

# DO HEDGES HELP CONTROL PESTS AND DISEASES IN VINEYARDS?

Agroforestry to improve vineyard management



## THE WHAT AND WHY

### Grapevine moth causes increasing damage in Mediterranean regions

The grapevine moth causes important losses to vineyard owners: the larvae perforate the grapes and help spread diseases. By doing so, they reduce the yield, but also increase the likeliness of grey mould (*Botrytis cinerea*) and acid mould (flies). The larvae of the first generation appear in April, while those of the last generation generally appear in August. The butterflies lay their eggs at dusk. The presence of larvae and

rotten fruit lowers the quality of the crop; moulds render vine making difficult and may require the crop to be harvested prematurely.

Growers faced with an infestation have no choice but to spray their vines with chemicals. As an alternative, bats and insectivorous birds can help control the grapevine moth, but need suitable habitat to be provided.



Website

Butterfly of *Lobesia botrana* (Denis et Schiffermüller).  
INRA HYPPZ  
<https://bit.ly/2RV1XN7>



Lagardère EARL vineyard in Lagardère (32310), France  
Association Française d'Agroforesterie  
[www.agroforesterie.fr](http://www.agroforesterie.fr)

## HOW IS THE CHALLENGE ADDRESSED

### Tree and vegetation cover for improved biological control

Bats can play an important role in the protection of economically important crops against lepidoptera pests. They seek out particular features where insects tend to be most abundant, such as hedgerows, clearings or forest edges.

A recent French study concluded that bats are present in vineyards and help reduce the losses related to grapevine moth and diseases like grey and acid mould. The study also confirmed that although they are present in intensive vineyards, bats still prefer hunting in more natural environments such as hedgerows. On pilot plantations, mixing vineyards and tree alignments

in the South-West area of France, a reduction of occurrence of grapevine moth has already been reported along with an increased presence of bats at dusk.

Other pilot plantations rely on the screening effect of hedges to isolate plots from each other, contributing to slowing down the spread of pathogens and diseases like grey mould. With the economic value of timber and hedge wood, the owner of the vineyard can compensate for some of the loss of production resulting from these optimisations of the biological control of the plots.



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Keywords: Vineyards; biological control; bats; birds; grapevine moth; grey mould; acid mould, quality; image

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## HIGHLIGHTS

- Trees and hedgerows improve the habitat conditions for bats and insectivorous birds.
- It is observed that bats and birds will be more present in agroforestry vineyards, reducing the presence of grapevine moth and the occurrence of diseases such as grey and acid mould.
- Hedgerows may also help to isolate infested plots from healthy plots, slowing down the spread of pathogens and diseases.



Vineyard under mature trees  
La Ruche Qui Dit Oui

watch video

### FURTHER INFORMATION

This article details the launch of a study on the impact of trees on the presence of insectivorous birds and bats in Bordeaux vineyards.  
<http://revue-sesame-inra.fr/des-vignes-sous-laile-des-chauves-souris-vignoble-bordeaux>

The ARBELE project (in French) investigates the techniques and impacts of tree in herbivore livestock farms.

<http://idele.fr/presse/publication/idelesolr/recommends/casdar-arbele-larbre-dans-les-exploitations-delevage-herbivore.html>

This factsheet describes biological techniques for the control of grapevine moth in vineyards.

<http://ephytia.inra.fr/fr/C/7025/Vigne-Methodes-de-protection>

## ADVANTAGES AND DISADVANTAGES

# Experiments to confirm the efficacy of the approach

### Choice of species

Little information is available regarding the combination of tree and bat species and their efficacy against pests, but also crop auxiliaries. Additional work is necessary to better understand the interactions between trees, bats, auxiliaries, pests and crops.

The definition of the woody perennial objectives is crucial at the start of the project. Some tree species might provide a better habitats for bats than others. Shade, on the other hand, will be quickly obtained with fast-growing species like poplar. This quick growth will also shorten the period for production of an added value from sale of timber or wood.

### Compatibility between trees and vines

Nitrogen competition can occur between trees and vines ; a negative impact on yield (-35%) was noticed for vine rows closer than 5 metres to the trees. Therefore, a distance of at least 5 metres is thus recommended between the trees and the first vine rows. This will also facilitate the mechanisation of the vineyard.

Unpruned trees can also complicate the maintenance of the vineyards. Besides allowing machines to work in the vineyard, pruning allows the production of quality wood and a fair income at tree harvest.

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