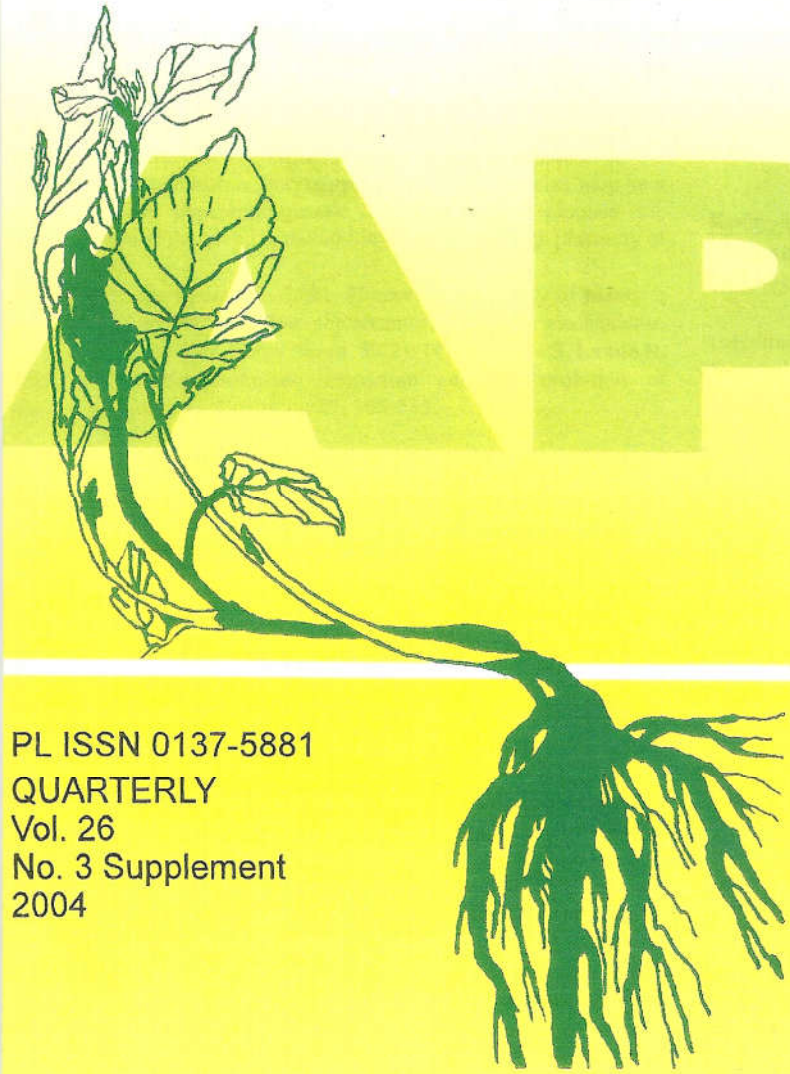

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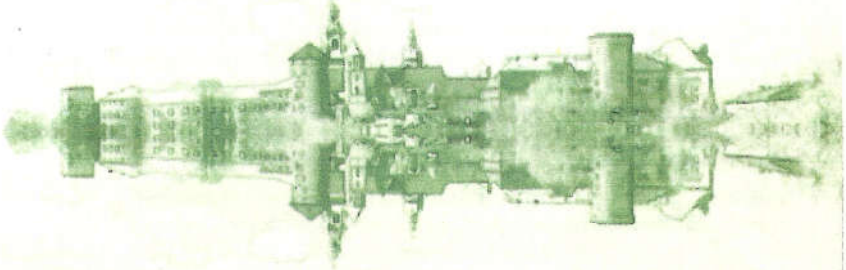

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mericarps. These components of total protein and enzymatic spectra may mark the metabolic programs of the species adaptation to the contrast water conditions. Polymorphism on some proteins may be a source of the population-genetic adaptation. Wc suppose the multivariance of the adaptive metabolic ways defines high plasticity of *S. latifolium.*

References: Kordyum EL. 2001. Phenotypic plasticity of plants: a general description, adaptive significance, possible mechanisms, opened questions. Ukr. Botan. Joum. 58(2): 141-151. Via S, Lande R. 1985. Gcnotype-environment interaction and the evolution of phenotypic plasticity. Evolution 39: 505-522.

AS-014 INFLUENCE OF DROUGHT ON ABSCISIC ACID IN COMMON LEUCAENA *LEUCAENA LEUCOCEPHALA* (LAM.) DE WIT.]

