

# FIRST OBSERVATIONS ON THE ROLE OF RAIN IN THE PENETRATION OF *EUTYPA LATA* INTO PRUNING WOUNDS

*Eutypa dieback* is a grapevine disease which causes the deterioration of wood in more or less long-term, which begins by drawing away the death of an arm. A good knowledge of the first stages of infection under natural conditions is necessary to perfect methods evaluating the efficiency of fungicides against *E. lata* for the protection of pruning wounds. The objective of this study was to obtain information on the role of rain in the penetration of ascospores of *E. lata* into the vessels after pruning.

## MATERIALS ET METHODS

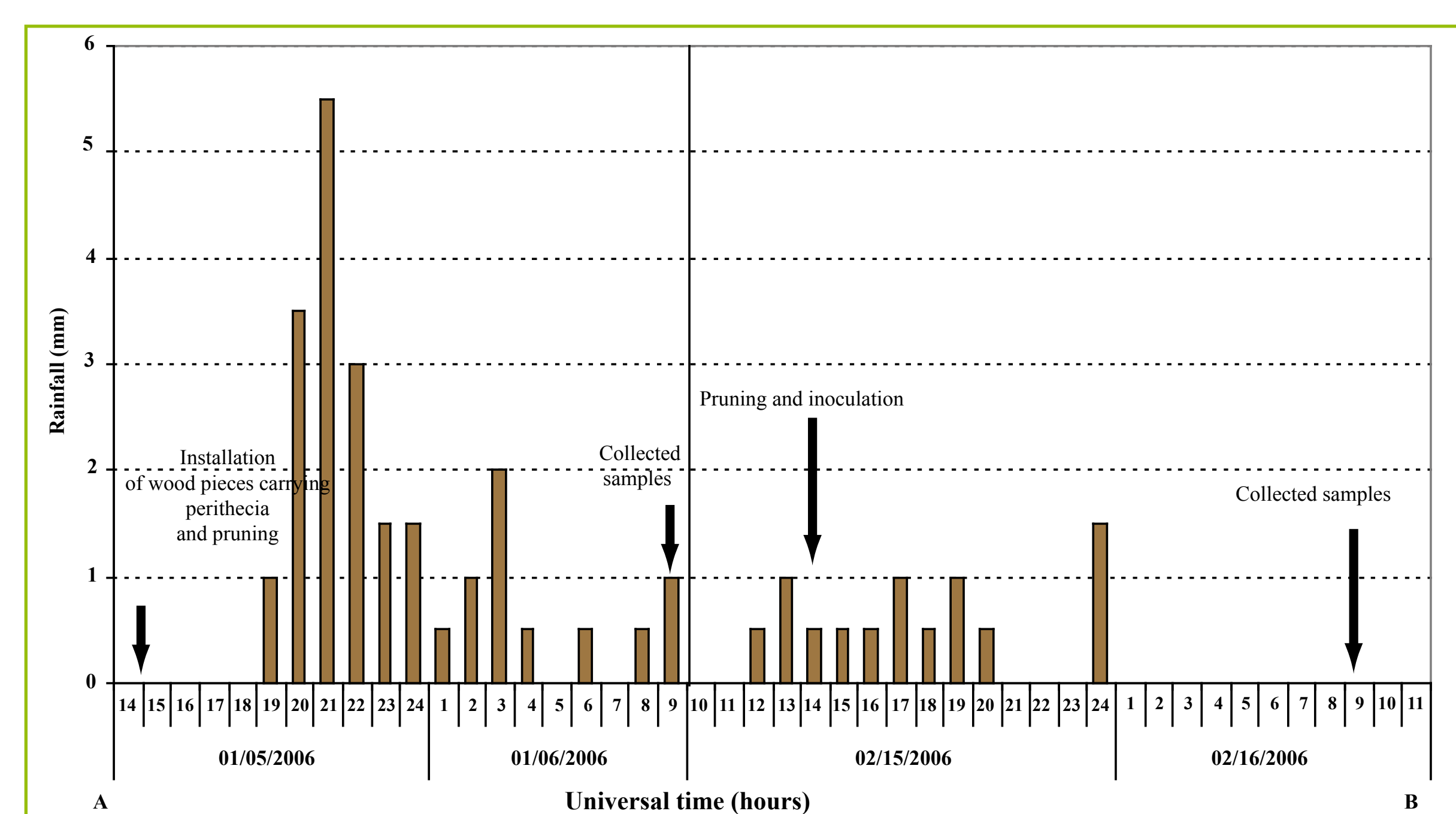
Experiments took place in a vineyard close to Nîmes (South of France). The cultivar was Sauvignon grafted on SO4 rootstock, planted in 1989 and cordon trained.

◆ **In natural conditions** : ten wood pieces carrying perithecia of *E. lata* were placed in the proximity of pruning wounds before a rainfall (figure 1A).

