

Mating disruption for sustainable pest management of vine mealybug in Portugal: preliminary results

Elsa Borges da Silva^{1,3}, Catarina Mourato³, João Vaz³, António Mexia^{2,3}, José Carlos Franco^{1,3}

¹*CEF-Forest Research Center, Instituto Superior de Agronomia, Universidade de Lisboa, 1340-017 Lisboa, Portugal;*

²*LEAF-Linking, Landscape, Environment, Agriculture and Food, Instituto Superior de Agronomia, Universidade de Lisboa, 1340-017 Lisboa, Portugal;*

³*Instituto Superior de Agronomia, Universidade de Lisboa, 1340-017 Lisboa, Portugal*

Key words: *Planococcus ficus*, mealybugs, grapevine, pheromones, IPM

Mealybugs (Hemiptera, Pseudococcidae) are considered economically important worldwide pests in vineyards. Chemical control is still the most common management tactic used against vine mealybugs. However, chemical control is often ineffective due to mealybug cryptic behavior, waxy body cover and clumped spatial distribution pattern. The use of insecticides may be unsustainable due to resistance, low selectivity, human toxicity, and risk or hazard assessment. A sustainable alternative control tactic for vineyard mealybug, *Planococcus ficus* (Signoret), such mating disruption, is important to study and evaluated their practical feasibility.

Mating disruption trials were conducted in three vineyards (Golhelha, Monte do Duque and Ribafreixo) in the region of Alentejo (Portugal), in 2017-2018. In each vineyard, plots of the same grapevine variety were allocated to the studied treatments: mating disruption *versus* control. After application of 500 dispensers/ha (Isonet PF, Shin-Etsu) in early May, male activity was monitored weekly through pheromone traps. The mealybug infestation in grapevines was evaluated in June and July by visual observation in 30 vines/plot. The level of infestation was determined using the index: 0- no mealybugs; 1- isolated individuals; 2- few mealybug colonies; and 3- several to many colonies. At harvest, the percentage of infested grape bunches was estimated in 100 (2017) and 50 (2018) bunches/plot, and counting the number of mealybugs/bunch.

Mean male captures within control plots were significantly higher (4.7 times) those in mating disruption treatment. The disruption index varied between 20% and 86%, in 2017, and between 77% and 80%, in 2018. The mean level of mealybug infestation in vine canopy in control plots was about 1.4 times higher but not significantly different from that in mating disruption. At harvest, the mean grape infestation, in mating disruption was significantly lower than in control plots.

Acknowledgements

This research was supported by KKL-JNF Israel (2015-2017), program PDR2020-1.0.1- FEADER-03200 (partnership 82/164) “Grupo Operacional IntenSusVITI, Intensificação sustentável da vitivinicultura através da poda mecânica,” and national funds provided by the Fundação para a Ciência e Tecnologia including R&D Unit’s projects UID/AGR/00239/2013 and UID/AGR/04129/2013.