

## Bees and Agriculture- The Alliance for Better Sustainability and Farming Practices

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### Introduction:

Crops without pollinators are unthinkable to grow because 80% of crops are cross pollination in nature. In order for the alliance to get pollinated, the flowers let the pollinators take pollens and nectars. And some cross pollination agents are animals, humans and insects (wind, bats, birds, butterflies but majority of crops get pollinated by bees).



Honey bees are well known for its 'a natural sweetener honey or nectar, bees are insects comes under the order of Hymenoptera, family of Apidea and bee plays a vital role as pollinating agent in Agriculture and other allied sectors. Around 70% to 75% of the pollination is done by Honey bees alone in cross pollinating crops. Which includes agriculture crops, oil seeds, fruits and vegetables?

### Few examples:

| Agriculture crops | Fruits      | Vegetables  |
|-------------------|-------------|-------------|
| Sunflower         | Apple       | Asparagus   |
| Soybeans          | Almond      | Broccoli    |
| Peanuts           | Avocadoes   | Cauliflower |
| Legumes           | Blueberries | Carrot      |

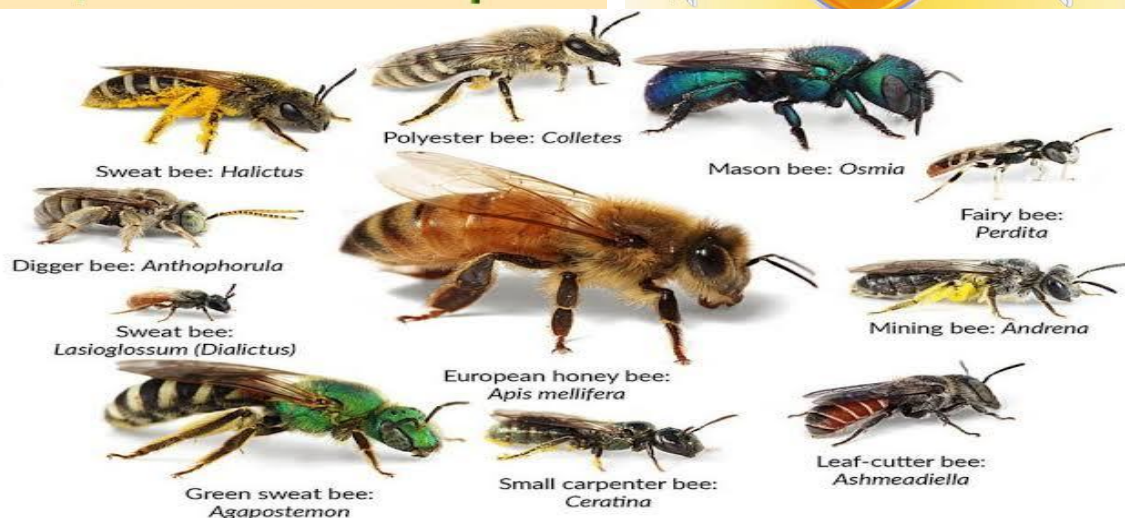
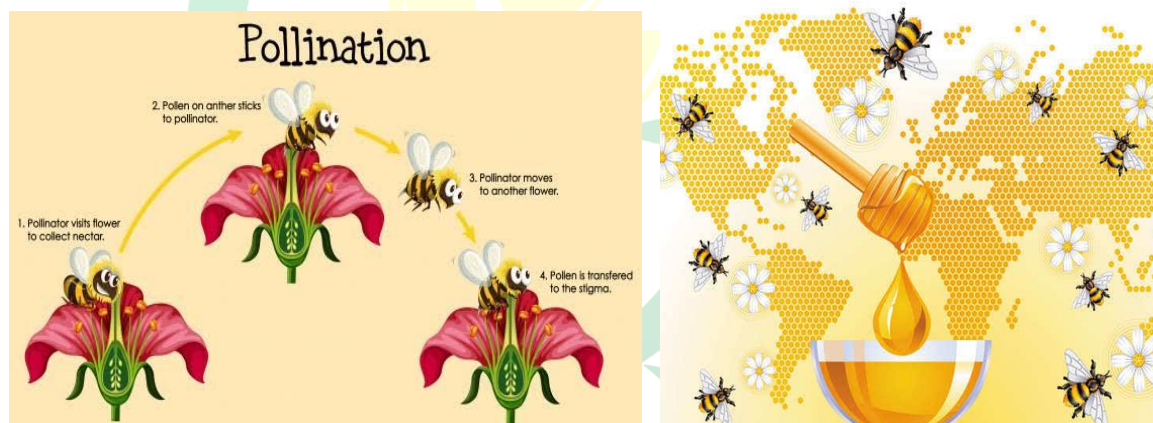
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| Cotton  | Cherries |  |
| Alfalfa | Citrus   |  |
|         | Grapes   |  |

**Fun Fact:**

- Honey bee's wing stroke up to 11,000/ minute, thus it makes buzzing sound.
- Queen bee lays around 2,500 eggs/day.
- When honey bees find the food source they do 'wiggle dance' to give food directions to other bees.
- The costliest honey is 'Manuka honey' costs nearly 10,000/kg collected by bees from *Leptospermum* plants, grows only in New Zealand and Australia.

**Importance of bees in sustainable agriculture and other sectors:**

- **Food:** 80% of plants requires cross pollination by approximately global value of 200 to 300 billion USD, done by honey bee alone.



- **Production and productivity of crops:** bee as pollinating agent it increases fruit setting and quality
- **Sweet revolution:** also known as ‘Honey Mission’. This scheme was launched by KVIC in 2017 to increase the production of honey to export it, for the purpose of doubling the income of farmers.
- **Biodiversity of bees:** Nearly 20,000 species of bees exist worldwide. And the anatomy of bees (small size, shape, hairy structure, pollen carrying legs) is meant to do more pollination than any other insects.
- **Bee fight crime:** in 2017, Scientist at University of Granada (Spain), created new Bee algorithm (Bio-inspired algorithm) to find crime network, explosion.
- **Artificial Bee Colony/ABC:** ABC algorithm combined with machine algorithm to predict soil organic matter.
- **The Health and Cosmetic Industries:** Honey has properties that are anti-inflammatory, anti-bacterial, anti-microbial, and anti-oxidant, used in wound healing, reduces cough so it has been used since ancient times and is used for face packs, facial washes, skin moisturizer, tan removers, acne creams, hair conditioner etc. used in home remedies and in industries too.

### Conclusion:

Bees are important in pollination, but they are declining day by day due to climate change, which causes effects and alters behavioral changes in bees, deforestation, monoculture because some species of bees prefer different type of flowers, and other reasons include heavy pesticide (neonicotinoid) usage, which kills non-targeted pests, including beneficial insects too. So it is our responsibility to conserve nature. Then nature will safeguard mankind. The small contributions that can be made by humans are afforestation, house gardening, multicropping, and reducing the usage of pesticides that harm honey bees as well as other beneficial insects.