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Biotic Potential of Different Densities of Aphid Parasitoids, Diaeretiella rapae (Hymenoptera: Braconidae: Aphidiinae) Feeding on Brevicoryne brassicae

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Abstract : Diaeretiella rapae (M'Intosh) attack most of the aphid species. However, it is specialized in feeding on crucifer aphid, Brevicoryne brassicae. Biological potential of parasitoid is its density-dependency due to sharing of limited resources in few cases. The present study was carried out to check the biotic potential of D. rapae at its different densities (1, 2, 4, 8 and 10 pairs) on fixed number of B. brassicae (100 in number) as a host. The present study was performed under laboratory conditions (25 ± 2 ºC temperature and 65-70 % R.H.). Different biological parameters for parasitoid (e.g. percent parasitism, adult emergence, adult longevity and per pair parasitism) were evaluated to check its biotic potential. The present findings showed that maximum parasitism (43.09 % ± 0.63) was observed in highest density (10 pairs) and minimum parasitism (16.59 % ± 1.28) in lowest density (1 pair) of the parasitoid. Maximum adult emergence (80.31 % ± 1.33) was observed in highest density (10 pairs) and minimum parasitism (45.99 % ± 1.27) in lowest density (1 pair) of the parasitoid. In the case of adult longevity, highest (8.2 days ± 0.38) and lowest (6 days ± 0.32) longevity were observed in lowest (1 pair) and highest (10 pairs) densities of parasitoids respectively. However, per pair parasitism rate decreased with the increase in parasitoid densities due to intra-specific competition, developed between the parasitoids for parasitism. The positive but close relationship was observed between percent parasitism and adult emergence. The increase in parasitoid densities increased the percent parasitism and adult emergence of the parasitoid. So, we conclude that an inter-specific competition negatively affected the efficacy of parasitoids and may reduce the fitness of the emerging parasitoid.

Keywords : Diaeretiella rapae, Parasitoid densities, Percent parasitism, adult emergence
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