POLLINATORS AND CLIMATE CHANGE - GS III MAINS

Q. Discuss the implications of climate change on the pollinators and bring out the impacts of it on the nation's food security. (10 marks, 150 words)

News: *Climate change: Nepal's honey gatherers say fewer hives threaten tradition*

What's in the news?

- Now the generation-old craft is increasingly under threat as some experts say rising temperatures brought by climate change disrupt the growth of bees, the availability of their food, and even pollination of plants.

Key takeaways:

- Global studies show that a temperature rise of even one degree affects the growth of bees, the availability of their food, and cross-pollination of plants, said Suruchi Bhadwal of India's Energy and Resources Institute (TERI).
- Research showed climate change was disrupting the food chains for bees and the flowering of plants, affecting populations of both across the world, added Bhadwal, the head of earth science and climate change at the institute.

Pollinators:

- Pollinators are animals that move pollen from the male part of a flower to the female part, enabling plants to produce fruits, seeds, and young plants.
- Common pollinators include bees, butterflies, birds, bats, and other insects.

Importance of Pollinators:

- Pollinators are crucial for the reproduction of many plants.
- They contribute to biodiversity and the production of food crops.
- In India, crops like fruits, vegetables, spices, and nuts rely heavily on pollinators.

Impact of Climate Change on Pollinators:

Global Findings:

- A study by researchers from the University of Texas at Arlington, the University of Nevada, Reno, and Virginia Tech has shown that climate change is causing a decrease in pollen production and a lower diversity of pollen. This affects food production, which relies on pollination.

Case Studies in India:

1. Apple Orchards in Himachal Pradesh:

- Apple production has been hit by changes in temperature and rainfall patterns, affecting the flowering time and the activity of pollinators like bees.

2. Mustard Fields in Rajasthan:

- Mustard crops depend on bees for pollination.
- Climate change-induced heatwaves and erratic rainfall can reduce bee activity, impacting mustard yields.

Implications of Climate Change on Pollinators:

1. Reduced Crop Yields:

- With fewer pollinators, the pollination of crops will decline, leading to lower yields. Crops like apples, almonds, cucumbers, and mustard are particularly at risk.
- Example - In Himachal Pradesh, reduced bee populations can lead to poor apple yields, directly impacting the local economy and food supply.

2. Increased Food Prices:

- As crop yields decrease, the supply of food will also diminish. This can lead to higher prices for consumers.
- Example - A reduction in mustard production in Rajasthan can lead to higher prices for mustard oil, a staple in many Indian households.

3. Nutritional Deficiencies:

- **Diverse Diet** - Pollinators help produce a variety of fruits, vegetables, and nuts, which are essential for a balanced diet.
- Example - A decline in pollinator activity can reduce the availability of these nutrient-rich foods, leading to nutritional deficiencies, especially in rural areas.

4. Income Loss:

- Farmers who rely on pollinated crops for their livelihood will face economic hardships due to lower yields.
- Example - Farmers in regions like Himachal Pradesh and Rajasthan may experience reduced income from apple and mustard crops, respectively.

Steps to Mitigate the Impact:

1. Creating Pollinator Habitats:

- Planting native flowering plants that bloom throughout the year can provide food for pollinators.

2. Sustainable Farming Practices:

- Reducing pesticide use and practicing organic farming can help protect pollinator populations.

3. Research and Monitoring:

- Continuous research and monitoring of pollinator populations can help in developing strategies to protect them.

Policy Interventions:

1. National Pollinator Protection Strategy:

- Implementing a comprehensive strategy to protect pollinators, similar to initiatives in other countries.

2. Awareness Programs:

- Educating farmers and the public about the importance of pollinators and how to protect them.

Climate change poses a significant threat to pollinators, which are essential for maintaining food production and biodiversity. By understanding the basics and taking proactive steps, we can mitigate the impact of climate change on pollinators and ensure food security in India.