Bilgen M[1], Ulger S[2], Toker C[1]
[1]Department of Field Crops, Faculty of Agriculture, Akdeniz University, TR-07070 Antalya, Turkey
[2]Department of Horticulture, Faculty of Agriculture, Akdeniz University, TR-07070 Antalya, Turkey

Introduction: Common or shrubby form of leucaena *[Leucaena leucocephala* (Lam.) de Wit.] is widely used as a source of cut-and- carry animal feed in the world (Bray, 1995). It has been grown in arable lands in Turkey without irrigation; using any pesticide, herbicide, and fungicide under rainfed conditions. The crop is therefore affected by drought and high temperature stresses. Under drought stress condition, abscisic acid (ABA) is known to relate with stress (Davies, 1995; Hartung and Jesehke, 1999). To our knowledge, there is no research on ABA-related in drought stress in leucaena. Leucaena is therefore subjected to drought stress and detected ABA in control and drought applications in this study.

Material and Methods: Youngest fully expanded leaves of a five-year old plant were used to examine the effects on abscisic acid of drought stresses under controlled condition. One plant was grown in pod with 28 cm diameters and 26 cm length, filled with local soil with loam soil texture and 30.76% CaCO,. According to Ulger *etal.* (2004), ABA was analyzed using HPLC.

Results and Conclusions: The treatment effects were statically significant ($P< 0.05$). As expected, ABA in drought treatment (1.575 $pg'^{1} \pm 0.03$) was higher than control (0.475 $pg^{1} \pm 0.03$). It was resulted that ABA was related with drought stress when leucaena exposed to drought stress.

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AS-Q15 RECOVERY OF PHOTOSYNTHETIC APPARATUS FROM DROUGHT OR WATERLOGGING IS DIFFERENT IN INBRED AND HYBRID MAIZE

Kocova M, I Iola D, Rothova O, Zdanska I I, Kholova J Department of Genetics and Microbiology, Faculty of Sciences, Charles University, Vinicna 5, 12843 Prague 2, Czech Republic

Introduction: Irregular water supply is one of the most important stress factors that negatively affect plants. As the photosynthetic processes arc almost always negatively and rather rapidly affected by drought or waterlogging, photosynthetic characteristics can be with advantage used as „sensors" of stress. Moreover, ability of plants to rapidly recover their photosynthctic apparatus from damage caused by drought or waterlogging is equally important as their efficiency in dealing with stress itself. Our study, supported by project No. J 13/98:113100003 from the Ministry of Education of the Czech Republic, was aimed at the analysis of potential differences between maize inbreds and hybrids in such a recovery.

Material and Methods: 3-wecks-old plants of two maize inbred lines and their reciprocal FI hybrids were subjected to drought or waterlogging.for 2 weeks, after which they were returned to optimum conditions for another 2 weeks. Photosystem (PS) 1 and 2 activities, photosynthetic pigments' content and specific leaf weight of mature leaves, and morphology of plants were studied in drought- or waterlogging-stressed plants, as well as in plants continually grown in or returned to optimum conditions. All characteristics studied were assayed according to Hold *el at.* (2003).

Results and Conclusions: Both PS2 and PS1 activity in leaves of drought-stressed plants decreased; this decrease was more pronounced for PS2. Similar decrease was also observed.for chlorophylls' content. Specific leaf weight increased in these plants, which were also smaller compared to control. Waterlogging affected photosynthesis or plant morphology to a lesser extent than drought. However, some decrease of PS2 activity, photosynthctic pigments' content and height of plants was also observed. After return to optimum conditions, plants originally stressed by drought or waterlogging were able to fully recover the efficiency of both photosystcms but retained lower content of chlorophylls. Hybrids better sustained waterlogging compared to inbreds, but their recovering ability was similar. The response of hybrids to drought did not differ from inbreds, but they recovered better.

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AS-016 VARIABILITY IN DROUGHT RESPONSE AND WATER USE EFFICIENCY OF BARLEY VARIETIES

Slaski JJ, Archambault DJ, Anyia AO Environmental Technologies, Alberta Research Council, PO Bag 4000, Vegreville, Alberta, Canada T9C 1T4

Introduction: The prairie regions of Canada experience occasional water deficit, which is an important constraint for barley production. In water-limited environments, crop yield (CY) is a function of water use (WU), water use efficiency (WUE) and the harvest index (HI) (Passioura, 1977) Transpiration efficiency (TE) is apromising trait that has been proposed as a criterion for yield improvement under drought. Breeding for improved TE has, however, been limited for a long time by lack of screening methodology. A major breakthrough came when Farquhar *el al.* (1982) found that the extent to which C_3 plants discriminate against "C during carbon assimilation was related to their