Geographical area extension of *Drosophila suzukii* in Bordeaux vineyards.

Lionel Delbac, Raphaël Rouzes, Adrien Rusch, Denis Thiéry
Bordeaux vineyards surveyed

Type of wine: red wine
Dominant cultivars: cabernet-sauvignon

Type of wine: white and red
Dominant cultivars: sauvignon-blanc and merlot

Type of wine: red
Dominant cultivars: merlot

Type of wine: white and red
Dominant cultivars: sauvignon-blanc and merlot

Type of wine: sweet white
Dominant cultivars: sémillon
Historical analysis of *Drosophila* and Sour rot in Bordeaux vineyards

Until 2011, the main fruit fly species was *Drosophila melanogaster*, and the side species was *D. simulans*.

Severe sour rot diseases (associated with *Dm*) occurred mainly in (Graves and Sauternes) except once 20 years ago in Médoc.
2011 = First occurrence of adults of *Drosophila suzukii* on grapes.

**FIRST OCCURRENCE OF DROSOPHILA SUZUKII IN THE SAUTERNES VINEYARDS**

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**What was the evolution of this species in time and space in the Bordeaux vineyard?**

*Adults Ds* detected in *Lobesia botrana* survey with food traps

Not found in grape clusters
Survey tools used for *D. suzukii* surveys

Traps filled with apple molasses diluted in water (Thiéry et al., 2006) hanged in the grapes foliage.

*Traps were initially used against *L. botrana* female, presence/absence of *D. suzukii* were referenced by technicians or advisors during summer.*

Bunches collected in the plots close to harvest time

One cluster per box placed in a climatic chamber

>>> checked daily for adult emergence
2012

Food traps

Capture of some adults *D. suzukii*, but area extension to the north from 2011

(6 positive traps/9)

Emergence from clusters

Dominance of the endemic species *Drosophila melanogaster*

No *D. suzukii*
2013

Food traps

Presence of adults of *D. suzukii*

(6 positive traps/6)

Emergence from clusters

*Ds* in 13% of the surveyed vineyards, All on the left bank of Garonne.

(3 positive plots/23)

Libournais 9 plots with no Ds

Entres-Deux-Mers 11 plots with no Ds
2014

Food traps

Presence of adults of *D. suzukii*

(16 positive traps/22)

Emergence from clusters

Presence of *D. suzukii* on bunches

(46 positive plots/53)

87% of positive plots

All the subregions concerned
Emergence from clusters

- % of plots with *D. suzukii*
- % of *D. suzukii* /other Drosophila
- *N. D. suzukii*/bunch

2014

- 2014%
- 14%
- 12%
- 8/other plots
- 8/other plots
- 8/other plots
- 8/other plots
- 8/other plots
2014

% sour rot severity on collected clusters
Survey of winegrowers: health situation in the vineyards in 2014

Since the unusual presence of sour rot in vineyard, French Ministry of Agriculture initiated a survey on the regional health situation

The questions were:
- Do you have any symptom of sour rot in your vineyard?
- If yes, what is the frequency of bunches attacked?
- What is the severity of the sour rot on bunch?
- Has the presence of *D. suzukii* been confirmed by technicians?

Survey was published by the regional agricultural warning services

112 Responses concerning Bordeaux area were received.
Survey of winegrowers: health situation in the vineyards in 2014

63% of positive answers  All the subregions concerned

% presence of Sour rot  % Sour rot frequency on bunch  % Sour rot severity on bunch

Survey of winegrowers: health situation in the vineyards in 2014

63% of positive answers  All the subregions concerned
Survey of winegrowers: health situation in the vineyards in 2014

% *D. suzukii* confirmed in plot
Current situation of Drosophila and Sour rot in Bordeaux vineyard

All Bordeaux subregions are now concerned by *D. suzukii* on white and black cultivars.

*D. suzukii* presence is concomitant with sour rots symptoms on bunch.
Geographical area extension of *Drosophila suzukii* in Bordeaux vineyards.

**Take home message**

- Well established in the Bordeaux vineyards since 2011
- Extends its geographical area to the north
- Proportion *Ds/Dm* increasing
- Bunches damaged in almost all production areas
- Black cultivars attacked more by *Ds* than by *Dm*
- We suspect a link with sour rot on black cultivars

Is *D. suzukii* a causal agent of sour rot (like *D. melanogaster*)?  
Is *Ds* going to be a permanent problem in vineyards, and how will interactions *Ds-Dm* will evolve?  
Will competition occur?  
What larval parasitoids of *Dm* (e.g. *L. boulardii*) are going to do?