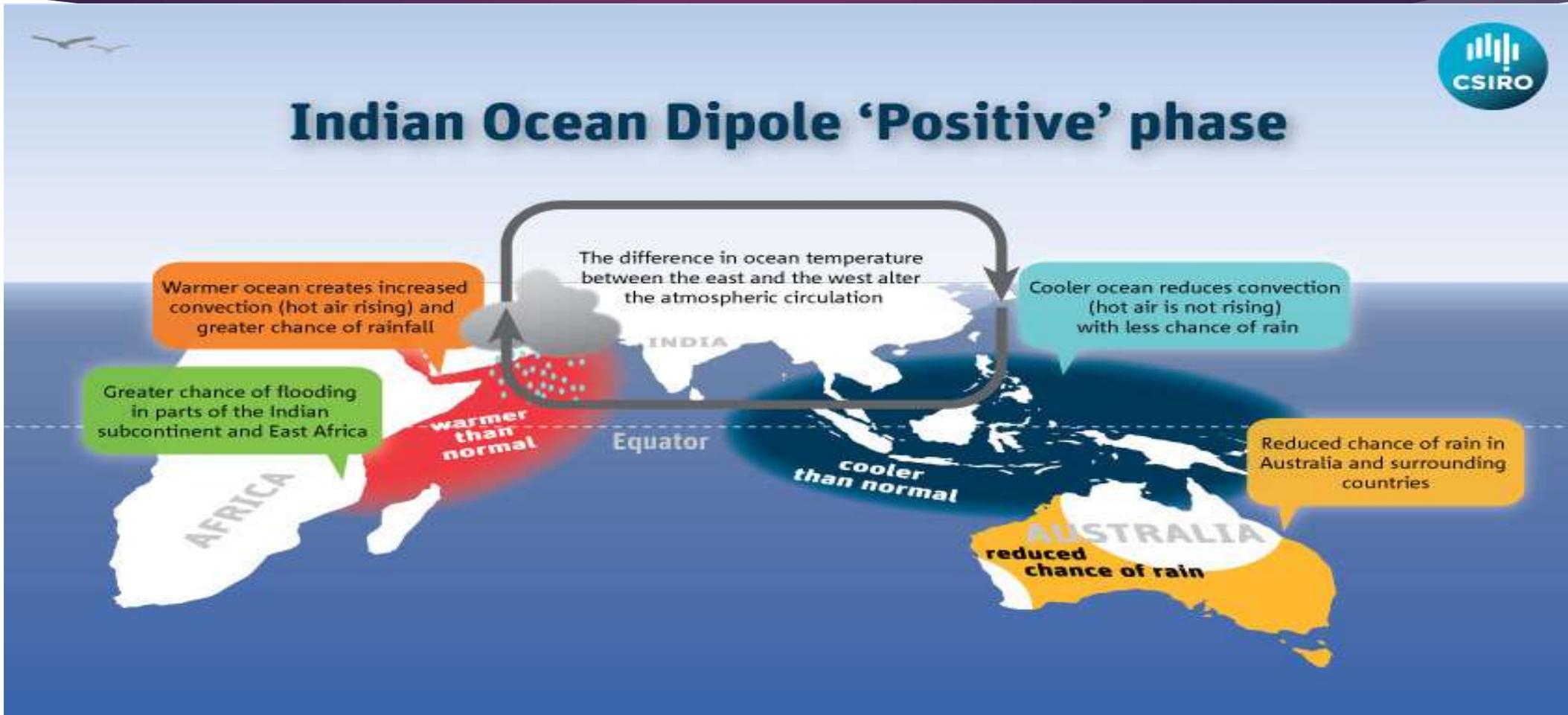
INDIAN OCEAN DIPOLE Positive phase



NOAA Climate.gov



Indian Context



Effects of IOD

- ▶ The Indian Ocean Dipole was so strong that it over-rode concerns of a drought in India last June and brought torrential rainfall — the most India has seen in decades.
- ▶ It also lasted nearly a month more than what is normal. This extended rainfall continued in several parts of West Asia, Oman, Yemen and in the Horn of Africa — Ethiopia, Somalia, Kenya — so much so that that the **dry sand became heavily moisture laden, facilitating** the formation of several locust swarms.
- ▶ East Africa, in fact, had its wettest rainfall season in over four decades even during October-November.



