

Biology and Life Fertility of the Cabbage Aphid, *Brevicoryne brassicae* (L) on Cauliflower Cultivars

Authors : Mandeep Kaur, K. C. Sharma, P. L. Sharma, R. S. Chandel

Abstract : Cauliflower is an important vegetable crop grown throughout the world and is attacked by a large number of insect pests at various stages of the crop growth. Amongst them, the cabbage aphid, *Brevicoryne brassicae* (Linnaeus) (Hemiptera: Aphididae) is an important insect pest. Continued feeding by both nymphs and adults of this aphid causes yellowing, wilting and stunting of plants. Amongst various management practices, the use of resistant cultivars is important and can be an effective method of reducing the population of this aphid. So it is imperative to know the complete record on various biological parameters and life table on specific cultivars. The biology and life fertility of the cabbage aphid were studied on five cauliflower cultivars viz. Megha, Shweta, K-1, PSB-1 and PSBK-25 under controlled temperature conditions of $20 \pm 2^\circ\text{C}$, $70 \pm 5\%$ relative humidity and 16:8 h (Light: Dark) photoperiods. For studying biology; apterous viviparous adults were picked up from the laboratory culture of all five cauliflower cultivars after rearing them at least for two generations and placed individually on the desired plants of cauliflower cultivars grown in pots with ten replicates of each. Daily record on the duration of nymphal period, adult longevity, mortality in each stage and the total number of progeny produced per female was made. This biological data were further used to construct life fertility table on each cultivar. Statistical analysis showed that there was a significant difference ($P < 0.05$) between the different growth stages and the mean number of laid nymphs. The maximum and minimum growth periods were observed on Shweta and Megha (at par with K-1) cultivars, respectively. The maximum number of nymphs were laid on Shweta cultivar (26.40 nymphs per female) and minimum on Megha (at par with K-1) cultivar (15.20 nymphs per female). The true intrinsic rate of increase (r_m) was found to be maximum on Shweta (0.233 nymphs/female/day) followed by PSB K-25 (0.207 nymphs/female/day), PSB-1 (0.203 nymphs/female/day), Megha (0.166 nymphs/female/day) and K-1 (0.153 nymphs/female/day). The finite rate of natural increase (λ) was also found to be in the order: K-1 < Megha < PSB-1 < PSBK-25 < Shweta whereas the doubling time (DT) was in the order of K-1 > Megha > PSB-1 > PSBK-25 > Shweta. The aphids reared on the K-1 cultivar had the lowest values of r_m & λ and the highest value of DT whereas on Shweta cultivar the values of r_m & λ were the highest and the lowest value of DT. So on the basis of these studies, K-1 cultivar was found to be the least suitable and the Shweta cultivar was the most suitable for the cabbage aphid population growth. Although the cauliflower cultivars used in different parts of the world may be different yet the results of the present studies indicated that the application of cultivars affecting multiplication rate and reproductive parameters could be a good solution for the management of the cabbage aphid.

Keywords : biology, cauliflower, cultivars, fertility

Conference Title : ICE 2018 : International Conference on Entomology

Conference Location : Paris, France

Conference Dates : October 29-30, 2018