



VITIRAMA: A program to characterize disease susceptibility in French ampelographic collections

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The program (2018-2020) deals with the tolerance to major diseases directly impacting grape production on a large panel of *Vitis vinifera* and hybrids varieties. Our aim is to better characterize the genetic resources in the Grapevine Resources Center of Vassal-Montpellier and the main French ampelographic collections for their exploitation in the short and medium term, either as alternative varieties or as genitors

Downy mildew

Plasmopara viticola

Powdery mildew

Erysiphe necator

Grey mould

Botrytis cinerea

Dead-arm disease

Phomopsis viticola

Esca - BDA

Several fungi

Eutypa dieback

Eutypa lata

Erinose mite

Colomerus vitis vector for GPGV

Source : INRA Unité Expérimentale du Domaine de Vassal 2018

Objectives

Organise already existing data and field phenotype diversified genetic resources

Make available a synthetic knowledge to viticulturists and nurseries, breeders and the scientific community

Genetic pool	Samples	Number
Cultivated <i>V. vinifera</i>	French catalogue ; 279 diversity panel * ; others	815 cultivars
Interspecific hybrids	French catalogue ; new breeding ; others	229 cultivars
Wild <i>V. vinifera</i> and other <i>Vitis</i> sp.	Representative diversity	202 accessions

* Nicolas et al. (2016)

ACTIONS

1 Disease phenotyping in repository fields

- Develop a common phenotyping protocol
- Phenotype whole plants at the relevant stage
- Gather existing data

2 Database integration

- Convert and format existing data
- Integrate bibliography and passport data
- Submit new CropOntology traits

3 Statistical analysis

- Use mixed statistical models
- Account for known confounders (e.g. spatial)
- Include all available genetic information

4 Methods and data sharing

- Phenotyping protocols, CropOntology, stat. scripts
- Datasets by disease and by sample
- Scientific communication

Expected outcomes

- Document and advise growers about variety potential
- Help breeders design their mating schemes taking into account original germplasm less susceptible to several pathogens
- Establish study panels for fundamental research on the genetic determinisms related to main disease resistance traits

VITIRAMA: an original and innovative approach

A rich panel of genetic resources studied for the first time for their tolerance to various diseases

Combine existing data with new observations

Mixed statistical models

Data workflow from the field to open databases