

Grapevine pruning: some principles

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Pruning allows to the management of yield per vine (or per m²) by controlling the number of latent buds (i.e. winter buds which bear the inflorescence primordia).

While pruning, some basic principles need to be considered for grapevine sustainability:

1. To respect the sap flows (xylem and phloem) by positioning the pruning wounds always (and when possible) on the same side of the arms and spurs (cordon pruning). For spurs it is possible to alternate the wounds to allow vertical spurs (Figure 1)
2. For cane/Guyot pruning to avoid to form a willow head (Guyot/cane pruning) (Figure 2).
3. To avoid creating dead zones (desiccated cones) within the perennial organs (trunk, arms, spurs...) by avoiding cutting close to the wood (Figures 3 & 4).
4. Therefore, in wood older than 1 year, a portion of wood should be left while pruning (the length should be 1,5 or 2 times the diameter of the pruned organ) as showed by figure 5.
5. The consequence could be the development of the basal buds which will require some extra work by cleaning/removing the issued growing shoots in spring.
6. The general aims are
 - i) to avoid the increase of necrotic-dead wood/tissues over years;
 - ii) to maintain the vascular system (xylem-phloem) operational.
7. It is also recommended for the two buds' spur to cut just below the third winter bud on the cane to let a part of internode long enough to avoid the necrosis of the tissue and of the winter bud located below the wound (figure 6).

These pruning objectives should help:

- a) To achieve more homogeneous budbreak and primary shoot development & therefore homogeneous vines.
- b) To achieve a better fruit zone microclimate (depending on the vegetative expression/vigour of the vines).
- c) to avoid wood diseases propagation (Esca, *Botryosphaeria dieback*...) which is one of the goals of gentle pruning (taille "non mutilante").

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More in:

Faúndez-López P., Gutiérrez-Gamboa G., Moreno-Simunovic Y., (2021). The role of diaphragm as a natural resistance to the necrosis produced by pruning cuts, IVES Technical review, DOI: <https://doi.org/10.20870/IVES-TR.2021.4817>

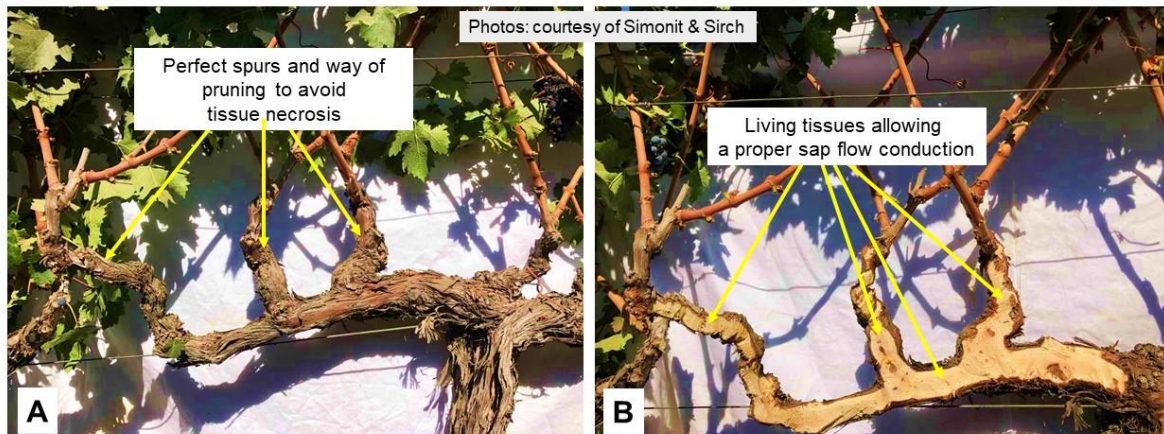
Lecomte P., Diarra B., Boisseau M., Weingartner S., Rey P., (2021). Preventing ESCA in *Vitis vinifera* by proscribing vine training systems or mutilating pruning methods, IVES Technical Reviews, DOI: <https://ives-technicalreviews.eu/article/view/4734>

Simonit M., (2015). Guide de la taille Guyot, Editions France Agricole.