Dangers of Locust Swarm

- ▶ Somalia announced a national state of emergency due to the outbreak in February 2020,
- ▶ Pakistan declared a national emergency for the second time this year, in April.
- ▶ The normal locust season in India spans June-November and coincides with the kharif season.
- ▶ So the entire Monsoon is yet to arrive properly
- ▶ Major agricultural problem



About locusts

- ▶ Desert locusts normally live and breed in semi-arid/desert regions.
- ▶ They are more likely to breed in Rajasthan than in the Indo-Gangetic plains or Godavari and Cauvery delta.
- ▶ Locusts aren't dangerous as long as they are individual hoppers/moths or small isolated groups of insects, in what is called the "solitary phase".
- ▶ The crowding induces behavioural changes and transformation from the "solitary" to "gregarious" phase – that they start forming swarms.
- ▶ A single swarm contains up to 40-80 million adults in one square km and these can travel up to 200 km in one day.

Desert Locust

It is a species of swarming short-horned grasshopper belonging to the Acrididae family. An international transboundary pest, it threatens agricultural production and livelihoods across Africa, the Middle East, and south and southwestern Asia.



Size of Male: 60-75 mm | **Female:** 70-90 mm | **Weight:** 2 grams

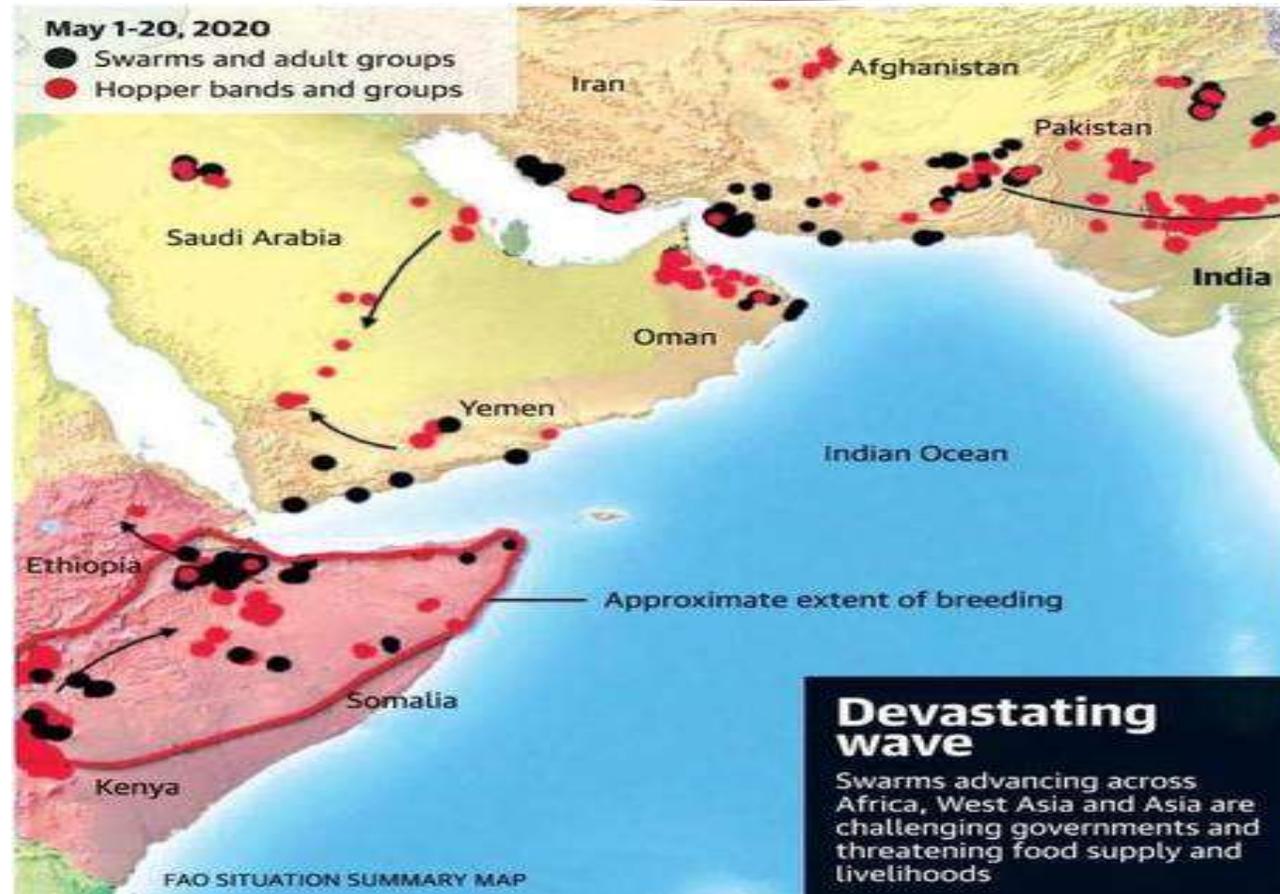
Diet: Plants, eats its own weight each day. A one-square-kilometre swarm eats the same amount as 35,000 people

