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Tapping Uncommon Opportunity

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Beekeeping is one of the oldest agri-allied industries in India. Besides honey, it includes the production of propolis, beeswax, bee venom, pollen, and royal jelly. Honeybees also present an uncommon opportunity for diversification in agriculture.

The honeybee also contributes to sustainable agriculture by increasing farm yield through pollination and helping in environment-friendly disease and pest management. Production of crops such as blueberry, strawberry, tomato, sunflower, apple, canola and pulses have increased in the US and Europe because of bee pollination.

According to the latest Indian Council of Agricultural Research (ICAR) report, the honeybee can be used as an effective tool for increasing production and income of farmers. Apis cerana was used in the past, but Apis mellifera, when introduced and domesticated, provides better pollination and yields going up to 40 to 50 kg honey per box. Various products, such as beeswax, bee venom, and royal jelly are also obtained.

At present, there are about one million colonies of honeybees in India and the National Commission on Agriculture has estimated that given the existing vegetational wealth, 150 million bee colonies can be sustained which would be capable of producing 1.5 lakh tonnes of honey. At the same time, this would generate employment for 15 million rural and tribal families besides phenomenal improvement in crop productivity and higher returns from unit area.

Hive bees

India has an array of honey bees i.e. Apis cerana indica (native Indian hive bee), A. mellifera (European bee), A. dorsata (rock bee), A. florea (small Indian bee) and Trigona iridipennis (dammer bee). All these are useful as plant pollinators. But they are restricted in distribution and numbers and are not available when required for pollination. All these other insects are therefore unreliable as efficient pollinators. As against these, the hive bees live in colonies throughout the year and can be taken for crop pollination purposes whenever and wherever required. Their number can be made adequate by simple addition of colonies. In view of these and other advantages, honeybees are used in many advanced countries for pollination of a number of agricultural and horticultural crops.

It has been proved that such use of bee colonies for pollination, results in manifold increase in crop yields. The data on bee pollination experiments conducted by various workers in countries like the USA, the UK or erstwhile the USSR, have shown that temperate fruits like apples or pears yielded many times more fruit when bees were provided than when self-pollinated. Legume crops like beans, clovers, berseem and Lucerne showed spectacular increase in yield due to bees helping in pollination. Here, the yield increases had been over 33,000 per cent over self-pollination. Such an increase is the result of self-sterility, i.e. the flowers can never be fertilised by their own pollen. If bees or other pollinators are not available, they cannot and do not set seed or fruits.

Expert pollinators

Honeybees as pollinators are known to enhance productivity of cross-pollinated crops. Natural pollination through wild honeybees normally occurs in crop fields. However, pollination activity through apiculture enhances both quality and productivity of various crops. India introduced Apis mellifera in the north Indian states in the early seventies to enhance crop production in apple, kinnow, orange, and vegetables such as cucurbits. In eastern India, this species is extensively used in enhancing litchi production. Standardisation of colony requirements for these crops has enabled commercial beekeeping and custom hiring of bee colonies in various states.

In other parts of the country, the dominant commercial exploitation is by using Apis cerana indica. The pollination induced through this species of honeybees helps in early setting of seeds, resulting in early and more uniform crop yield. It is estimated that about 5 per cent to 25 per cent increase in yields of various crops is due to pollination by honeybees, and in crops like apple in the absence of bees, no yield is expected. The most important crops where substantial increases in yields can be obtained are litchi, almond, citrus, grape, cucurbits, plum, pear, cashew, papaya and cardamom.