Impact of Mixed Prey Population on Predation Potential and Food Preference of a Predaceous Ladybird, Coccinella septempunctata

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Abstract : We investigated predation potential and food preference of different life stages of a predaceous ladybird Coccinella septempunctata L. (Coleptera: Coccinellidae) using a nutritive food (mustard aphid, Lipaphis erysimi) and a toxic food (cabbage aphid, Brevicoryne brassicae). We gave monotypic prey, L. erysimi, then B. brassicae to all life stages and found that second, third and fourth instars and adult female C. septempunctata daily consumed greater number of former prey. However, the first instar and the adult male equally consumed both the prey. In choice condition, each larva, adult male and female consumed mixed aphid diet separately in three proportions (i.e. low: high, equal: equal and high: low densities of L. erysimi: B. brassicae). We hypothesized that life stages of C. septempunctata will prefer L. erysimi regardless of its proportions. Laboratory experiment supported this hypothesis only at the adult level showing high values of β and C preference indices. However, it rejects this hypothesis at the larval level, as larvae preferred B. brassicae in certain combinations and showed no preference in a few combinations. We infer that mixing of nutritive diet in a toxic diet may possibly overcome the probable nutritive deficiency and/or reduces the toxicity of toxic diet, especially to the larvae of C. septempunctata. Consumption of high proportion of B. brassicae mixed with fewer L. erysimi suggests that mixed diet could be better for the development of immature stages of C. septempunctata.

Keywords : Coccinella septempunctata, predatory potential, prey preference, Lipaphis erysimi, Brevicoryne brassicae
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