Simonit M., (2018). Guide le la taille Cordon, Editions France Agricole.

Sicavac, (2015). Manuel des pratiques viticoles contre les maladies du bois, BIVC, Sicavac Centre-Loire, Imprimerie Paquereau, ISBN 978-2-37006-000-6.

Example of a proper Cordon pruning respecting the sap flow conduction, according to Simonit & Sirch method



(A) The photo is showing a proper way to prune a Cordon respecting the sap flow conduction by avoiding wood/tissue necrosis (B) at the spur and arm levels.

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Figure 1 : Example of proper spur pruning respecting the sap flow of the arm and the spurs.

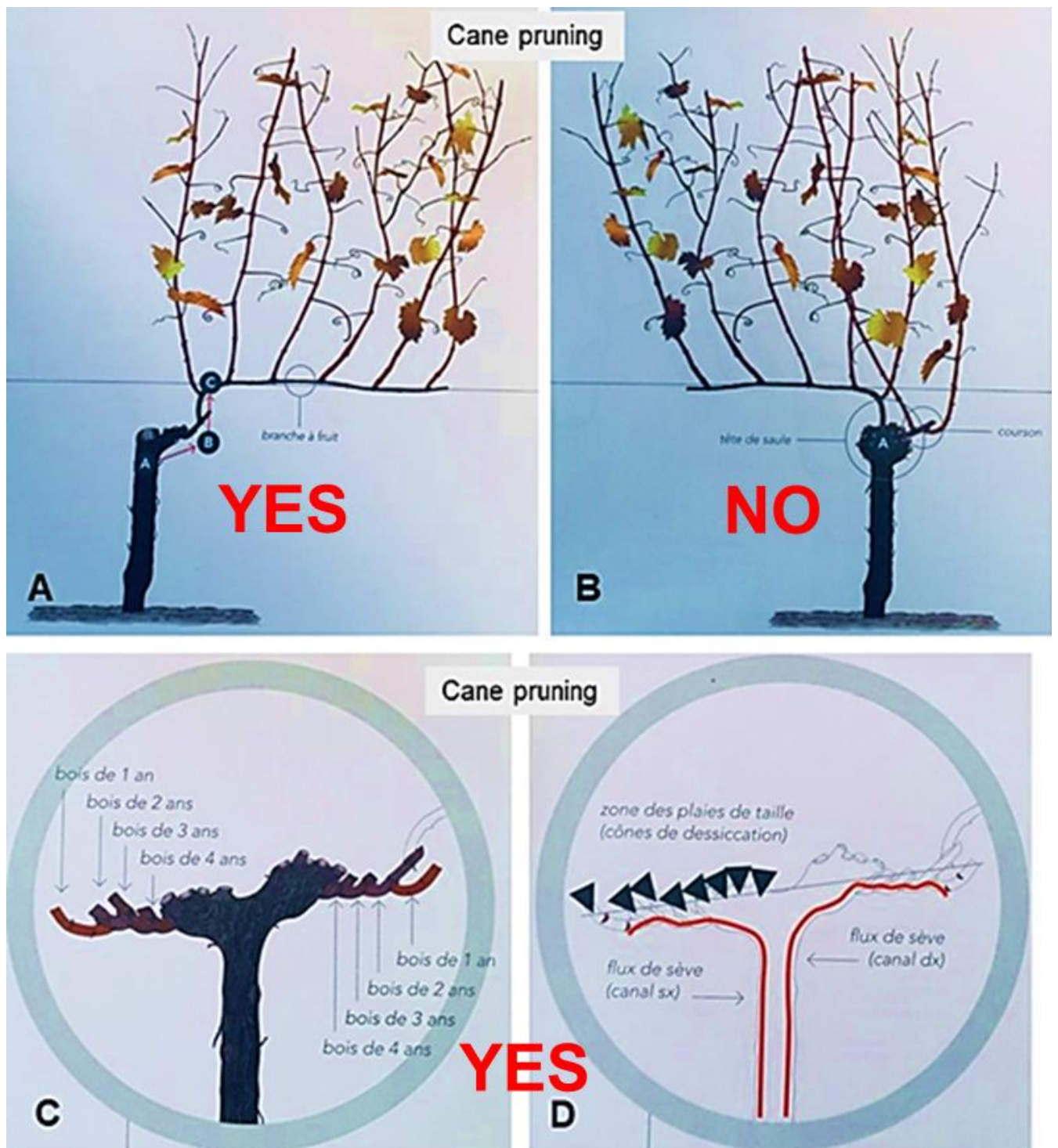


Figure 2: For cane pruning it is recommended to avoid the formation of a willow head (a, c, d), in order to respect the flow of sap and avoid tissue necrosis at the level of the "head" (b).

About gentle grapevine pruning: some principles
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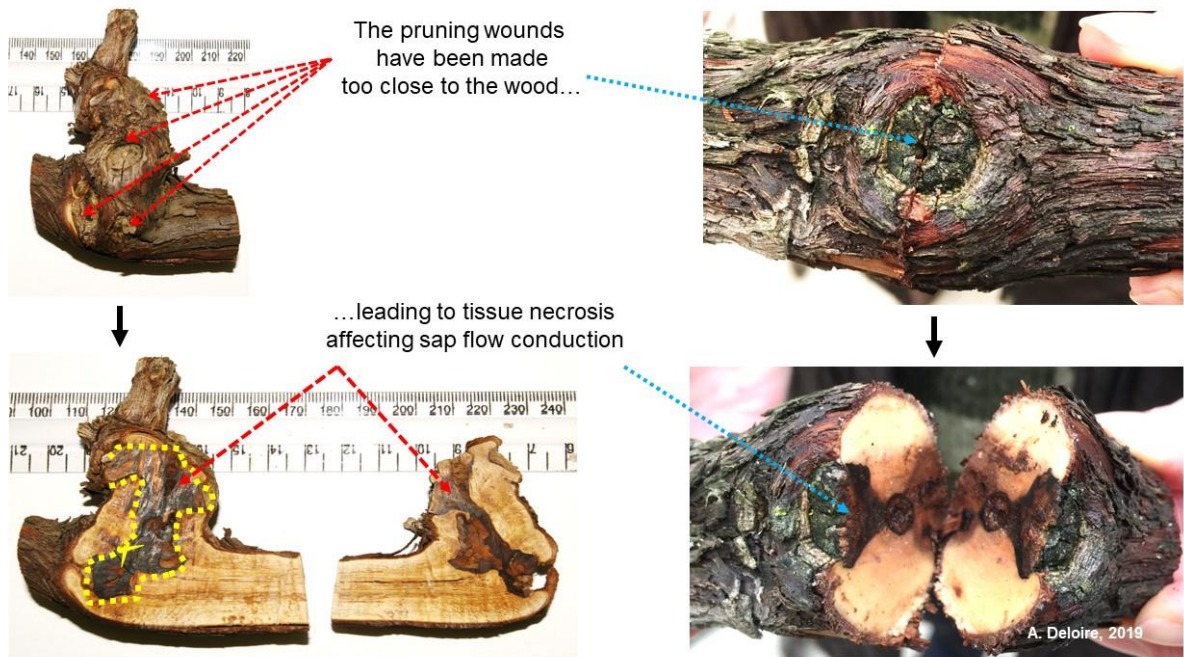
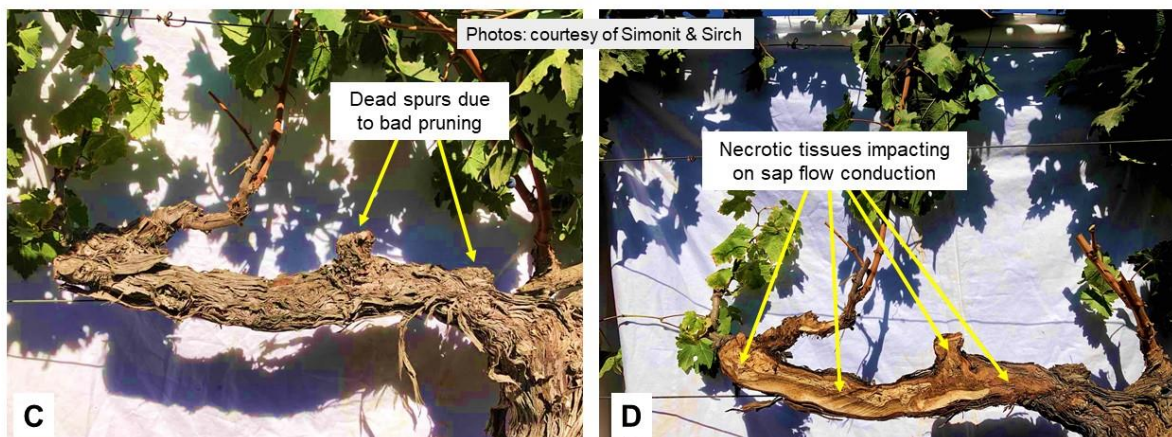


