

# Cannibalism behaviour of a ladybird beetle, *Cheilomenes sexmaculata* Fabricius (Coleoptera: Coccinellidae) due to its densities

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India has an incredible affluent assortment of both flora and fauna. The fauna is extremely distinctive establishing the ecosystem steadiness in a drastic compartment. Ladybird beetles are cosmopolitan in distribution. They diminutive insects ranging in size from 1-10 mm, vibrantly clad with shades of red, yellow or orange with spots on their elytra, belonging to the order Coleoptera and family Coccinellidae. North India has an exceedingly loaded population of ladybird beetles together with both the herbaceous and aphidophagous species. They are elected as farmer's friends as they prey upon a number of insect pests like aphids, mealybugs, thrips other soft bodied insects and phytophagous mites. They are persuasive biocontrol agents and indispensable gears of integrated pest management. They have already been time-honored as successful biocontrol agents against coccids, diaspids and other pest infestations. Present work spotlights on the effect of density on cannibalism by different larval stages of the zigzag ladybird beetle, *Cheilomenes sexmaculata*.

**Key words :** Ladybirds beetles, Coccinellidae, Biocontrol agents, Integrated pest management, Cannibalism

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## INTRODUCTION

Cannibalism reviewed by Fox (1975) is an extensive phenomenon in the animal kingdom that is generally considered to be an adaptive survival strategy (Church and Sherratt, 1996). It engrosses interactions between animals with analogous predatory abilities, and this may amplify the jeopardy of injury or even reciprocal predation. Cannibalistic feeding carries several prospective costs, counting loss of inclusive fitness if relatives are devoured (Agarwala and Dixon, 1993; Pfennig *et al.*, 1994) and menace of grievance or disease transmission during assault (Pfennig, 1997). The rate of cannibalism augments when the food is infrequent but many predators are cannibalistic even when food is copious (Wagner *et al.*, 1999). When other prey is plentiful but of low quality, conspecifics might be a expensive food source by acting as bio-accumulators, concentrating valuable resources, or as bio-filters, abolishing toxic or low-quality compounds. So,

cannibalism may be regarded as a food-mixing tactic with conspecifics representing a moderately high quality food.

Cannibalism in the ladybird beetles (Coleoptera: Coccinellidae) is of pervasive occurrence both in the laboratory as well in the fields. Cannibalism in coccinellids is mainly due to paucity of aphid prey and predator starvation so eggs, lower and same stage larvae, pre-pupae and pupae are very recurrently devoured (Dixon, 2000). Larval cannibalism is a function of relative susceptibility and incidence of encounters (Maurice and Ramteke, 2012).

*Cheilomenes sexmaculata* Fabricius also known as the six-spotted or zigzag ladybeetle is very well-liked in the oriental region, effortlessly accessible in the environment and prefers to feed on an extensive variety of aphids (Omkar *et al.*, 2005). The larvae of this ladybird beetle are known to partake in cannibalism of both conspecifics eggs as well as larvae when the aphid availability declines (Maurice and Kumar, 2011). The experiment was designed in order to study the effect of