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Prey preference of Coccinella transversalis Fabricus (Coleoptera: Coccinellidae) on three aphid species: Aphis crassivora, Toxoptera citricida and Aphis gossipi

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Aphids are one of the most destructive pests and both the adults and nymphs damage flowers, buds, pods, tender shoots and reduce the market value of the product. Presently, biological control is used as a major management method for aphid pest control. Coccinellids (Coleoptera: Coccinellidae) are the most important insect predators of aphids (Hemiptera: Aphididae); among the coccinellids, C. transversalis is one of the most efficient predators of aphids. Therefore, it is important to find the most effective prey aphid insects for the mass rearing of C. transversalis under laboratory conditions.

C. transversalis adults were collected from natural unsprayed vegetable fields and reared in the laboratory by providing three different types of aphids, namely Aphis craccivora (T1:black bean aphid), Toxoptera citricida (T2:citrus aphid) and Aphis gossipi (T3:cotton aphids) separately. Male and female compatible pairs of C. transversalis reared on the three different types of aphids were taken separately and kept for one day for mating. After eggs were hatched, first instar larvae were fed with 100 adults of A. craccivora, A.gossipi and T. citricida separately. Same experiment was repeated with second instar, third instar, and fourth instar larvae and for the emerged adults, respectively. Average daily consumption rate was measured with all larval instars and for the adults separately fed with T1, T2 and T3. CRD was applied with 3 treatment and 5 replications. The treatment means were analyzed using ANOVA and the means were compared using DNMRT.

Treatment effects were significant at alpha level 0.01 for both adults and larvae with the three different aphid species. The relative average daily consumption rate of first, second, third and fourth instar larvae of C. transversalis was significantly different on A. craccivora (38.41, 54.05, 68.21 and 86.76), followed by T. citricida (15.61, 32.91,46.25 and 68.32) and A. gossipi (28.52,47.04,68.2 and 75.34), respectively. Similarly, relative average daily consumption rate of adult C. transversalis was significantly different on A.craccivora (55.04), followed byT. Citricida (31) and A. gossipi (42) respectively. The prey preference of larvae and adult C. transversalis on adult of A. craccivora was significantly higher when compared with T. citricida and A. gossipi.

Keywords: Coccinella transversalis, Aphis gossipi, Toxoptera citricida, Aphis craccivora, mass rearing

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