

Twelve years of practical experience using mating disruption against *Eupoecilia ambiguella* and *Lobesia botrana* in vineyards of the Wuerttemberg region, Germany

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Abstract: Starting with first trials in 1985, the use of mating disruption against *Eupoecilia ambiguella* and *Lobesia botrana* in the Wuerttemberg region continuously increased. In 1999 75 % of the vineyards were treated with pheromones. The overall rate of successful treatments was better than in vineyards treated with insecticides. The use of pheromones in viticulture seems to be more a social problem than a technical problem.

Key words: *Eupoecilia ambiguella*, *Lobesia botrana*, mating disruption, pheromone, Wuerttemberg

Introduction

Main pests in Southern Germany vineyards are the grape and the vine moth (*Eupoecilia ambiguella* and *Lobesia botrana*). While *Eupoecilia* represents the most common species in the vineyards, *Lobesia* exists in some sites only. The typically wine-farm is very small (0.8 ha) and most of the vineyards are cultivated as a side-job and grapes are processed in co-operatives. After first successful trials in 1985, the use of mating disruption rapidly increased to now more than 75 % of the total vinegrowing area in the region Wuerttemberg (Figure).

Problems and solutions

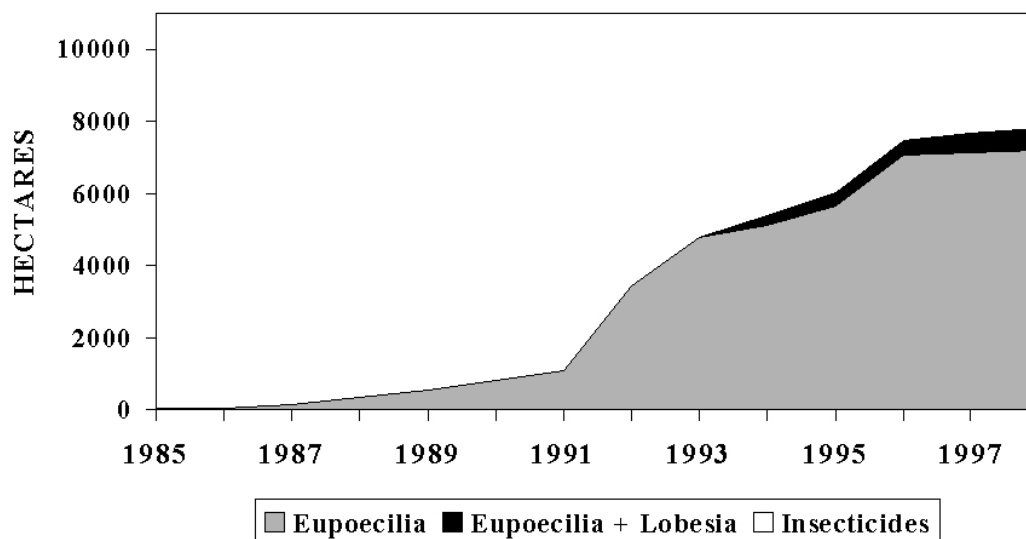
One of the biggest problems was to organize treatments over a large area. The larger the covered area is, the better mating disruption works. In most cases, a lot of winegrowers had to work together. Basic structures as co-operatives and reparcelling organizations proved to be very helpful in this case. The dispensers were suspended generally in a joint action, which was processed as a social event.

Public pressure against the use of chemical insecticides and the fact, that most vineyards in the region are located extremely close to residential areas, were also very helpful. It proved to be of importance, that everybody could realize the use of the new system against pests.

Celebrating the suspension as a social event, mating disruption was best reported in the local newspapers and winegrowers had an excellent chance to cultivate a better image.

One of the biggest problems was the higher cost of the new technique. Mating disruption costs about 240 DM/ha for one species and 340 DM/ha for two species. Additional costs of about 50 to 100 DM/ha were needed for the suspension of the dispensers (2 – 3 man-hours/ha) and organization. In contrast, insecticides rated from 30 to 180 DM/ha for 1 or 2 sprays. A holistic approach had to calculate additional costs for sprays against mites caused by the reduction of beneficial arthropods especially *Thyphlodromus pyri*. The reduction of the beneficials by insecticides required at least one additional spray against spider mites. One spray costs 180 DM/ha. The holistic approach concluded, that mating disruption is cost-neutral. The use of mating disruption was supported by the government of Baden-Wuerttemberg starting with 80 DM/ha in 1987 up to 200 DM/ha in 1998.

Use of Pheromones in Wuerttemberg Vineyards



Furthermore a control system was established. First control (1st generation) was performed during bloom. Where larval attack exceeded 10, the winegrowers were informed that there might be a risk of higher attack during the 2nd generation. In this case, the vineyards were controlled very intensively in the second generation especially during the end of the oviposition period. In some cases additional use of insecticides was proposed. A control of the second generation was carried out using data of pheromone traps from outside the treated area. Controls were performed 7 and 14 days after the first peak.

Conclusion

The mating disruption technique proved to be successful. In more than 98% of all cases, the attack did not exceed the damage threshold of 5% grape attack. A higher rate of attack was found in some cases along the border line of the treated area and in some hot spots, with an extremely high population density. Soon the winegrowers learned to handle these problems. The overall rate of successful treatments was better than in vineyards treated with insecticides. The rate of success increased if the method was used for more than three years. Relevant changes in the abundance of other pests were not observed. In the first and second year in some cases the leaf hopper population (*Empoasca vitis*) increased but did not exceed the damage threshold. Mite problems decreased very quickly because of the higher number of beneficial arthropods.