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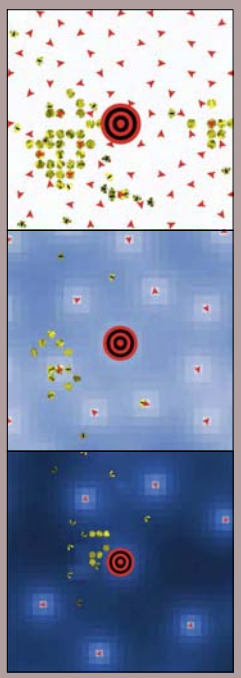
AMAZING SCIENCE

A VIRTUAL PEST TO TEST A REAL METHOD OF INTEGRATED PEST MANAGEMENT :

AGENT-BASED MODELS AS A TOOL TO EXPLORE THE BEHAVIOR OF L. BOTRANA DURING MATING DISRUPTION

Franck R. Paul, *Amazing Stories*, 1946
coll. Maison d'Ailleurs & Agence Martienne



Impact of pheromones diffuser on spatial distribution of L. Botrana (top: high density of diffuser, middle: average density, down: low density). Pheromones concentration : white = high; black = none.

Abstract

Lobesia botrana is a microlepidoptera moth a common pest in European vineyards. Larvaes cause damages both by eating plant reproductive organs and indirectly by promoting the infection of grape berries by saprophytic pathogens.

Since 1999, the Banyuls and Albères Agricultural Development Group (GDA) keeps track of infestations by L. botrana on control plots. Moreover, since 2012, thanks to the ANR TERVICLIM, the of Banyuls AOC region is covered by a network of temperature recording stations.This year, the GDA launches an IPM (Integreted Pest Management) plan based on mating disruption that requires the involvement of vine-growers. The aim of this paper is two-fold: the calibrating an agent-based models simulating the mating behavior of Lobesia botrana wih/without mating disruption, evaluating the impact of IPM on the L.botrana population on the AOC region. More specifically, the aim of this model is I) to provide a proof of concept about the benefits of using agent-based model rather than traditional statistical methods, ii) to provide, by computer optimization methods, tangible results in the IPM strategies. This kind of model can also be used to provide an educational tool to sensitize vine-growers or cooperatives about IPM methods.

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