



# Empirical or rational truffle cultivation ? It is time to choose

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Up to now truffle cultivation methods were based on processes applied in France by our ancestors during XIX th Century and up to the first world war, as well as noting the conditions under which the fungus developed spontaneously and its fruiting.



The rational methods are developed from scientific knowledge from the biology of the fungus and its host.

Basic principles to take into consideration :

1 - A good soil preparation before planting





2 - A intensive wedding around truffle plants to avoid competition from herbaceous plants (water)



3 - It must be carried out early in the season, manually or with agricultural adapted equipment (discs, not hooks), aside of the tractor





#### 4 - A work differential soil



5 - Get a soft and airy ground around truffle trees

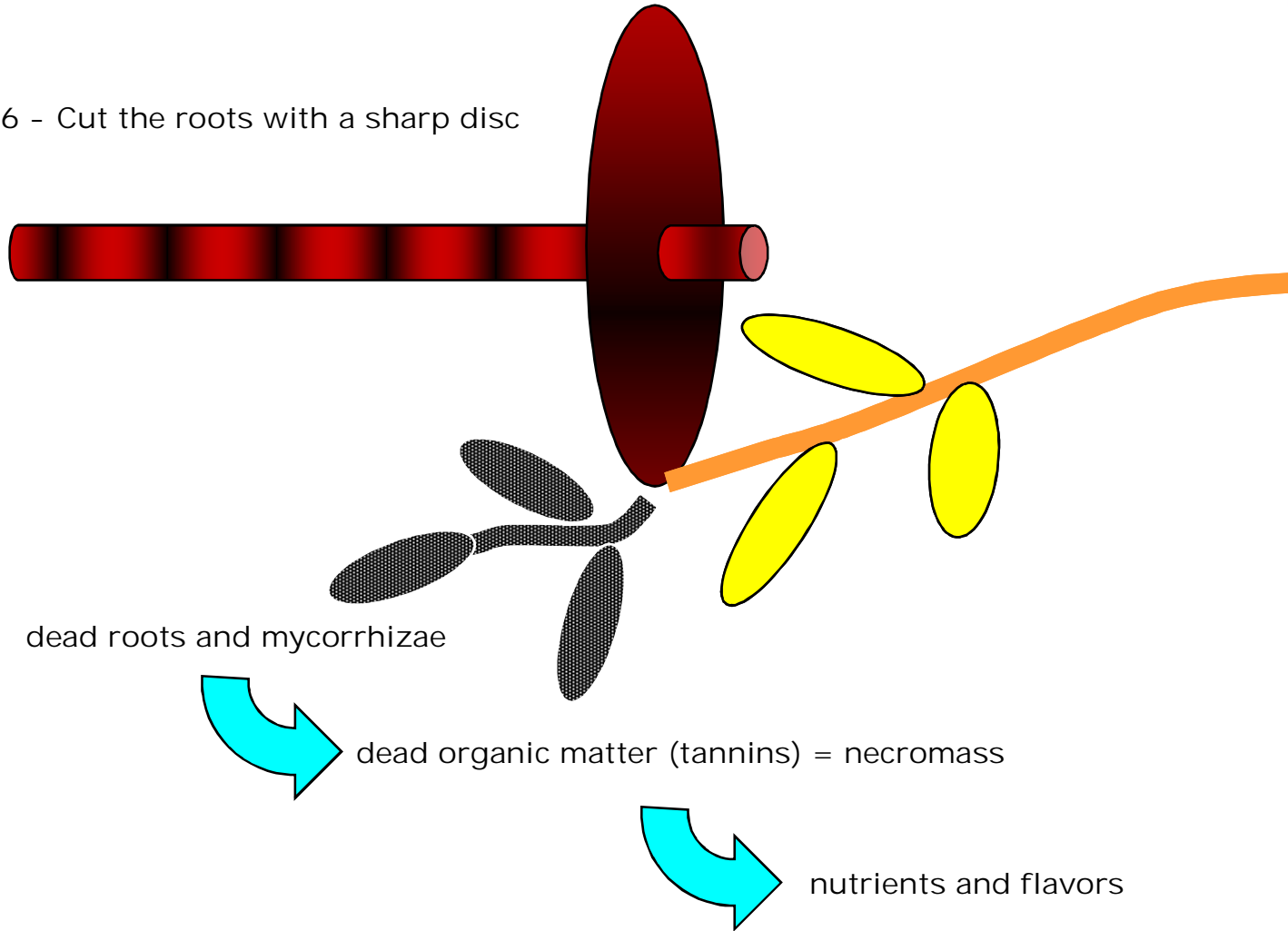


## 5 - Work the soil in depth





6 - Cut the roots with a sharp disc



dead  
root

penetration into the dead root

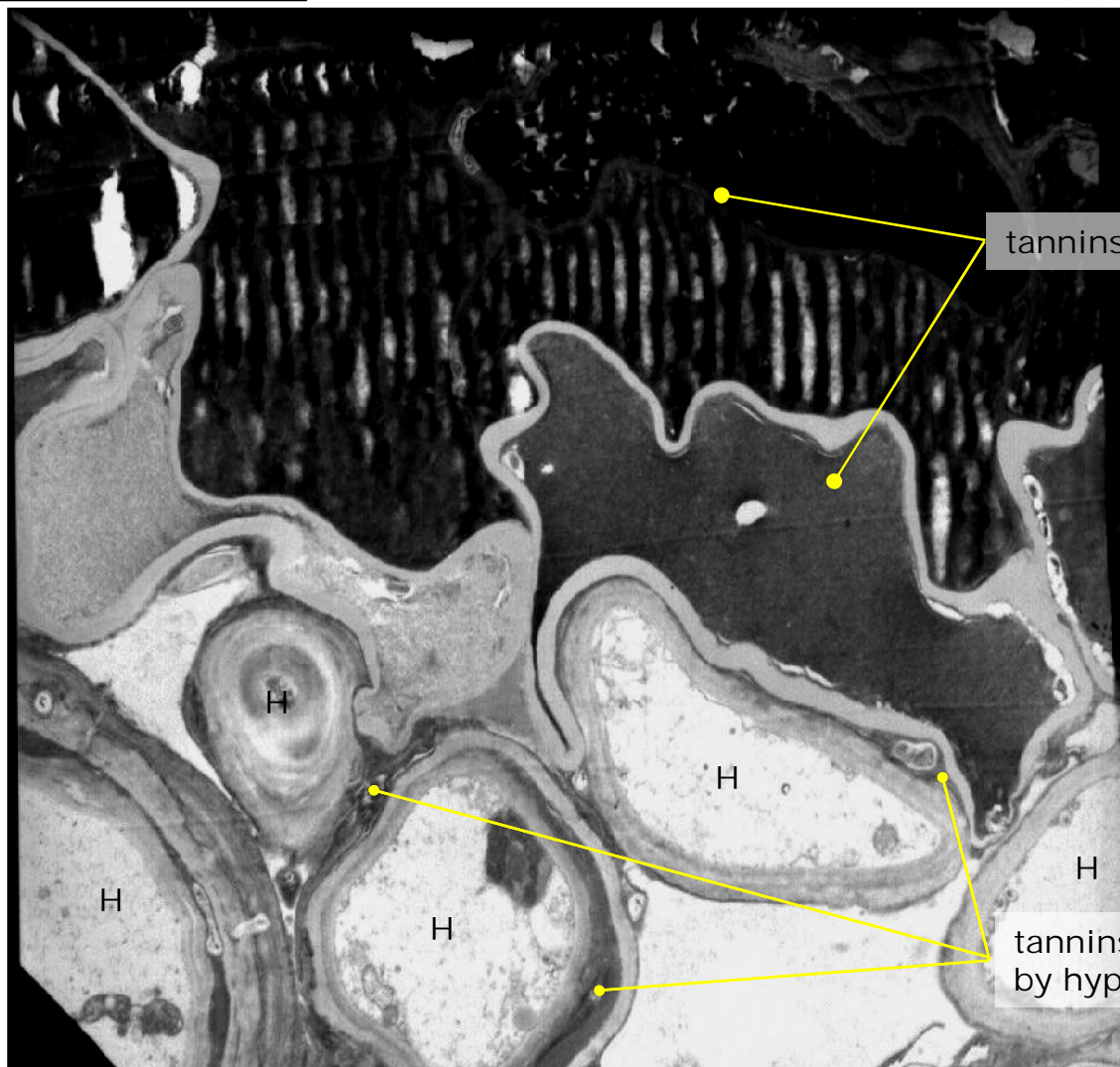
observation  
area of the next  
image with TEM

