

# IN SEARCH OF PRACTICES THAT REDUCE THE NEGATIVE IMPACT OF GRAPEVINE TRUNK DISEASES IN EUROPEAN VINEYARDS

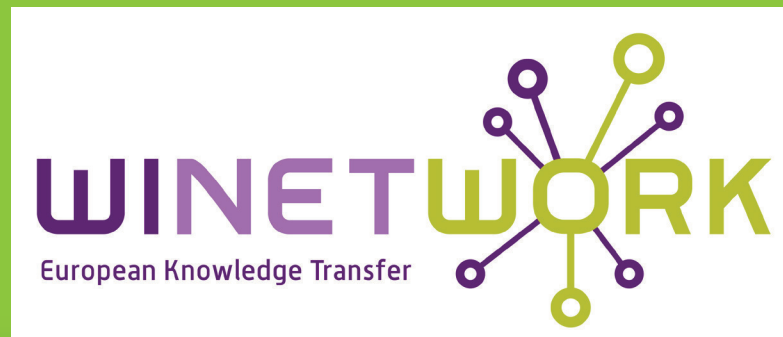
K. Diklić<sup>1</sup>, M. Bubola<sup>1</sup>, D. Poljuha<sup>1</sup>, G. Trioli<sup>2</sup>, F. Prezman<sup>3</sup>, E. Serrano<sup>3</sup>

(1) Institute of Agriculture and Tourism, Karla Huguesa 8, 52440 Poreč, Croatia

e-mail address: dkristina@iptpo.hr

(2) Vinidea srl, Piazza 1 Maggio 20, 29028 Ponte dell'Olio, Italy

(3) The French Institute for Vine and Wine, South West, Brames-Aïgues, 81310 Lisle/Tarn, France



Grapevine trunk diseases (GTD) involve several fungal diseases and numerous fungal species that induce wood deterioration and lead to reduced yield and grape quality. Common and innovative control practices that winegrowers have recognized as efficient in overall GTD management were identified and collected within WINETWORK project.

In order to answer the requirements of winegrowers in GTD management and collect information significant for scientific research, a survey of 219 interviews was conducted in 10 European winegrowing regions. The questionnaire was compiled of questions that collected information on general viticultural production and specifics on GTD control.



Preventive disease management, prior symptom to development, is essential for maintenance of a long-term productive vineyard. Infections that primarily occur through pruning wounds, on upper parts of grapevine, colonize progressively lower parts of the trunk.

## GOOD PRUNING PRACTICES APPLIED BY WINEGROWERS

Traditional training systems and pruning methods are primarily oriented to the achievement of high yields and grape quality, but impact of training systems on diseases, such as fungal trunk diseases, was widely neglected until recently. Factors related to pruning such as training system, weather condition during pruning period, number and size of pruning wounds, location and accumulation of pruning wounds, wound age, cane/spur length, period of pruning, wound protection and pruning debris management potentially contribute to the risk of infections with GTD fungi.

### MANAGEMENT OF POTENTIAL INOCULUM

- Planting healthy and high quality planting material
- **Removal** of sources of fungal inoculum present on wood of **symptomatic and dead vines**
- Removal of pruning debris and dead vines **briefly after pruning**
- **Pruning during dry weather** contributes to reduced number of infections on recently pruned wounds due to lower fungal activity
- Disinfection of pruning shears is not of key importance in GTD control

### PREVENTION OF NEW INFECTIONS

- **Early adoption of pruning wound protection** after vineyard establishment reduces GTD incidence
- **Application of protectants on pruning wounds** (physical, biological, chemical), in a short interval after pruning is essential in GTD prevention
- An increased interest in application of *Trichoderma* has been observed in European winegrowing regions
- **Delaying pruning** close to budburst, when the risk of pruning wounds infection is minimized, reduces GTD spread

### PRUNING ORIENTED TO GTD CONTROL

- Influence of training systems and pruning methods on fungal diversity and wood colonization has been evaluated in recent scientific researches
- It has been *assumed* by European winegrowers that **Guyot-Poussard** pruning minimizes infections due to small-sized and reduced number of pruning wounds in comparison with traditional Guyot or spur-pruned vines
- **Increased spur or cane length** reduces fungal penetration into perennial wood
- **Double pruning** is a modification of late pruning implemented in preventive GTD management

## PRACTICES APPLIED BY WINEGROWERS ON SYMPTOMATIC VINES

Infections by the fungal spores primarily occur through pruning wounds on upper grapevine parts, but overtime progress of GTD fungi leads to colonization of lower sections of grapevine trunk. Limited efficiency of available control strategies interferes with successful eradication of GTD fungi. Practices like trunk renewal, trunk cleaning, re-grafting, replacement of infected vines, foliar application of bioactivators, fungicide trunk injections are applied after symptoms development and potentially contribute to vineyard longevity.

### TRUNK RENEWAL

- Trunk renewal is a practice that implies removal of infected wood on symptomatic vines, by cutting portions of infected cordons or trunk, followed by re-training of a new vine from watershoots developed on the remaining trunk portion
- Trunk renewal is a common practice applied in management of several GTD in European winegrowing regions
- Practice efficiency is variable and according winegrowers' experiences it provides better control of Eutypa dieback in comparison with other GTD



### TRUNK CLEANING (VINE SURGERY)

- Trunk cleaning, also known as vine surgery, is an old practice that has been recently reapplied and modified for the requirements of GTD management
- Trunk cleaning involves the removal of symptomatic wood, represented by necrosis or white rot that has developed due to fungal activity
- Symptomatic wood is related to fungal activity and it is frequently associated to pruning wounds
- Decayed wood is removed through precise scraping with a small-sized chainsaw, maintaining the functional grapevine vascular tissue



*\*Only the most significant and frequent practices have been described. More information is available on WINETWORK project 'Knowledge reservoir'.*

