

## Whiteflies - Features & Threat to Indian Agriculture


Whiteflies have been a cause for direct and indirect damage of yield in agriculture, horticulture and forestry crop plants. This exotic invasive species has spread itself across India, except Jammu & Kashmir, and has become a major cause of concern for the agricultural sector of the country.

In March 2020, the National Botanical Research Institute (NBRI), Lucknow developed a pest-resistant variety of cotton to fight against these whiteflies, as they are considered to be among the top ten devastating pests in the world.

### About Whiteflies - Characteristic Features

Whiteflies are **tiny, sap-sucking insects often found on the underside of leaves**. Adult whiteflies resemble small moths and the body and wings are covered in a powdery white wax.

Mostly, this species of insect is considered to be **native to the Caribbean islands or Central America**. Given below are the key facts about Whitefly:

<b>WhiteFly</b>	 <p>(Image Source: <a href="https://en.wikipedia.org/">https://en.wikipedia.org/</a>)</p>
<b>Order</b>	Hemiptera
<b>Family</b>	Aleyrodidae
<b>Physical Features</b>	<ul style="list-style-type: none"> <li>• Small Insects, with a body length between 1 to 2 mm, and wing length of up to 3 mm</li> <li>• Giant whitefly may even extend to the length of 5 mm</li> </ul>

### Whiteflies in India - A Brief Background

- In India, the first invasive whitefly case was reported in Kerala in 1995
- Another major attack was in 2015, wherein, two-third of the cotton crop was destroyed by the pest in Punjab

- In 2016, whiteflies were observed in various coconut farms in Tamil Nadu
- Approximately 1.35 lakh hectares of coconut and oil palm in India are affected by the rugose spiralling whitefly
- Between 2015 and 2020, extensive research and study was done to examine the pattern of occurrence of the attack, infestation intensity and decline in the number of whiteflies in an area to overcome the loss faced due to the havoc caused by whiteflies

In 2015, after the whiteflies attack in Punjab, around 15 farmers were reported to have committed suicide due to the loss of their crops and land. Thus, this is an alarming concern for the authorities to come up with measures to prevent the spread of whiteflies. Read about the statistics of [Farmer Suicides in India](#), at the linked article.

Another migratory pest, [Locust Swarm](#), has also been a cause for risk to agriculture in India. Maharashtra, Rajasthan, Punjab, Haryana and Madhya Pradesh are the five Indian states to have been affected by these migratory pests. Visit the linked article to know more.

## Concerns with Whiteflies

- **Harmful Pest for Plant Species** - Whiteflies are one of the top ten devastating pests in the world that damage more than 2000 plant species and also function as vectors for some 200-plant viruses
- **Damage Crops** - They have the ability to expand their host range on valuable plant species and reduce the yield of a crop. This may include coconut, banana, cashew, oil palm, and important medicinal plants
- **Nature/Behaviour of Whiteflies** - A recent study has noted that the host range of all of the invasive whiteflies has been increasing due to their polyphagous nature (ability to feed on various kinds of food) and prolific breeding
- **Unavailability of Insecticides** - No effective insecticide is available which can easily kill the whiteflies and prevent them from harming the crops

Apart from whiteflies, many other invasive species have been detected in the country, mainly due to the increasing globalisation, import of plants and movement of people. This rising number and varieties of invasive species is a major threat to the agricultural sector of the country.

## Control & Management of Whiteflies - The Way Forward

- **Spreading Awareness** - People and farmers both must be made aware of such invasive species and their harmful effects. Also, people must not indulge in the illegal or unintentional import of exotic species
- **Biological Control Methods** - It has been found that synthetic insecticides are not effective on whiteflies, thus, naturally occurring insect predators, parasitoids and entomopathogenic fungi must be used to control the spread of invasive species

- **Study/Research/Monitoring must continue** - A lot has been discovered about whiteflies by researchers and continued monitoring of this species may help find better cures and methods to prevent crops from the flies
- **Implementation of Stricter Phytosanitary Regulations** - The state should ensure stricter phytosanitary measures at relevant places to reduce the chances of incoming exotic species
  - Phytosanitary is related to the health of plants or measures to control plant diseases, especially in agricultural crops

**Whiteflies and National Botanical Research Institute (NBRI), Lucknow**

To fight against whiteflies, NBRI developed a pest-resistant variety of cotton in March 2020 and its field trials were done at the Faridkot Center of Punjab Agriculture University, Ludhiana between April to October 2020.

To develop the pest-resistant variety researchers explored 250 plants from lower plant biodiversity to identify novel protein molecules that are toxic to whitefly. Leaf extract of all the plants was prepared separately, and whiteflies were allowed to feed on them, and ultimately of these 250 plants, the leaf extract of an edible fern '*Tectaria Macrodonata*' was found toxic for whiteflies.