

## **Honey bee pollination in polyhouse: ICAR-IIHR Technology**

In India, polyhouse cultivation of vegetables has been gaining popularity as it helps in breaking seasonal barriers and also in getting higher quality yield and net income from lesser land. However, pollination is a major limitation for growing cross pollinated vegetables like gourds, melons and cucumbers which depend on honey bees for pollination. Since plants inside polyhouse are excluded from insect visitation, hand pollination is essential to achieve fruit set. However it is labour intensive and time consuming. In Europe and other temperate countries, bumble bees are used for pollination in polyhouses. But those species are not present in India and from biodiversity point of view, import of exotic species is not desirable. Hence it is very much desirable to have native pollinator species amenable for polyhouse pollination. ICAR- Indian Institute of Horticultural Research, Bengaluru has standardized a protocol of using two native honey bee species viz., Indian honey bee, *Apis cerana* and stingless bee, *Tetragonula iridipennis* for this purpose.

This technology involves placing a honey bee box at the border of polyhouse in such a way that half of box with main entrance facing inside polyhouse and other half i.e. back of box remaining outside polyhouse. This box is provided with twin entry and exit points so that bees can move in either of directions. The hive has to be placed when the flowering is about to start. In case of stingless bee, hives have to be hung from top at crop canopy level. It was observed that worker bees visited both male and female flowers of cucumber, musk melon and ridge gourd and helped in pollination.

The yield and fruit quality obtained from honey bee pollinated crops inside polyhouse were superior compared to open field cultivation. For instance mean fruit weight of muskmelon variety Arka Siri developed by IIHR was 1.60 kg with maximum being 2.6 kg. In case of ridge gourd fruits of up to 85 cm length were harvested. There was 92% fruit set resulting in a yield of 50 tonnes per hectare of muskmelon and 80 ton/ha in cucumber which is 2.5 times higher than open field. The fruit weight and quality parameters obtained through bee pollination were at par with those resulted from hand pollination. For an acre, requirement is 6 hives of Indian honey bee or 12 hives of stingless bee. It involves about 24000 rupees one time investment. But the returns in terms of enhanced yield, saving on labour cost and honey harvest are about eight times the cost incurred for honey bees.

This technology helps in overcoming the main hurdle of pollination under polyhouse. Considering the economics and benefits, this can be one of the approaches towards doubling farmers income.

### **Acknowledgements**

Director, ICAR-IIHR, Bengaluru

**For more details contact**

[director.iihr@icar.gov.in](mailto:director.iihr@icar.gov.in)

### **Research & Technical inputs**

**Dr. P. V. Rami Reddy**

Principal Scientist

Division of Crop Protection,  
ICAR-IIHR, Bengaluru - 560089

Copyright®: Director, ICAR-IIHR, Bengaluru