◆ **In artificial conditions** : thirty fresh pruning wounds were inoculated two hours after the beginning of rainfall (figure 1B) or in dry period with 20, 250 or 1500 ascospores. The experiment was replicated two times. Isolations of the two experiments were pooled and converted to percent values on total isolation.

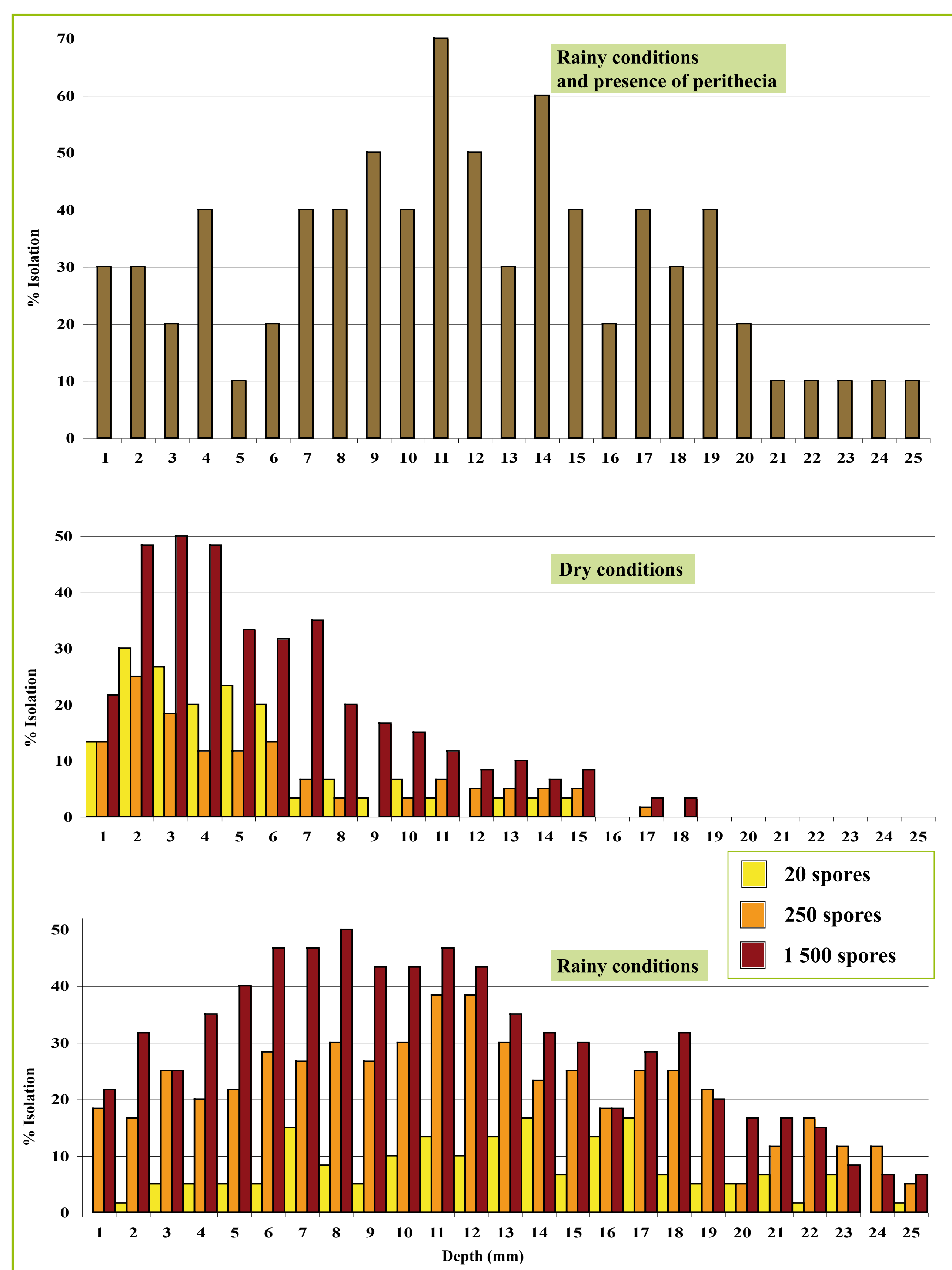
The localisation of spores was deduced indirectly from isolations. One-year-old pruned canes were collected the following day. Isolations were made immediately: the bark was removed on a length of 25 mm from the pruning wound. This excoriated end was cut into 25 sections of 1 mm. The sections were placed on malt agar and incubated at room temperature for 21 days.

