

HIGH DEPENDENCY OF CHILLI FRUIT SET ON WILD POLLINATORS IN SOUTHERN INDIA

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Chilli (*Capsicum annuum*) is one of the most important crops in India, both for domestic use and for export. Chilli has earlier been regarded to be mainly wind-pollinated and not needing insects for successful pollination. However, recent evidence from the closely related habanero (*Capsicum chinense*) suggests that insect pollination might be more important than previously thought.

In our study, we evaluated if the fruit set of chilli, i.e. the fraction of flowers that develop into chilli fruits, benefits from insect pollination, and whether the fruit set is constrained by a lack of wild pollinators. We investigated this by conducting experiments and doing flower visitor surveys in eleven different chilli fields, spread in a semi-arid agricultural area of Andhra Pradesh, India. The experiment included three treatments: plants with untreated control flowers, plants with hand-pollinated flowers, and plants with bagged flowers where pollinators, but not wind, were excluded.

We found that the fruit set was about three times higher in the open treatments (control and hand pollinated flowers) than in the pollinator exclusion treatment, which suggests a strong dependency on insects for successful pollination leading to fruit set.

However, there was no significant difference between the fruit sets from the control and the hand pollination treatments, which indicates that there were sufficient pollinators for chilli production in the area. Bees made up for 98% of the flower visits, suggesting they are the most important pollinators.



The giant honeybee, Apis dorsata, flying away from a recently visited chilli flower

Our field study shows that insect pollinators increase fruit set in chilli. Future research should establish if this also applies to fruit quality and total yield. Our study highlights the importance of field-realistic experiments and calls for research on pollinator dependencies also of other crops, especially in times of worldwide pollinator declines.