

SEASONAL AND DIURNAL VARIATION IN THE INTERNAL MOISTURE
STRESS OF MATURE DOUGLAS-FIR IN THE SISKIYOU MOUNTAINS

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ABSTRACT

The internal moisture stress was determined on the needles of mature Douglas-fir by making relative turgidity and diffusion pressure deficit measurements. Relative turgidity, unfortunately, does not always reflect changes in the internal moisture stress. The vapor equilibrium techniques employed for DPD determinations gave precision within ± 2 atmospheres.

On the four areas studied, representing a range in elevations from 2700 to 5500 feet, stress at sunrise was usually less than 5 atm. However, by late summer, at about 1500 hours values ranging from 8.5 to more than 30 atm. were measured. It is suggested that an understanding of the moisture relations affecting trees growing in different environments can be achieved by measuring internal moisture stress at the time of maximum seasonal and diurnal stress.

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