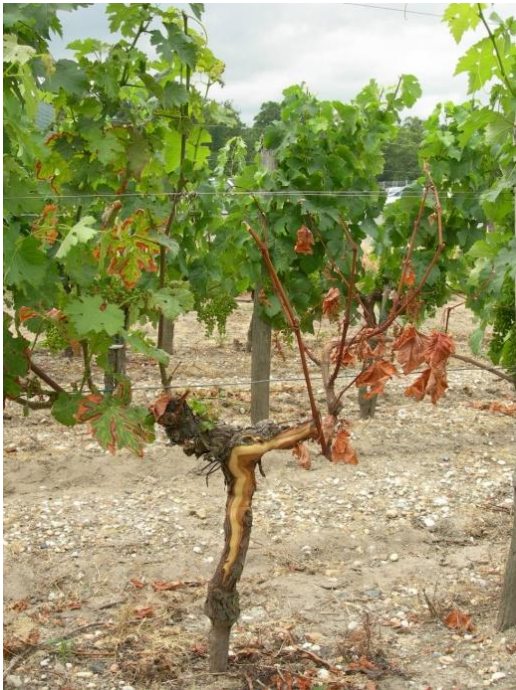


## Grapevine trunk diseases : foliar and wood symptoms



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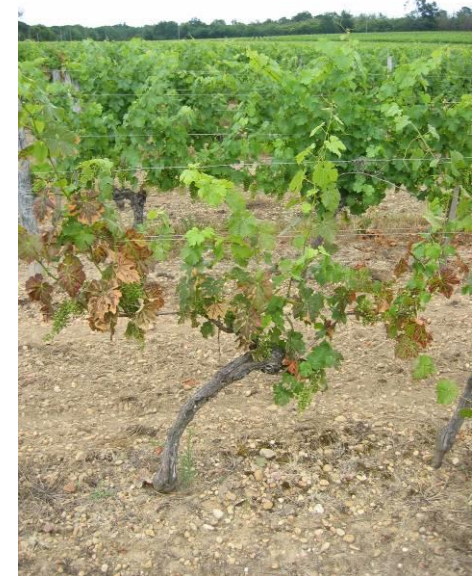
*ISVV, Université Bordeaux, France*