Figure 3: Example of tissue necrosis due to pruning, which could affect the xylem and phloem sap flow.

Example of inappropriate Cordon pruning inducing wood necrosis that will interrupte or reduce sap flow conduction



(C) The photo is showing necrotic/dead spurs on a Cordon due to inappropriate/bad pruning.
D) Bad pruning is inducing wood/tissue necrosis at the spur and arm levels that will impact on sap flow conduction and on vine sustainability

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Figure 4: Example of inappropriate spur pruning on a cordon which led to tissue necrosis of the arm and the spurs.

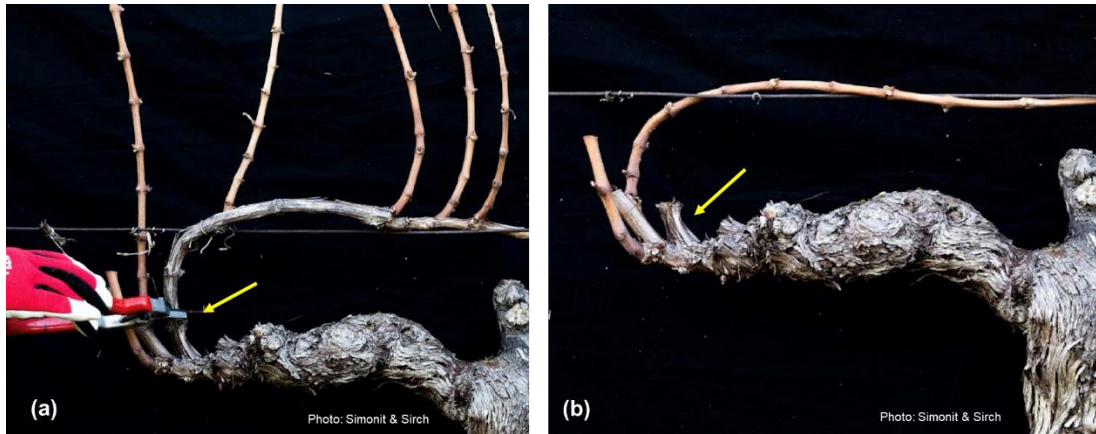


Figure 5 (a, b): Example of proper way of cutting wood older than 1 year : a portion of wood should be left while pruning (the length should be 1,5 or 2 times the diameter of the pruned organ).



Figure 5: To preserve the diaphragm of the winter bud in position two it is recommended to cut the cane just below the bud number three limiting the desiccation of the internode which is just below and protecting the diaphragm.