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Efficacy of recent active aerosol emitters versus conventional passive dispensers for the mating disruption of grapevine moths

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Abstract: The two grapevine moths *Lobesia botrana* and *Eupoecilia ambiguella* are major viticultural pests, which are today controlled by mating disruption all over Europe. Until recently mating disruption relied on passive-release dispensers, deployed at high densities of 200 to 500 dispensers/ha. With the authorisation of active aerosol emitters more and more winegrowers switch to this less labour-intensive control method requiring only 2 to 5 emitters/ha. We were therefore interested to study if these new aerosol emitters provide a similar protection to vineyards than the original method for mating disruption. Since 2019, we find no evidence that the novel active-release emitters CheckMate[®] Puffer LB/EA are less effective than the classical passive-release dispensers of the type Isonet[®] or RAK[®]. Damages by grapevine moths remained for both types of pheromone emission stable and at a very low level. Infestation was also in both systems considerably lower than in the monitored references. Overall, our observations confirm that the deployment of less sex pheromone sources per area by the installation of active-release emitters does not reduce the efficacy of mating disruption at low pest population densities. It can therefore be an interesting alternative to conventional mating disruption.

Key words: *Vitis vinifera*, Lepidoptera, Tortricidae, IPM

Introduction

The two grapevine moths *Lobesia botrana* and *Eupoecilia ambiguella* are the two major lepidopteran pests in European vineyards. In the past, these two moth species were controlled by insecticides, but over the last decades mating disruption has established itself as an environmentally friendly alternative all over Europe. Today this integrated pest management measure is implemented area-wide in nearly all Swiss vineyards covering probably more than 80 % of the viticultural area. Until recently mating disruption relied on conventional passive-release dispensers, deployed in vineyards at high densities of 200-500 dispensers/ha. With the registration of active-release emitters by the Swiss legal authorities in 2019, more and more winegrowers switch to this less labour-intensive control method requiring the installation of only 2-5 emitters/ha. We were therefore interested to monitor if this new form of aerosol emitters, with considerably less sex pheromone sources per area, provides a similar protection against grapevine moth damages than conventional mating disruption.

Materials and methods

Lobesia botrana and *E. ambiguella* have two generations per year in Switzerland. At the end of both generations (usually around full flowering and at veraison), we estimated the proportion inflorescences or grape clusters infested by grapevine moth larvae and noted if these vineyards were protected by mating disruption and the type of method (e. g., classical passive-release dispensers versus novel active-release emitters). Vineyards in which we detected no pheromone dispensers are classified as references, where insecticides against grapevine moths might be applied or not.

Results and discussion

From 2019 to 2023, we found no evidence that the novel active-release emitters CheckMate[®] Puffer LB/EA were less effective than the classical passive-release dispensers of the type Isonet[®] or RAK[®]. Damage by grapevine moths remained stable and at a very low level for both types of pheromone emission methods (Figure 1). Moreover, both methods provided a considerably better protection against grapevine moth damage than the traditional application of insecticides. Overall, our observations confirm that the deployment of less sex pheromone sources per area by the installation of active-release emitters does not reduce the efficacy of mating disruption at low pest population densities. This is in accordance with the results obtained by Benelli et al. (2023). They also concluded that novel active-release emitters are as effective as classical passive-release dispensers and fully comparable, or even better, than growers standards in the management of *L. botrana* in small-sized Italian vineyards. The installation of only 2-5 active-release emitters per hectare can therefore be an interesting alternative to conventional mating disruption with 200-500 passive-release dispensers per hectare.

The installation of a few active-release emitters is not only less labour-intensive, but sex pheromone release can also be programmed thereby incorporating pest's actual life stage, daily periods of pest's flight activity as well as the phenology and sensibility of the crop (Benelli et al., 2019). Finally, the deployment of a few active aerosol emitters might also reduce the accumulation of plastic dispensers in viticultural soils and the nearby environment thereby reducing environmental pollution.

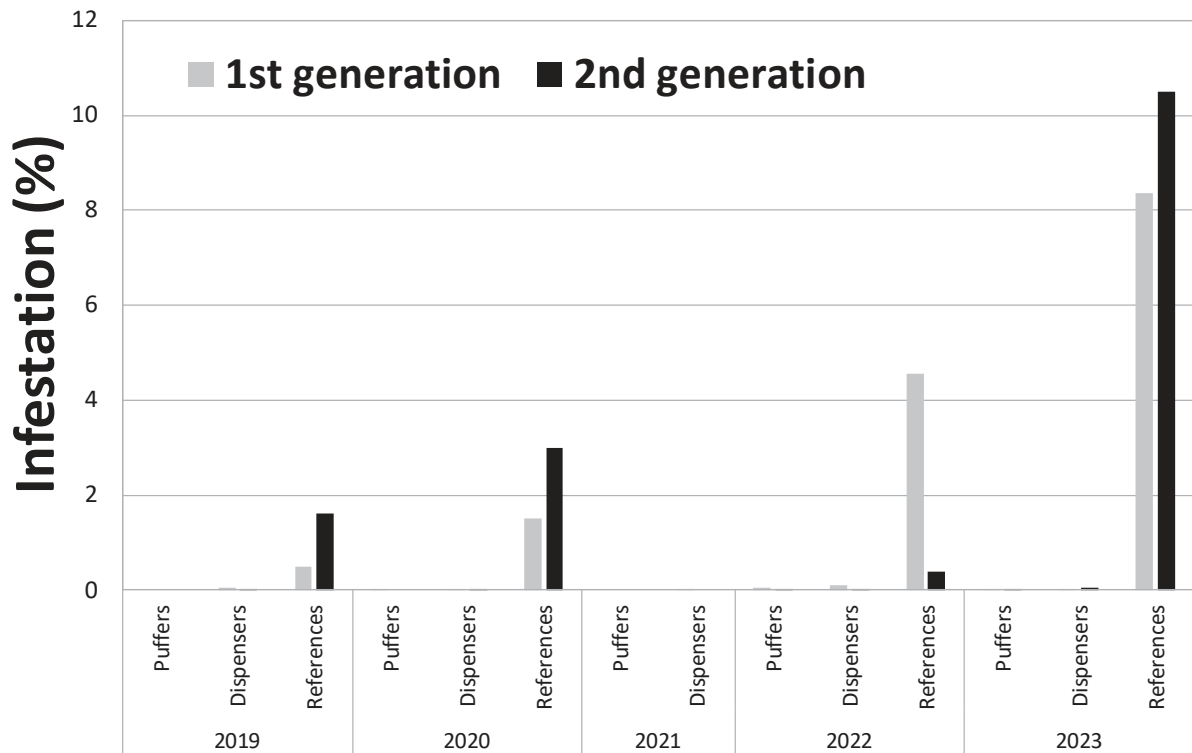


Figure 1. Grapevine moth infestation in Western Switzerland's vineyards protected by either novel active aerosol-release emitters (= Puffers), classical passive-release dispensers (= Dispensers) or insecticides respectively nothing (= References) from 2019 to 2023.

Acknowledgements

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References

- Benelli, G., Lucchi, A., Thomson, D. and Ioriatti, C. 2019. Sex pheromone aerosol devices for mating disruption: Challenges for a brighter future. *Insects* 10: 308. doi: 10.3390/insects10100308.
- Benelli, G., Ricciardi, R., Cosci, F., Iodice, A., Ladurner, E., Savino, F. and Lucchi, A. 2023. Sex pheromone aerosol emitters for *Lobesia botrana* mating disruption in Italian vineyards. *Insects* 14: 270. doi: 10.3390/insects14030270.