
Impact of agro-ecological infrastructures on the biological control of *Dysaphis plantaginea* (Hemiptera: Aphididae) in apple orchards in north-western France.

Laurence Albert^{*1,2}, Pierre Franck³, Yann Gilles¹, and Manuel Plantegenest²

¹Institut Français des Productions Cidricoles (IFPC) – Institut Français des Productions Cidricoles – France

²Institut de Génétique, Environnement et Protection des Plantes (UMR 1349 IGEPP) – Agrocampus Ouest, Institut national de la recherche agronomique (INRA), Université de Rennes 1 – France

³Plantes et système de cultures horticoles (INRA UP PSH) – Institut national de la recherche agronomique (INRA) – France

Abstract

Reducing chemical products use in apple orchard production is currently an important concern. Cider apple production, for which a perfect visual aspect of fruits is not a commercialization imperative, offers good opportunities to develop new agronomic strategies, which could be subsequently extended to all apple production types. The Institut Français des Productions cidricoles (IFPC) committed itself in the development and testing of new low inputs systems of cider apple orchard management relying on changes in farmers' practices including the setting up of agro-ecological infrastructures (hedgerows and flower strips located in the vicinity and within the orchard) to improve the natural regulation of pests. In this study, we focused on the impact of the distance to agro-ecological infrastructures and of farmers practices (insecticides use intensity and cider-apple cultivar choice) on the biological control of the rosy apple aphid (*Dysaphis plantaginea*), a main pest in young apple orchard, which induces important economic losses. To tackle these questions, we monitored during two years (2014 and 2015) cider-apple trees in 14 orchards, located in north-western France. In general, we found that flower strips were more favorable to natural enemies than hedgerows were. Moreover, the influence of the distance to agro-ecological infrastructures depended on the agro-ecological infrastructure type and on the natural enemies considered.

Keywords: Biological control, agro ecological infrastructure, *Dysaphis plantaginea*, cider apple orchard

*Speaker