

PRUNING PRACTICES TO BE AVOIDED

Increased number of **large wounds**, wounds accumulated on upper part of vine trunk or wounds positioned in level with the perennial wood



'Return cut' made in old vineyards to replace the training system, to lower vine height or to remove large portions of cordons that have no spurs developed



Pruning debris and wood debris from **symptomatic/dead vines** contributes to GTD fungi spread



Pruning debris left in vineyard

Fomitiporia fruiting body (*Esca*)

Eutypa fruiting body

Additional informations:

WINETWORK KNOWLEDGE RESERVOIR

www.winetwork-data.eu

ESCA AND GRAPE TRUNK DISEASES

GOOD PRUNING PRACTICES



Pruning wounds represent a significant **point of entry** to the fungal spores and colonization of grapevine trunk diseases, while **pruning debris**, dead and symptomatic vines are a source of **fungal inoculum**. Implementation of **preventive disease management** needs to be adopted **briefly after vineyard establishment** and prior symptom development. One of the **principal mistakes** in grapevine trunk diseases (GTD) management is application of control strategies only **after leaf symptoms development**.

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, cane and spur length of pruned vines, pruning wound protection, late-winter pruning, minimal or double pruning, pruning debris management contribute to the risk level of infections with GTD fungi.



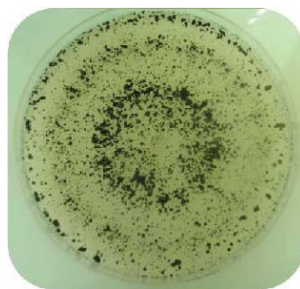
Cordon cross-section with visible internal GTD symptoms developed under pruning wounds.

PRUNING PERIOD

Weather conditions are significant for release and dispersal of spores of GTD fungi and **pruning** should be conducted during **dry periods** when the risk for new infections is lower. When possible, pruning is conducted either in **early autumn** or **late winter** (as much as possible close to bud burst), when temperatures are higher, in order to **minimize new infections and improve wound healing**.

PROTECTION OF PRUNING WOUNDS

- Pruning wound **protection**, implemented **prior foliar symptoms development**, is essential in GTD control
- Pruning wound protection needs to be **applied briefly after pruning** in order to minimize the development of new infections
- **Mastics and fungicides** (biological and chemical) are **efficient** only as **preventive treatments** that reduce new infections
- Wound treatments need to be **applied on all wounds** made by pruning or mechanical damage (cordon and trunk)
- **Chemical fungicides** have an immediate effect on wound protection, but the major limit is the narrow period of their persistence and activity
- **Trichoderma species** require time for wound colonization and are able to protect pruning wounds up to 8 months after treatment
- **Spray application** of pruning wound protection is efficient equally as treatments applied by painting when high water volumes are used



PRUNING ORIENTED TO GTD MANAGEMENT

It is **assumed** that training systems and pruning methods may **minimize** the **infections** and penetration of GTD fungi into perennial wood if the pruning is aimed to lower the number and size of new **pruning wounds**, to **avoid “return cuts”** (usually applied to retrain vines in older vineyards) and to **increase spur/cane length**.

GUYOT-POUSSARD

Guyot-Poussard is a training system that **preserves** grapevine **sap routes** from one year to another due to a type of pruning that positions wounds primarily on the upper part of the cordon. **Guyot-Poussard potential benefits** are listed, but scientific results are still missing:

- Reduced size and number of pruning wounds minimizes the possibility of new infections with GTD fungi
- ‘Return cut’, usually applied in older vineyards to lower the trained vines, and large wounds are avoided
- Preserved sap routes contribute to a more balanced grapevine physiology and lower symptoms development



DOUBLE PRUNING

Double pruning is a modification of **late pruning** (delays pruning until March), implemented in preventive GTD management in spur-pruned vineyards, to reduce infections with GTD fungi.

Double pruning involves two operations:

- (1) non-selective pre-pruning and
- (2) final pruning of the training system:

- **Mechanical pre-pruning** on uniform height of approximately 30 - 45 cm above the cordon,
- **Pruning** on the desired **training system**, conducted in later winter, removes the infected wood and minimizes new infections.



MANAGEMENT OF FUNGAL INOCULUM

Fungal inoculum represents a **potential source of new infections** and it may be found on vines with wood/foliar symptoms.

GTD fungal inoculum is present on necrotic stems, leaves, desiccated bunches, under the bark of perennial wood (trunk, cordon), dead wood and pruning debris.

Sources of infection, like pruning debris and symptomatic/dead vines, should be **removed** from vineyard **promptly** to prevent development of new infections.