

## HOST-PLANT MEDIATED INTERACTIONS BETWEEN BELOWGROUND EFFECTS OF ORGANIC AND CONVENTIONAL FARMING ON THE ABOVEGROUND PLANT-HERBIVORE RELATIONSHIPS

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It is known that belowground biogeochemical systems can influence the aboveground system. Agricultural practices involving fertilisers, pesticides, water, biological organisms, all have an important effect on the belowground ecosystems and these in turn affect the plant, herbivore, natural enemy complex aboveground. On the other hand, it is known that in several insect species, previous infestation with conspecifics has either a positive or negative influence on insect acceptance and/or colonisation of its plant host. Previous work by the author has shown that *Myzus persicae* adults are more attracted to conspecific-infested potato plants, but spend significantly less time probing and lay fewer eggs than on uninfested plants. In spite of this definite host preference exhibited by the insects, the effect on performance (in terms of egg hatch, percentage nymphal survival, percentage adult survival and fecundity of emerging adults) was found to be only minimally better on uninfested plants. Studying the effect of belowground factors on this insect host-plant relationship, using organic (compost) and conventional inputs (synthetic NPK fertilisers) showed that organic inputs were less favourable for the pest in general, and caused a behavioural change in the insect (the preference for uninfested plants appeared to be lost and insects colonised conspecific-infested and uninfested plants in equal measure). Furthermore, preventing the release of biologically-sourced soil volatiles by sterilising the soil also had a strong effect on the above ground insect -host plant interaction, with a greater preference being exhibited by *M.persicae* adults for conspecific infested host plants than uninfested ones. These results have implications for crop protection in organic and conventional agriculture.