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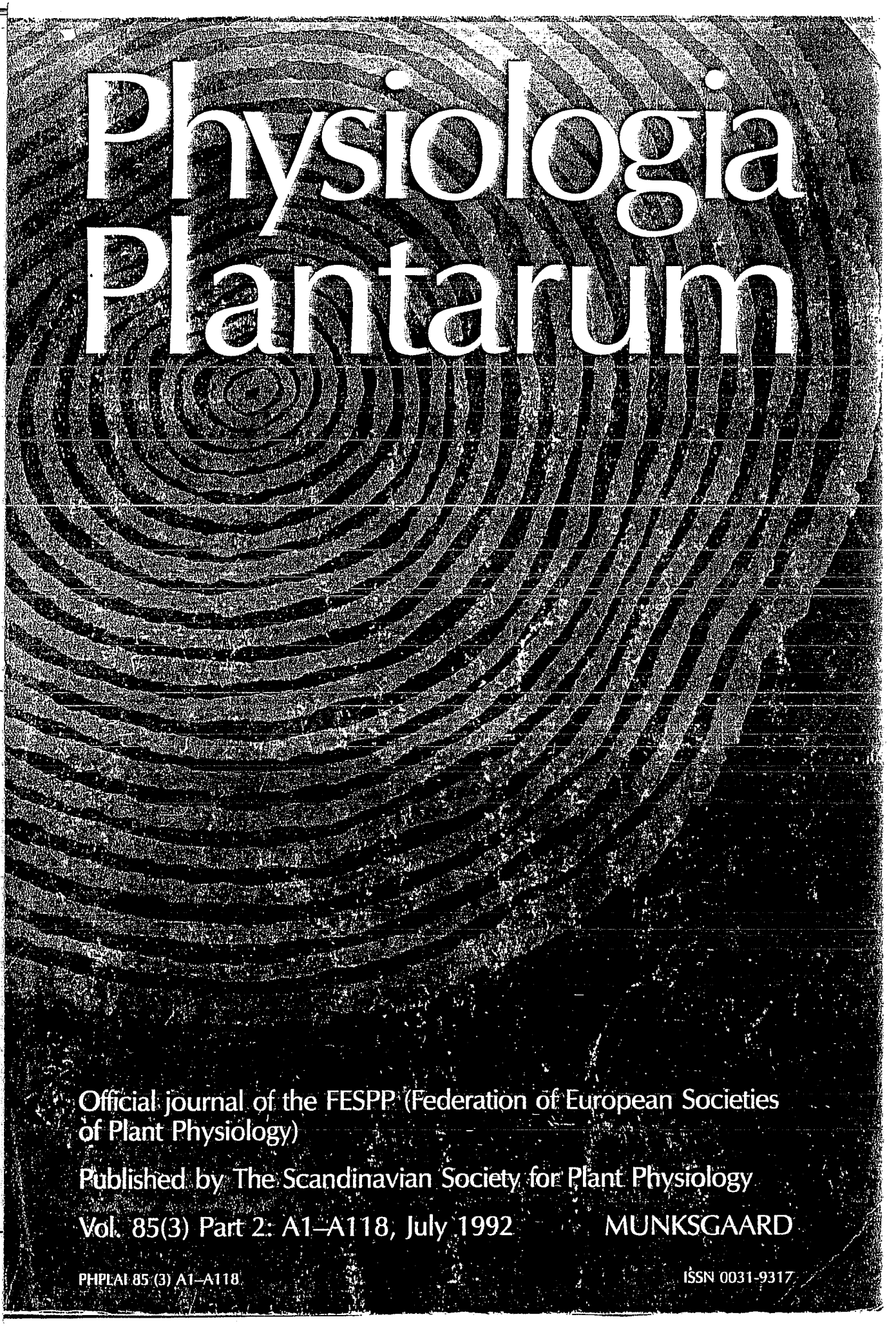
Physiology, Ramonda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...spectroscopy
ained will be

...cell wall plasticity by influencing either or both H+ extru-
sion and auxin transport. Cell wall stiffening does not see
to be an initial cause of Al-induced growth reduction.

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and Juan Barceló,
as, Universidad
SPAIN.

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s ssp. mexicana,
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120 µM Al. Growth
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EXPOSURE TO LONG-TERM LOW TEMPERATURE PHOTOINHIBITION ENHANCES NET CARBON GAIN IN COLD HARDENED WHEAT

Vaughan Hurry[1,2], Marianna Krol[1], Gunnar Öquist[2] and Norman Huner[1], Dept Plant Science, Univ of Western Ontario, London, Canada[1], Dept Plant Physiology, Univ of Umeå, Umeå, Sweden[2]

The effect of daily exposure to photoinhibitory light (1200 µmol $m^{-2}s^{-1}$ PFD) at 5°C was examined in attached leaves of cold grown spring and winter wheat. Kharkov winter wheat exhibited a daily reduction in F_v/F_m of 24%, in contrast to 41% for Katepwa spring wheat. Both cultivars showed recovery from these treatments such that the leaves exhibited an average morning F_v/F_m of 0.651 ± 0.004. Fluorescence measurements made under steady state conditions indicated that the yield of PS II electron transport under light saturating conditions was the same for photoinhibited and control cold grown plants, regardless of cultivar. Repeated daily exposure to high light at low temperature did not increase resistance to short term photoinhibition, although zeaxanthin levels increased 3 to 4-fold. In addition, both cultivars increased the rate of dry matter accumulation, relative to cold grown controls (10% and 28% for Katepwa and Kharkov respectively), despite exhibiting daily suppression of F_v/F_m and reduced photon yields for O_2 evolution. Thus, although photosynthetic efficiency is suppressed in cold grown wheat by long term photoinhibitory treatment, light saturated rates of photosynthesis are sufficient during the high light treatment to offset any reduction in photochemical efficiency of PS II. We suggest that in these cold tolerant plants, photoinhibition of PS II may represent a stable down regulation of photochemistry to match the overall photosynthetic demand for ATP and reducing equivalents.

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Mill., cv. Abunda)
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SOME PHYSIOLOGICAL CHARACTERISTICS OF RAMONDA SERBICA AND R. NATHALIAE LEAVES DURING DEHYDRATION AND REHYDRATION

Gordana Jelić[1] and Branka Stevanović[2], INEP[1], Botanical Institute and Garden[2], University of Belgrade, 11000 Belgrade, Yugoslavia.

Poikilous endemic species Ramonda serbica and R. nathaliae originate from the tropic-subtropic family Gesneriaceae, surviving in the Balkan peninsula as tertiary relicts. Both species can survive complete dehydration and retain full physiological integrity. Changes of chlorophyll content and Chl a/ ratio were investigated during dehydration and rehydration c whole plants and cut-off leaves. Leaf dehydration was followed by partial chlorophyll degradation. Chlorophyll synthesis was activated at the beginning of rehydration process. The results suggest that these species exposed to conditions of a very low water potential can preserve the system of Chl biosynthesis undamaged.