



Comparison of dispersal behavior in *Amblyseius swirskii* and *Amblydromalus limonicus* (Acari: Phytoseiidae)*

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Thrips and whiteflies are important pests of many agricultural crops around the world. To reduce the use of chemical pesticides, biological control programs have been developed. *Amblyseius swirskii* Athias-Henriot and *Amblydromalus limonicus* Garman & McGregor are generalist predators of thrips and whiteflies in greenhouses and field, while they have different biological characteristics. *A. swirskii* can complete development at 15–36°C (Lee and Gillespie, 2011) and *A. limonicus* at 10–30°C (McMurtry and Scriven, 1965). Thus, the former works well in summer and the latter in relatively cool seasons. If these two phytoseiid species are compatible, they can be used simultaneously in any pest management program which will elevate their biological control efficiency. In addition, the ability of predator dispersal and host searching/feeding and interspecific interaction are critical for successful biological control. In this study, we conducted a laboratory experiment to examine the effect of predator/prey ratio between 1:0 and 1:8 on the dispersal behavior of *A. swirskii* and *A. limonicus* and their interspecific interaction. Two kidney bean leaflets were placed on a petri dish and connected with polyolefin films between them. We released phytoseiids and thrips on one of the two leaflets bridged by a polyolefin film in a petri dish and placed a honey-saturated yarn on the other leaflet to settle the phytoseiids. We checked the number of dispersal mites periodically under various phytoseiid/thrip ratios. Our results show that there were no inter-individual or interspecific interactions in both species. In addition, the dispersal rate of *A. swirskii* decreased promptly soon after they had detected the prey. Compared to *A. swirskii*, *A. limonicus* were more likely to leave the leaflet regardless of the phytoseiid/thrip ratio. We conclude that interactions do not occur when the two phytoseiid species are simultaneously released; thus they may be compatible and used in biological control programmes. Further investigations into their biological control efficiency in the greenhouses and field are required.

Keywords: Biological control, dispersal, phytoseiidae, inter-specific interaction

References

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