How I implement IPM

Details of a holistic IPM strategy with low pesticide input in a European farm

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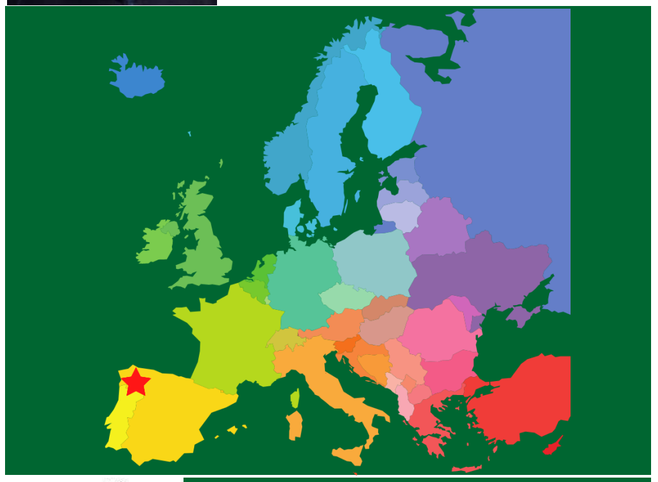
My farm

PEDO-CLIMATIC CONTEXT

- Sandy soil
- Predominant Atlantic Climate: rainy and mild temperaturas during the year
- High environmental humidity

MAIN PESTS

- Downy mildew (Plasmopara viticola),
- Powdery mildew (Erysiphe necator)
- Botrytis (Botrytis cinerea)
- Grape moth (Lobesia botrana)
- green mosquito



AGRONOMICAL CONTEXT

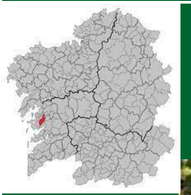
(crops, rotation, Utilised Agricultural Land…)

- Alvariño grape: native Galician variety
- 3 hectares of vineyards

SOCIO-ENVIRONMENTAL CONTEXT

(workforce, environmental issues, labels, specificities…)

- Vine training system, which restricts the mechanisation of the vineyard.
- Production associated with a winegrowers' cooperative and part of the Rías Baixas Designation of Origin, together with more than 5,000 winegrowers and more than 170 wineries.



OBJECTIVES AND MOTIVATIONS OF THE FARMER

(type of soil, climate…)

- Reducing the application of phytosanitary products as much as possible and to move towards viticulture with a lower environmental impact while maintaining economic viability.

My strategy

Chemicals and biocontrol

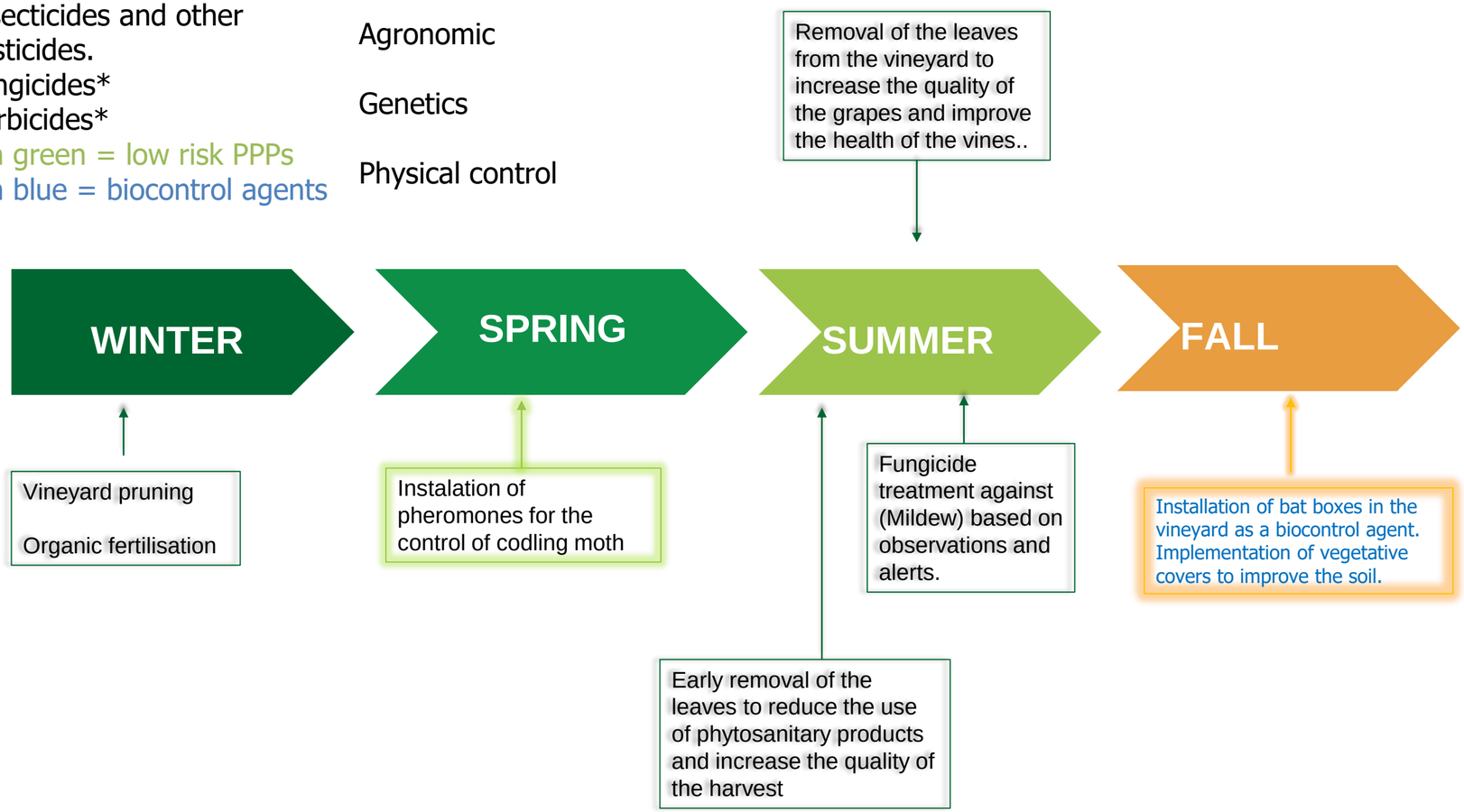
Insecticides and other pesticides.
Fungicides*
Herbicides*
*In green = low risk PPPs
*In blue = biocontrol agents