# 1 – Eutypa dieback



# 2 – Botryosphaeria dieback

NO typical leaf symptoms



# 3 – Esca disease

# Esca = inner necrosis variable in shape and discoloration

## Central necrosis



White rot

## Sector-shape necrosis

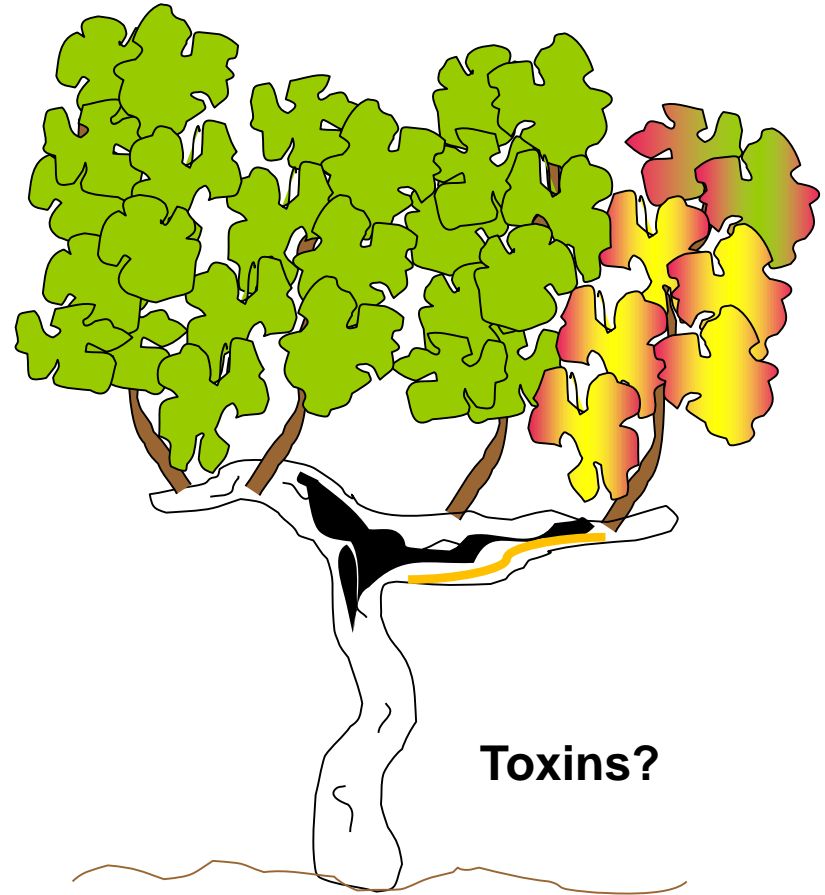


Larignon, 2004

Mixed necrosis → Foliar symptoms (Maher *et al.*, 2012)

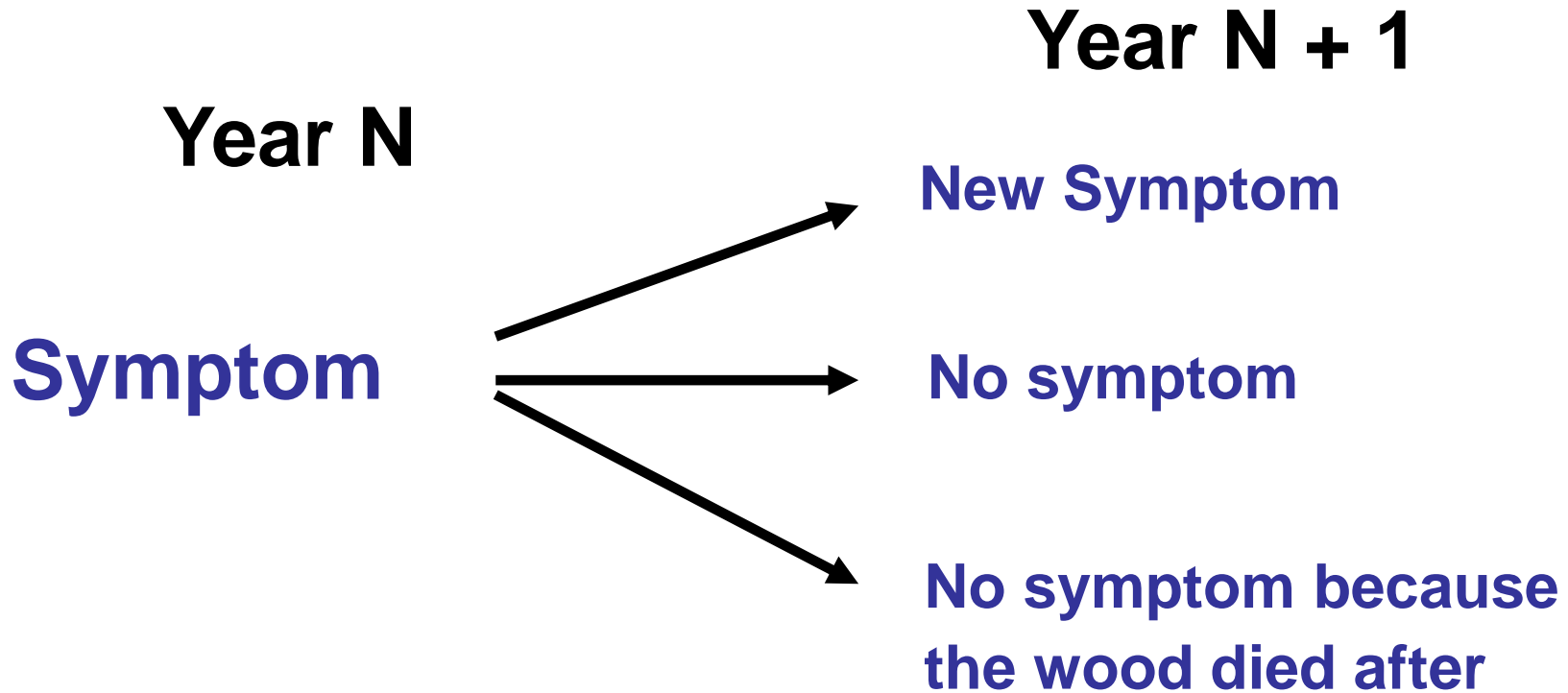


**Foliar symptoms are often erratic,  
they usually precede a wood damage (spur, cordon, trunk)**



**Water transport disruption?**

What happens with a vine showing leaf symptoms?



