Larval development and voracity of Eupeodes americanus (Diptera: Syrphidae): comparison of the focal prey, Aphis gossypii (Hemiptera: Aphididae) and the banker prey, Rhopalosiphum padi (Hemiptera: Aphididae).

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Abstract

Unlike European species, the potential of Nearctic syrphid species as biological control agents is still poorly studied. Nonetheless, the American Hoverfly (*Eupeodes americanus* Wiedemann 1830) has recently demonstrated promising results as a biological control agent, notably against the foxglove aphid (*Aulacorthum solani* Kaltenbach 1843) on pepper. The present study aims to extend our knowledge of the American Hoverfly, and more specifically to evaluate its potential as a biocontrol agent in a banker plant system, against the melon aphid (*Aphis gossypii* Glover 1877) in greenhouse cucumber crop. In banker plant systems, the success of the biocontrol is clearly linked to the voracity of the predator on the banker prey and the focal prey (pest) and to the respective values of both preys for the development of the predator. Consequently, the preimaginal development and voracity of *E. americanus* were compared when preying upon the focal prey (melon aphid, *A. gossypii*) or the banker prey (bird cherry-oat aphid, *Rhopalosiphum padi* L. 1758) by the daily observation of larvae from egg to adult emergence (25∘C, 16 L:8 D photoperiod and 50% R.H). Development of the larvae was similar on both prey species, except for 3rd instar and pupal weight that were higher for larvae fed with the banker prey. The *ad libitum* voracity was similar on both preys except for the third instar larva which consumed more focal preys. Results suggest that a banker plant system involving the bird cherry-oat aphid could be adequate for *E. americanus* to efficiently control the melon aphid.

Keywords: American hoverfly, biological control, banker plant system, melon aphid, bird cherry-oat aphid, greenhouse cucumber.

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