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FEEDING POTENTIAL AND BIOLOGY OF COCCINELLID PREDATOR *CHEILOMENES SEXMACULATA* (FABRICIUS) (COLEOPTERA) ON APHID HOSTS

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ABSTRACT

Laboratory studies were conducted to find out the consumption rate and biology of coccinellid predator *Cheilomenes sexmaculata* (Fabricius), on aphid hosts, *viz*., *Aphis craccivora* Koch, *Aphis gossypii* Glover, *Rhopalosiphum maidis* (Fitch) and *Lipaphis erysimi* (Kaltenbach). The potential hosts, beginning with the best may be arranged as *A. craccivora, A. gossypii, R. maidis,* and *L. erysimi* in descending order. The 4th instar grubs consumed significantly more aphids when compared to 1st, 2nd and 3rd instars. The per day predation rate (number of aphids) by female beetle on *A. craccivora* was 37.2±3.32, followed by *A. gossypii* (35.2±2.22), *R. maidis* (31.6±2.44), and *L. erysimi* (23±0.94). Male could feed only 35.8±2.67 of *A. craccivora,* followed by 30.8±1.98 of *A. gossypii,* 27.8±4.28 of *R. maidis,* and 20.8±1.15 of *L. erysimi*. Male and female longevity was lowest (26.8±1.71 and 34.6±1.36 days) on *L. erysimi* and longest (41.6± 0.98 and 48.2± 2.67 days) on *A. craccivora*. The decreasing order of development rate observed of *C. sexmaculata* was *A. craccivora* > *A. gossypii* > *R. maidis* > *L. erysimi*.

Key words: *Cheilomenes sexmaculata*, feeding potential, biology, aphids

Aphids are tiny, soft bodied, sucking pests and approximately 4000 species of aphids have been observed so far feeding over 250 agricultural and horticultural crops. These cause damage directly by sucking cell sap, secrete honey dew on leaves and shoots, and indirectly as vector of plant viruses (Raboudi *et al*., 2002). On several occasions, insecticidal applications have accentuated the aphid populations and quite often resulted in outbreaks. However, predatory coccinellids play a major role in keeping these under control (Kristopher *et al.,* 2002).

Among the predatory coccinellids *Cheilomenes sexmaculata* (Fabricius), is one of the potential predators of aphids and it is widely distributed in India, Iran, Australia and other parts of the Oriental region (Agarwala and Bardhanroy, 1997). The important features of *C. sexmaculata* includes its wide geographic distribution and host range, broad habitats, tolerance to certain pesticides, enhanced searching ability, voracious larval feeding capacity and easy rearing in laboratory (Venkatesan *et al.,* 2006).

The development and feeding potential of coccinellids varies with their food and changes with the environmental conditions. Therefore, the present study was undertaken to determine the predatory efficiency of grubs and adults of *C. sexmaculata* on different aphid hosts, *viz*., *Aphis craccivora* Koch, *Aphis gossypii* Glover, *Rhopalosiphum maidis* (Fitch), and *Lipaphis erysimi* (Kaltenbach) along with details of biology.

MATERIALS AND METHODS

The cowpea aphid was reared based on standard set of procedures given by Gautam (2008). Maize and cotton seeds were sown in polystyrene pots (21×18 cm) in enclosed cage. The nucleus cultures of maize aphid, *R. maidis* and cotton aphid, *A. gossypii* were collected from experimental farm of IARI. Two week after germination of seedlings, apterous forms were inoculated in the respective cages. As the plants grew taller, older pots were discarded and freshly potted seedlings were introduced. The mustard seeds were sown in the cups (10 x 5 cm) made of polystyrene. After 10 to 15 days of sowing, apterous form of mustard aphid, *L. erysimi* was introduced and culture established (Ridland *et al*., 1988).

Adults of *C. sexmaculata* were collected from cotton, brinjal and maize crops from farms of IARI campus. These were transferred to plastic jar (22.5 x 15 cm) and they were used as a nucleus culture for mass multiplication. The bottom of the jar was covered with Whatman no. 1 filter paper. Cowpea twigs infested