M-OVICARD: Analyzing chemical cues for grapevine moth oviposition for the development of a Decision Support System

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The European grape berry moth, *Eupoecilia ambiguella* and the grapevine moth *Lobesia botrana* are the most serious pests in European vineyards. They can develop up to four generations in one growing season, depending on weather conditions. While the first generation prefers the flower buds for oviposition, the second generation lays its eggs on green berries.

Larvae developed from the second generation eggs damage the grapes and may transmit bacteria and fungi, especially grey mould *Botrytis cinerea*, which are able to develop rapidly on injured berries.

For insects it is of vital importance to perceive and find suitable cues for locating food, finding a mate and oviposition sides. Olfaction plays a central role in inter- and intra-specific chemical communication. Additionally, contact chemoreception, tactile and visual cues contribute to host finding and acceptance.

For oviposition site acceptance several sequences have to be fulfilled in turn or at the same time. Firstly, the gravid females get guided to the suitable environment, such as the vineyard, mostly through olfactory and visual cues. For the location of its host plant grape in the vineyard olfactory signals are very important. Once the moth has landed on the plant, olfactory as well as tactile, visual and contact-chemosensory cues are contributing to the decision to oviposit. *L. botrana* is capable of perceiving signals via receptors on antennae, proboscis, tarsi as well as on the ovipositor.

A successful control method consists on the treatment of the pest at its most vulnerable life stage. The prediction of the moths oviposition would therefore help in designing an optimal treatment schedule. This would help to reduce sprayed pesticide amounts to acceptable levels.

Traps equipped with female sex pheromone are used currently for determining the activity of male moths, but they do not provide reliable information for timing female oviposition behavior, for which no measuring method exists.
The poster summarizes the known sequences for host location and acceptance *in Lobesia botrana* and *Eupoecilia ambiguella* and gives a short outline on our current attempts for filling the gaps.
Beside analytical analysis, behavioral and electrophysiological experiments will be carried out for developing an innovative oviposition monitoring tool.