

Effect of Silicon on Tritrophic Interaction of Cotton, Whitefly and *Chrysoperla carnea*

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Abstract : The present experiment was carried out to examine the effects of silicon dioxide on tritrophic interaction of cotton, whitefly, and the predator *Chrysoperla carnea*. Population of whitefly was maintained on silicon treated and non-treated cotton for two generations in greenhouse net cages exposed to outside temperature and luminosity. The cotton was treated with silicon dioxide twice after 15 days intervals with 200 ppm concentration. A stock rearing of the natural predator was developed in the laboratory conditions. In the bioassay eggs of the predator all at the same age were individualized in glass petri plates that will be pierced with a pin to allow aeration and maintained in an incubator at $28 \pm 2^\circ\text{C}$, $70 \pm 10\%$ relative humidity and 12h photo phase. Population of whitefly stayed on silicon treated, and non-treated cotton were offered to newly hatched chrysopid larvae until the end of the larval stage, assuring a permanent supply. Feeding preference of *C. carnea* along with longevity, survival of each instar larvae, pupation, adult emergence, and fecundity was checked. The results revealed that there was no significant difference in the feeding preference of *C. carnea* among both treatments. Durations of 1st and 2nd larval instar were also at par in both treatments. However overall longevity and adult emergence were a bit lower in silicon treated whitefly treatment. This may be due to the fact that silicon reduces the nutritional quality of host because of reduced whitefly feeding on silicon treated cotton. No significant difference in 1st and 2nd larval instars and then increased larval duration in later instars suggested that the effect of silicon treated host should be checked on more than 1 generation of *C. carnea* to get better findings.

Keywords : *Chrysoperla carnea*, silicon, tritrophic, whitefly

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