

Pollinators, their importance and how they are getting affected?

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Manifest Pedagogy

Agriculture has become a major topic for Prelims (Thanks to IFoS). Looking at the number of questions in prelims, Manifest 11 has a separate section for Agriculture. It is such a topic which has scope for many inter-disciplinary linkages be it science, economy, society etc. This topic has to be covered very thoroughly.

In news

Dwindling of pollinators

In syllabus

Paper 3

Major crops – cropping patterns in various parts of the country

Environmental pollution and degradation

Environment Conservation

Static dimensions

1. Pollination and pollinators
2. Biodiversity and CBD
3. Farm production and Food Security

Current dimensions

Living Planet Report 2018

Content

Pollination is one of the most important mechanisms in the maintenance and promotion of biodiversity and, in general, life on Earth. Many ecosystems, including many agro-ecosystems, depend on pollinator diversity to maintain overall biological diversity.

Pollination also benefits society by increasing food security and improving livelihoods. Pollinators are extremely diverse, with more than 20,000 pollinating bee species and numerous other insect and vertebrate pollinators. Therefore pollinators are essential for diversity in diet and for the maintenance of natural resources.

In 2015, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) found that pollinators lead to huge agricultural economic gains.

The report estimated pollinator contribution in India to be \$0.831-1.5 billion annually for just six vegetable crops.

Nearly 70% of tropical crop species are dependent on pollinators for optimal yields.

Across India's agrarian plains, plantations and orchards, millions of birds, bats and insects toil to pollinate crops. However, many of these thousands of species may be in dangerous decline.

The decline of **moths, bees, butterflies, hoverflies** and other pollinators is undeniably linked to human activity like

- **Monoculture cultivation:** Large tracts of natural habitats have been cleared.

- Use of pesticides and fertilisers: In a series of studies at the University of Calcutta, researchers have showed that native Indian bees, when exposed to multiple pesticides, suffer from memory and olfactory impairment, lower response rates, and oxidative stress which damages cells.

In Kashmir, researchers have pinned lowering yields of apple trees on the declining frequency of bee visits. In north India, lowering yields of mustard cultivation may be caused by disappearing pollinators.

The Convention on Biological Diversity (CBD)'s cross-cutting initiative on the conservation and sustainable use of pollinators aims to:

- Monitor pollinator decline, its causes and its impact on pollination services
- Address the lack of taxonomic information on pollinators
- Assess the economic value of pollination and the economic impact of the decline of pollination services
- Promote the conservation, restoration and sustainable use of pollinator diversity in agriculture and related ecosystems

Solutions:

1. Promotion of organic farming
2. Lowering pesticide usage
3. Landscape management
4. Direct payment support to farmers to provide buffer strips for pollinators for nectar- and pollen-rich plants
5. Forests can be restored to become thriving homes for pollinators
6. Fallow areas and government land can be used to plant flowering species for pollinators
7. A key aspect of this year's bi-annual Living Planet

Report 2018 is the threat to soil biodiversity and pollinators

Test yourself: Mould your thoughts

How fundamental is pollination in Agriculture Production? How anthroposphere has affected this natural process? Suggest measures for sustainable agriculture.