Alternative solutions

Agronomic

Genetics

Physical control



Legend ℕ **New solution** ~~**Solution**~~ **Abandoned solution** **Non systematic solution**

Key measures

- Gradual restoration of vineyards, removing cultivation in environmentally sensitive areas or implementing corrective measures such as "green screens", areas with vegetation cover and hedges that minimise the drift of phytosanitary products.
- Maintenance of inter-rows with mechanical means, eliminating the use of herbicides. Reduction of soil tillage, implementation of vegetal covers.
- "Technical" plant cover planting (nitrogen fixation, decompaction, etc.).
- Monitoring of pests such as downy mildew and powdery mildew by using platforms with prediction models and pest evolution for a more precise control both in the moment of application and in the use of products with less impact.
- Reduce the use of aggressive or more persistent phytosanitary products.
- Encourage the use of alternative products with less impact such as plant extracts, citrus oil, soya lecithins, etc.
- Reduction of the use of insecticides by alternative methods such as sexual confusion of the grape moth by means of pheromone diffusers and the placement of nest boxes for bats or the use of potassium soap.
- Change from chemical NPK fertilisation to a model of fertilisation by adding organic material.

My results

Evolution trend on the farm

Pests control

Very good	Medium	To improve
grape moth	Downy mildew	wood diseases
weeds	Powdery mildew	
	Botrytis	
	Green mosquito	

Evolution of use of pesticides

Very good	Medium	To improve
Insecticides	fungicides	Low risk of APP
Herbicides	biocontrol	

Sustainability indicators

Very good

- ↘ Use of products that are dangerous or toxic to the environment
- ↘ Use of chemical fertilisers
- ↗↗ Handling of dangerous or toxic products
- ↗↗ Overall satisfaction level of the winegrower
- = Workforce

Medium

- ↗ Workload
- = Work distribution throughout the year

To improve

- ↗ Energy costs
- ↗↗ Complexity of the non-mechanised harvesting process
- ↗ Awareness and knowledge of new practices

Key conclusions

Agronomic issues,
Soil management using organic fertilisers and technical cover crops will reduce the dependency on chemical fertilisers.

Economic,
Cost reduction is achieved due to less use of chemicals and cover crop management while maintaining crop productivity.

- Investment in sprayer upgrades through correct calibration and the use of anti-drift nozzles.
- Implementation of green screens to minimise drift to sensitive areas (from a social or environmental point of view).
- Reduction of phytosanitary residues on the grapes at harvest time by reducing the use of more persistent products and anticipating the last phytosanitary treatment before the grape harvest.
- Generation of "own compost" for the fertilisation of the vineyard, based on own and nearby resources such as plant remains from the forest.
- Use of green manures and plant cover to improve soil stability and structure.

Environmental
Increase awareness and dissemination of more environmentally friendly techniques.

Social
Increase environmental and economic sustainability, which will have an impact on the active population in rural areas.

Legend

In green = positive trend
In red = negative trend
In black = comparable

= Comparable

↗ Increase
↘ Decrease

↗↗ Significant increase
↘↘ Significant decrease

Environmental indicators
Social indicators
Economical indicators

Our feedbacks

A change of mentality is needed, adopting a global approach that allows us to discover and adopt new measures to protect the vineyard and its environment while maintaining economic profitability.

Joaquín Martínez Rodiño (España)

Galician viticulture is highly conditioned by climatic conditions: high humidity and mild temperatures that favour the appearance of fungal diseases such as mildew, which also requires a great effort in terms of sanitary control. Despite this, winegrowers such as those who make up the IPMWorks group are committed to alternative methods.

Ángela Muñiz Varela (España)

Main objective of the farmer:
Reduce the environmental impact of agricultural activity while maintaining crop profitability.

Advantages of the system: Lower environmental impact, reduction of the use of chemical synthesis products such as fertilizers and pesticides.

Limitations: climatic limitations due to humidity and high precipitations in the region.

Opportunities for future developments
Development of "environmentally friendly" agriculture, reducing its impact to a minimum, encouraging biodiversity and multi-cropping.
Promoting generational replacement through the economic and social sustainability of agricultural activity.
New treatments for fungal diseases with a natural base and greater adoption of technological solutions that facilitate the work of farmers.

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