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TREE WATER POTENTIAL : IMPORTANT DATA FOR UNDERSTANDING THE FOREST TREE'S ECOPHYSIOLOGY

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Studying physiological ecology of trees and especially their response to drought is essential to improve conditions of their use.

In some cases it is difficult to study the behaviour of trees as a function of soil water content on account of the physical characteristics of many forest soils.

The study of the variation in tree water potential under water stress from soil and atmosphere has permitted great progresses in this field.

In this paper the author shows the interest of the water potential of tree, especially of predawn potential for :

— measuring the level of water stress in forest stands,

— defining the physiological characteristics of various trees species.

Use of predawn potential to map water potentialities of sites, althrough possible, seems to be reserved for special studies on account of technical problems resulting of the necessity to make the measurements shortly before sunrise.

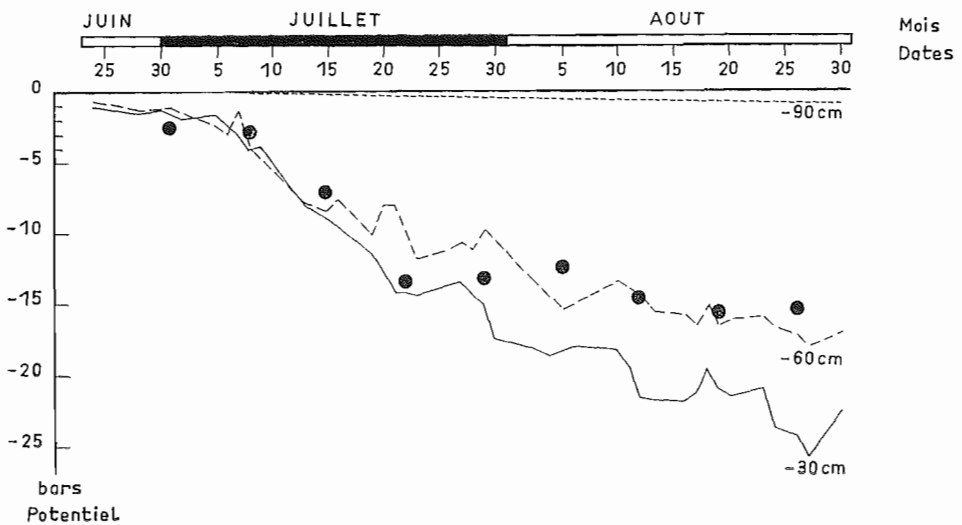

Figure 2 : Evolution of the water potential in the soil (3 levels : — 30 cm, — 60 cm and — 90 cm) compared with the predawn potential of the douglas. (Aussenac et al., 1984).

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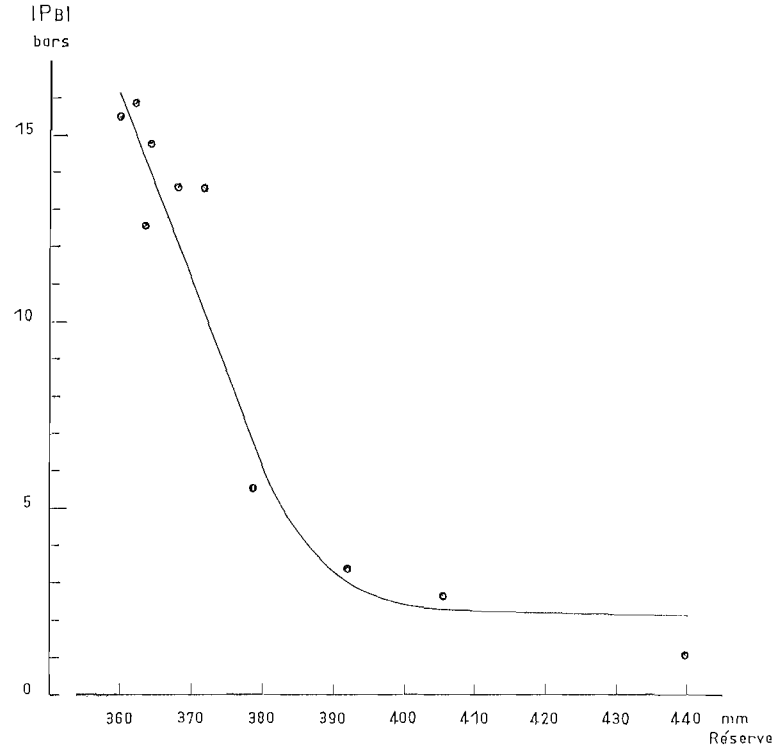

Figure 3 : Predawn water potential as a function of the soil water reserve (depth : 130 cm). (Aussenac et al., 1984).

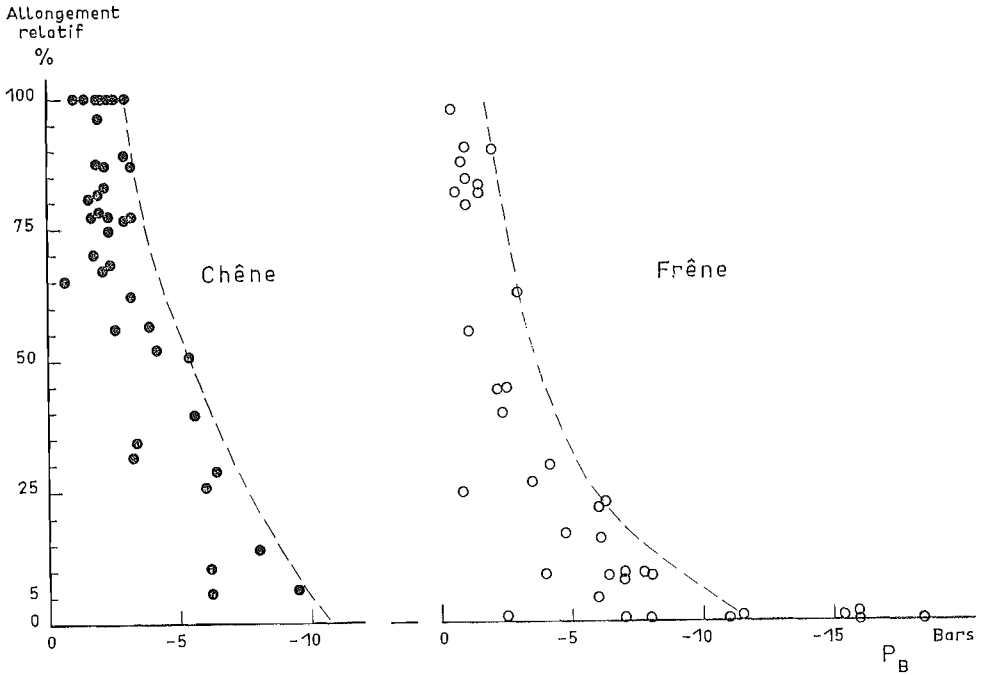

Figure 8 : Average height growth (per week) Quercus pedunculata and Fraxinus excelsior (as a percentage of the average growth of plants at field capacity) as a function of predawn potential (PB). (Aussenac, Levy, 1983).

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