Mating disruption for the management of *Lymantria dispar*

M.C. Boukouvala, A. Skourti, C.S. Filintas, D.L.S. Gidari, N.G. Kavallieratos*

*Laboratory of Agricultural Zoology and Entomology, Department of Crop Science, Agricultural University of Athens 75 Iera Odos Str., 11855 Athens, Greece, *kfilintas@aua.gr*

Keywords: spongy moth, egg clusters, flight activity, monitoring

The spongy moth, *Lymantria dispar* (L.) (Erebidae), is a polyphagous lepidopterous pest infesting more than 400 plant species (Boukouvala et al. 2022). The environmental risks and public health hazards linked to heavy reliance on chemical insecticides have sparked increased interest in alternative, environmentally friendly management strategies (Barathi et al. 2024). The mating disruption (MD) method, i.e., the release of artificial female sex pheromones in an area to interfere with the ability of males to locate their mates, has been effective in suppressing the populations of numerous moth pests. This strategy is gaining traction for the area-wide management of destructive lepidopterans due to the species-specific and environmentally safe nature of pheromones (Lance et al. 2016).

In this study, the efficacy of MD was evaluated for the suppression of *L. dispar* populations in Southeastern Europe. Field trials were conducted during the period of 2022–2024 in two forested areas of Greece (Peloponnese). Applications of an MD gel containing this species' sex pheromone were conducted in the MD area, whereas a second area served as a control. Male flight activity was monitored during the summers when the adults are active, using pheromone traps baited with disparlure. Additionally, egg cluster densities were documented during consecutive winters of the experimental period to assess the reproduction success.

The results indicated a considerable decline in the number of males captured in pheromone traps within the treated site during the field trial period, compared to the untreated area. Accordingly, egg cluster counts in the treated area were substantially reduced compared to those in the control area, with densities decreasing by more than 90% during the winters of 2023 and 2024 following the MD application. These findings provide strong evidence of the effectiveness of pheromone-based mating disruption against *L. dispar* populations. Therefore, MD constitutes a viable alternative to conventional management strategies.

References

Barathi S., Sabapathi N., Kandasamy S., Lee J. 2024. Present status of insecticide impacts and eco-friendly approaches for remediation-a review. Environmental Research 240: 117432.

Boukouvala M.C., Kavallieratos N.G., Skourti A. et al. 2022. Lymantria dispar (L.) (Lepidoptera: Erebidae): Current status of biology, ecology, and management in Europe with notes from North America. Insects 13(9): 854.

Lance D.R., Leonard D.S., Mastro V.C., Walters M.L. 2016. Mating disruption as a suppression tactic in programs targeting regulated lepidopteran pests in US. Journal of Chemical Ecology 42(7): 590–605.