Flight Speed: 16-19 km/h
Can cover upto 200 km in a day
Life Span: Variable, generally 3-5 months.

Natural Enemies:
Predatory wasps and flies, parasitoid wasps, predatory beetle larvae, birds and reptiles.

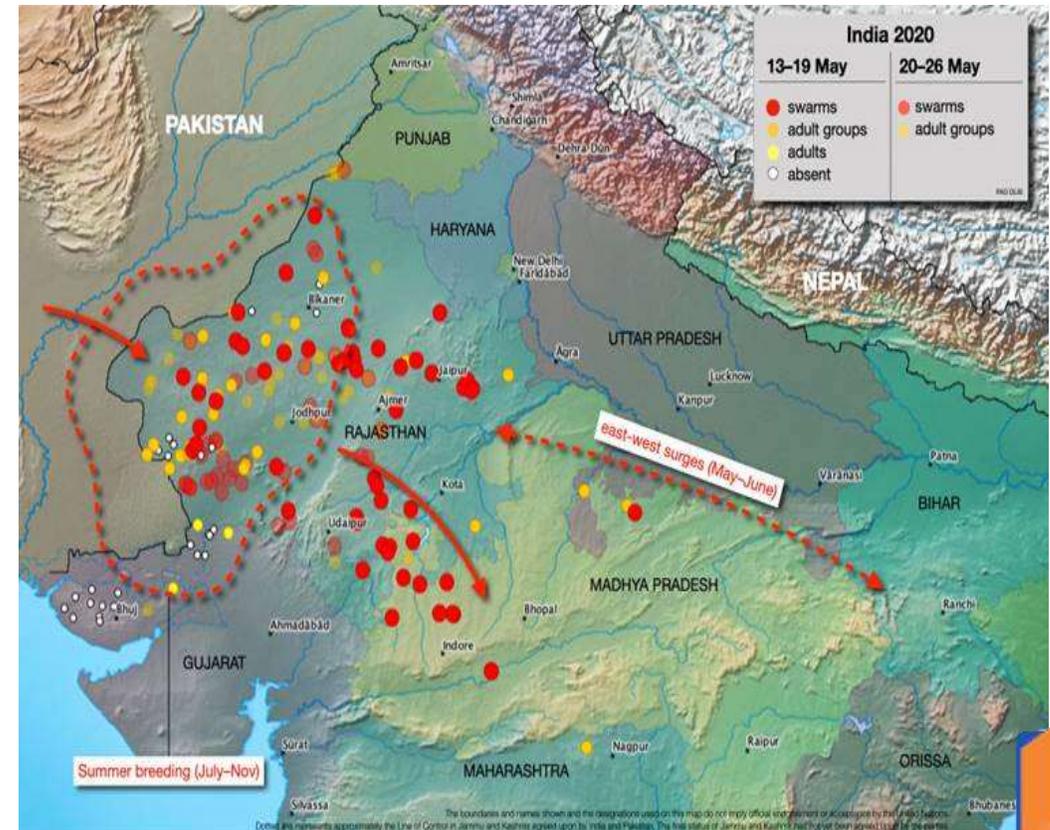


Movements – Outside India



Movements – Inside India

- ▶ Swarms have come to western Rajasthan, and also moved to the eastern parts of the state and even Madhya Pradesh and Maharashtra
- ▶ The West to East movement, was aided by the strong westerly winds created due to the genesis of Cyclone Amphan in Bay of Bengal.
- ▶ Therefore, two meteorological drivers behind the current locust invasions:
 - ▶ one, unseasonal heavy rains in the main spring-breeding tracts in March-April, and,
 - ▶ two, strong westerly winds.



Respite

- ▶ An important thing to note is the current swarms are all of “immature locusts”.
- ▶ These are locusts that voraciously feed on vegetation, but have not yet laid eggs.
- ▶ Once they start breeding, the swarm movement will cease or slow. Also, the breeding will happen mainly in Rajasthan.
- ▶ So far, the swarms haven’t caused much damage, since the rabi crop has already been harvested and farmers are yet to start kharif sowings.



But no Complacency

- ▶ The danger would be when the swarms that have already or are about to come will start breeding.
- ▶ A single gregarious female locust can lay 60-80 eggs three times during its average life cycle of 90 days.
- ▶ If their growth is coterminous with that of the kharif crop, we could well have a situation similar to what maize, sorghum and wheat farmers of Kenya, Ethiopia and Somalia experienced in March-April.



History of Locust Control

- ▶ In the nineteenth century, India experienced serious locust outbreaks in 1812, 1821, 1843-'44, 1863, 1869, 1878, 1889-'92, and 1896-'97. Several efforts were made to combat the swarms.
- ▶ The British encouraged entomologists – scientists who study insects – to research locusts with the hope of understanding this phenomenon.