emerging hyphae of surface of a young truffle

Transmission electron microscopy

0,01mm

dead root



tannins not yet degraded

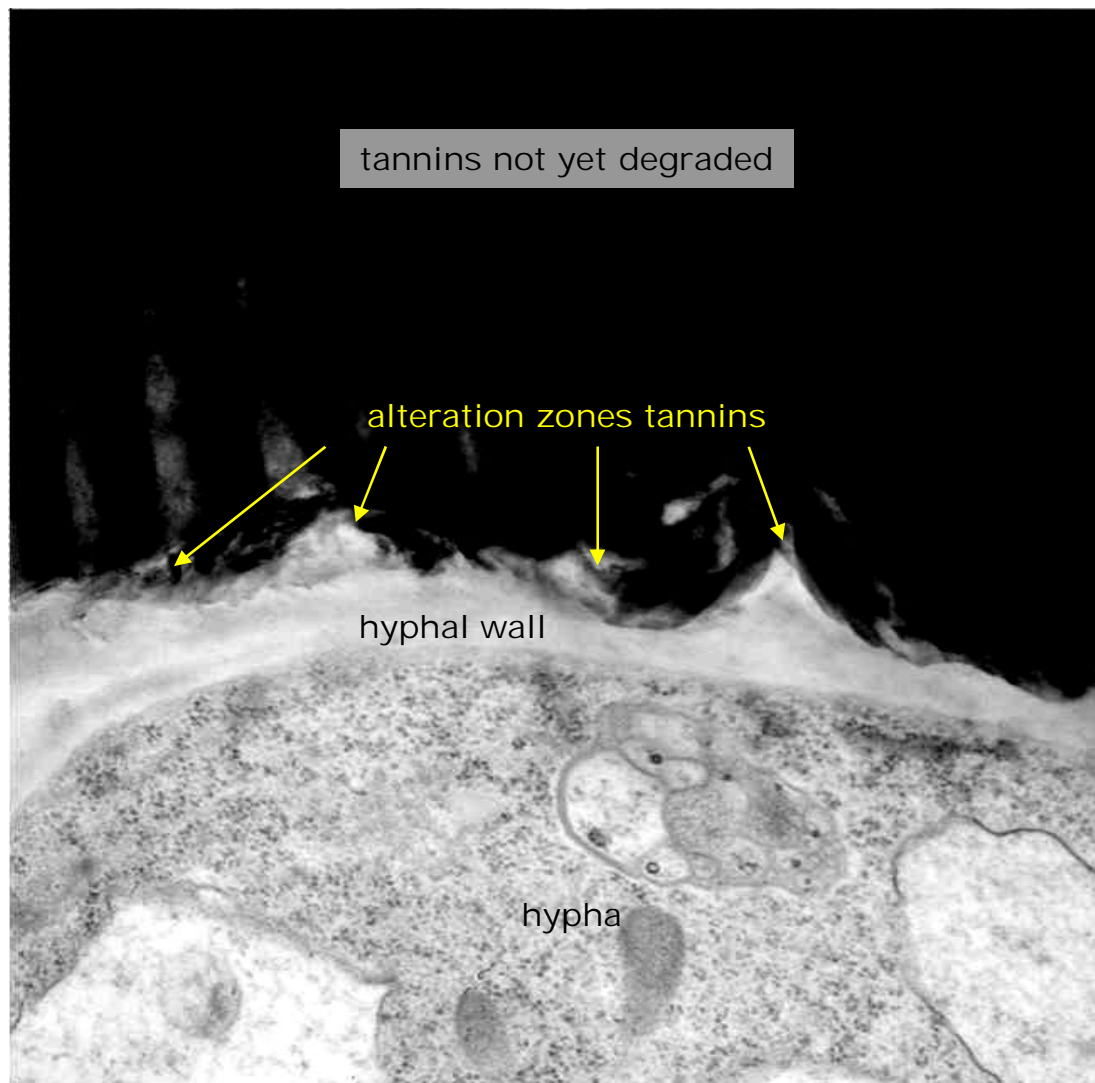
tannins very altered  
by hyphae

H : hyphae penetrating into the cells of the dead root

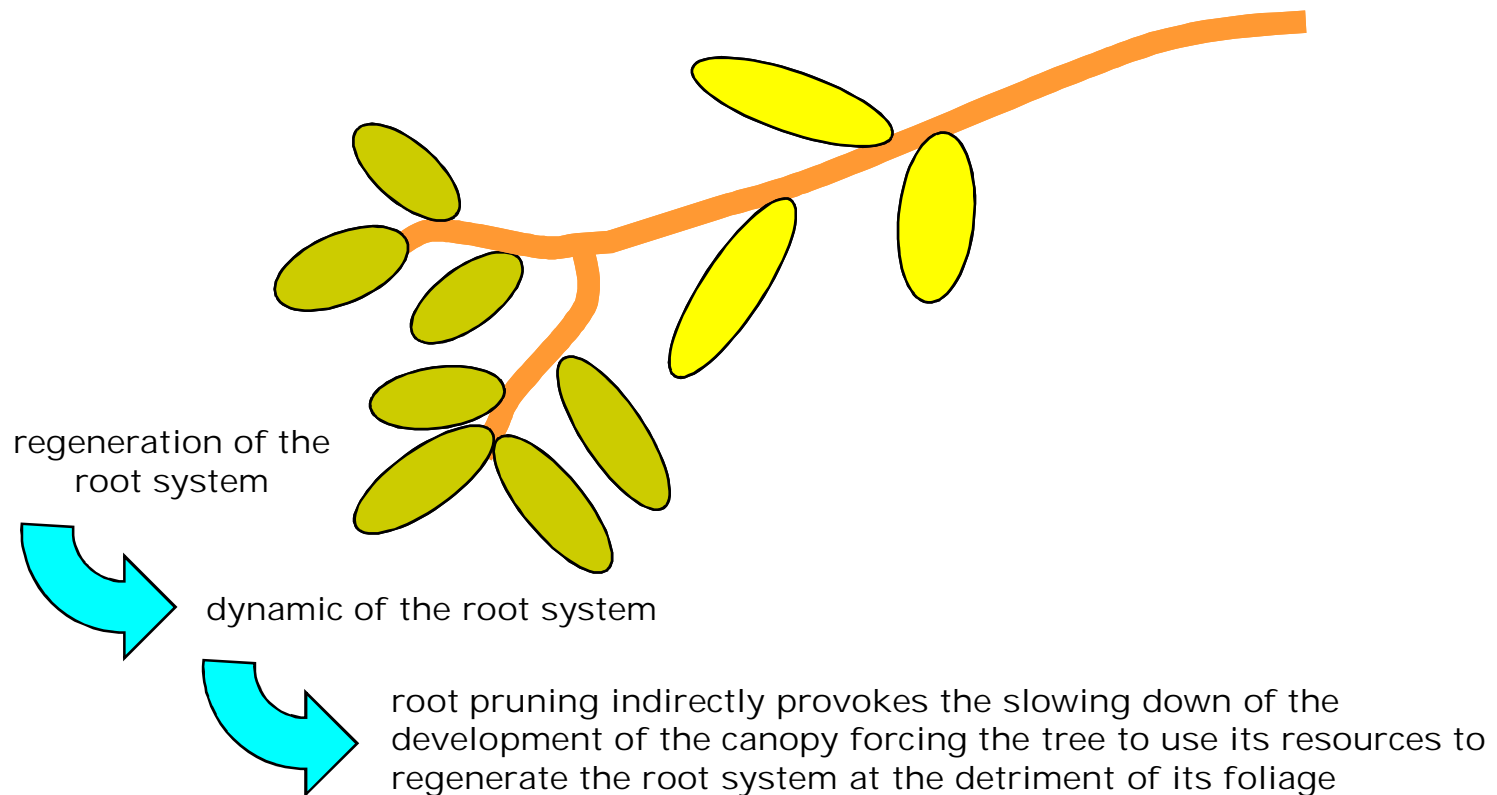


## Contacts between tannins and hypha observed with TEM

dead root



...after cutting of the roots



7 - The trees must be hard pruned, not only in winter but in summer also





## Conclusions

Only the careful application of this rational method in truffle cultivation could lead to an intensive truffle cultivation:

- first truffles harvested four years (even three) after plantation, whatever the species of the tree used,
- high proportion of productive trees at four years (more than 70%),
- possibility to plant at high density (more than 500 trees per hectares for *Tuber melanosporum*),
- sustainable production (more than thirty years).

# Thank you for your attention

Gratitudes

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