Figure 1 : Climatic conditions during the experimentation on the pollution of the pruning wounds  
A : in the presence of perithecia ; B : in artificial conditions under rain



## RESULTS

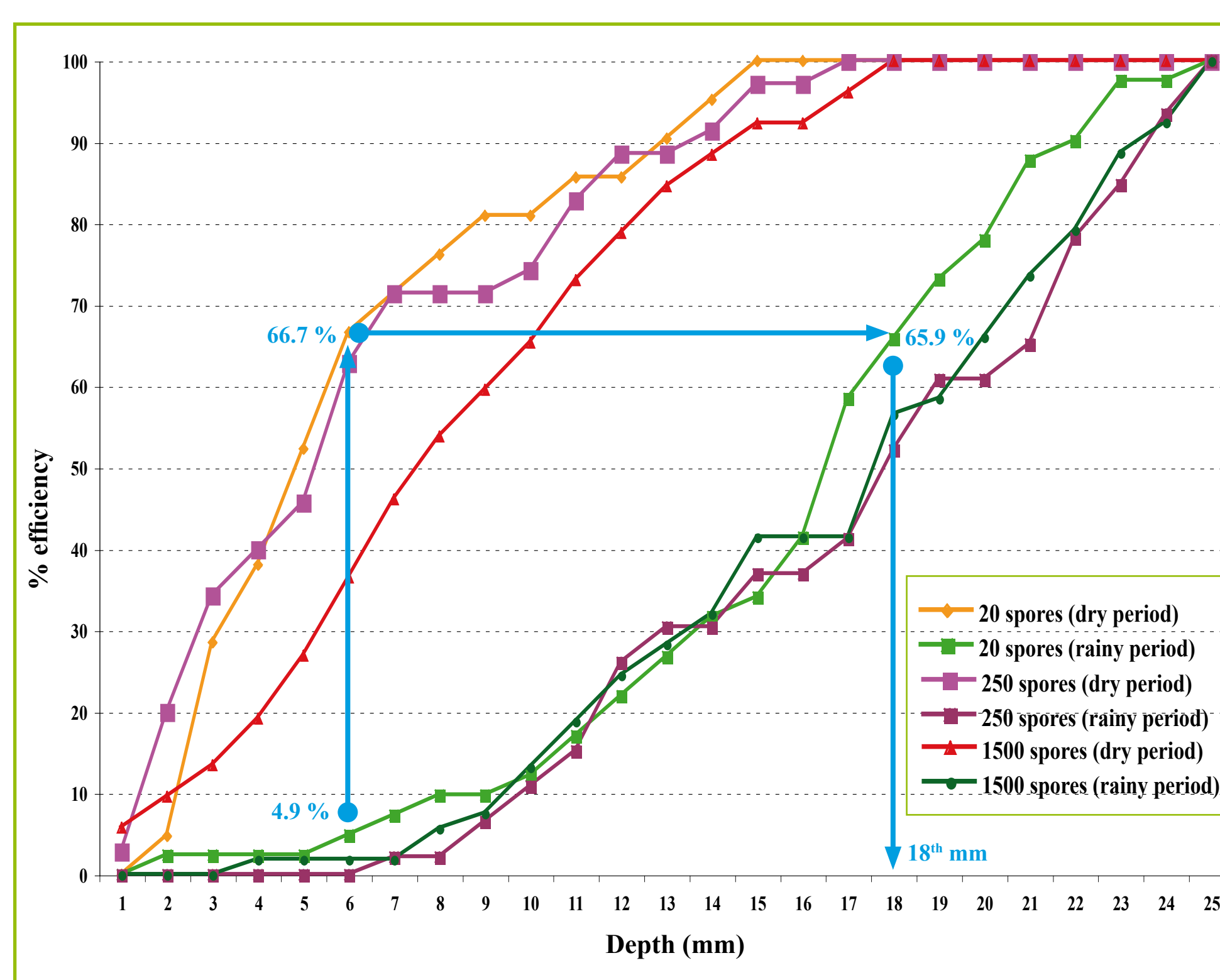
Figure 2 : Localization of ascospores in a pruning wound



Medium maximum depths of migration of ascospores in a wound

	Rainy period	Dry period
Perithecia	18,75 ± 3,95 mm	-
20 spores	16,24 ± 6,15 mm	6,43 ± 3,88 mm
250 spores	17,61 ± 5,18 mm	6,37 ± 4,33 mm
1 500 spores	17,28 ± 5,33 mm	8,33 ± 4,73 mm

Figure 3 : Consequences on the effectiveness of fungicides in the protection of pruning wounds



For instance, in the case of the application of 20 spores by wound, considering that a product is 100 % efficient on the first six millimetres and that a wound is considered polluted when the fungus is just once isolated among the 25 wooden pieces during the microbiological analysis, we note that in a dry period, the product has a 66.7 % effectiveness, while under rain it has a 4.9 % effectiveness. To have an effectiveness of the same level, it is necessary that the product has a 100 % effectiveness up to the 18<sup>th</sup> millimetre.

## CONCLUSION

This study demonstrates the role of water in migration of spores into wounds and subjacent tissues. Evaluations of the efficiency of products for pruning wounds protection against *E. lata* will have to take into account this important factor. Thus, in view of these results, the protection of pruning wounds by spraying becomes delusive. Furthermore, pulverization will never bring enough product on a pruning wound to prevent *E. lata* from developing, especially if it is deeply located in vessels after pollution. Only painting of a product could bring the sufficient quantity.