- ▶ Only after the 1927-'29 outbreak that ravaged the central and western parts of India was the need felt for a centralised organisation to gather information about locusts and control them.
- ▶ This resulted in the formation of the Standing Locust Committee in 1929 and the Central Locust Bureau in 1930. This culminated in 1939 in the establishment of the present-day Locust Warning Organisation.



Protecting birds

- ▶ Officials were helped by the knowledge that similar techniques were being applied in places like Syria, where birds like rosy pastors, domestic fowls, partridges were used to exterminate locusts. This method became so successful that it was practised well until the twentieth century.
- ▶ It received favourable mention in the interim report of the Locust Committee of 1929, which recommended protecting birds like starlings and mynas which fed on locusts as a preventive measure against locust outbreaks.



Chinese Duck Army

- ▶ During China's Great Leap Forward from 1958, a plan to eliminate “four pests” – rats, flies, mosquitoes, and sparrows – greatly reduced the sparrow population.
- ▶ China paid the price for this when a locust outbreak occurred because sparrows had maintained an equilibrium by feeding on the insects. In the following decades, as locust swarms multiplied, China developed a “duck army” to wage a fight against the swarms.



Steps to be taken

- ▶ A proactive exercise of control, through aerial spraying of ultra-low volume of concentrated insecticides in all potential breeding sites, is required, along with continuous monitoring of the crops during the ensuing kharif season.
- ▶ IPM (Integrated Pest Management) is a must for these situations as we need a non-chemical and ecologically non-invasive solution to the locust problem.



Courtesy

- ▶ *BBC Online News*
- ▶ *The Hindu*
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