According to the year and according to the development of wood damage, the number of vines which are able to show symptoms cannot be the same

**From our (CEB group) experience:**

**Leaf symptoms are a good indicator of the presence of the disease**

**but not an accurate indicator of impact**

**We consider that all symptoms must be recorded**

## Example of damage caused by esca in Bordeaux area

Vineyard	Cultivar P.G. Date de plantation Conduite	Year	Nb of vines examined	% of esca affected vines	
				Trunk	Leaves
Cénac Entre-2-Mers	Cabernet Franc 3309C 1988 <b>Guyot, short cordons</b>	2004	500	31.4	18.6
		2005	500	38.8	16.8
		2006	550	48.2	25.6
Latresne, Entre-2-Mers	Cabernet Franc/ Fercal 1987 <b>Lyre, long cordons</b>	2004	1072	-	45.4
		2005	500	9.4	35
		2006	500	9.6	55.6

Training systems with long arms decline less rapidly than those with short arms  
but may exhibit more leaf symptoms and longer

# Recording Esca symptoms

## **METHOD:**

**Rationale = to monitor all wood and leaf symptoms (method CEB 261) in order to get an history of each vine that is individually observed year after year**

**all ratings are done by comparison with the original vines**

**4 replicates are used**

**50 vines per replicate, when the treatment is applied on vines showing symptoms  
waiting for a leaf symptom resilience in the treated)**

**100 vines per replicate in other situations**

**waiting for a difference between treated and control  
(wood or leaf symptoms)**



# Ranking index to assess the esca impact

General canopy status on the year Y		Possible development in Y+1
Code	Meaning	Code
V	Original vine without any visible damage (leaves and wood)	V, S, APO, DA, R, M, A, CP
S	Original vine showing foliar symptoms (whatever their severity) (S1,2,3,4,5)	V, S, APO, DA, R, M, A, CP
APO	Original vine showing a widespread or complete wilting due to esca (apoplexy)	APO, DA, R, M, A, CP
DA	Original vine showing a part of dead wood	DA, R, M, A, CP
R	Re-trained or re-newed vine	R, M, A, CP
M	Dead vine	M, A, CP
A	Absent vine	A, CP
CP	Replanted or re-grafted vine, young vine, all vine planted after the initial planting date	CP, M, A

# Some examples of field data

## History of some vines

<b>Date</b>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>
<b>Vine 1</b>	<b>0</b>	<b>S2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Vine 2</b>	<b>0</b>	<b>S2</b>	<b>0</b>	<b>S1</b>	<b>DA</b>	<b>U S3</b>
<b>Vine 3</b>	<b>S3</b>	<b>APO1</b>	<b>DA</b>	<b>DA</b>	<b>DA</b>	<b>DA</b>
<b>Vine 4</b>	<b>S3</b>	<b>S4</b>	<b>DA</b>	<b>DA</b>	<b>DA + APO1</b>	<b>M</b>
<b>Vine 5</b>	<b>DA</b>	<b>DA</b>	<b>DA</b>	<b>DA S1</b>	<b>BM APO1</b>	<b>A</b>
<b>Vine 6</b>	<b>0</b>	<b>S1</b>	<b>Weak</b>	<b>DA, S4</b>	<b>M</b>	<b>CP</b>

REFERENCES: P. Lecomte, J. Grosman, 2016, Méthode CEB 261, Méthode d'essai d'efficacité pratique de préparations phytopharmaceutiques destinées à la lutte contre les maladies du bois de la vigne.