intercelulares em relação as folhas das plantas testemunhas. O tratamento com 2 ton/ha de calcáreo diminuiu o diâmetro da nervura principal da folha em relação ao tratamento com 4 ton/ha e às plantas testemunhas. O tratamento com 4 ton/ha de calcáreo, na região da nervura principal, apresentou o floema com conteúdos taníferos.

GRAIN FILLING IN MAIZE: THE EFFECT OF NITROGEN NUTRITION ON THE ACTIVITIES OF NITROGEN ASSIMILATING ENZYMES IN THE PEDICEL-PLACENTO-CHALAZA REGION

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In a developing maize kernel, the pedicel-placento-chalaza (PPCh) is a heterogeneous tissue between the cob vascular system and the endosperm. It provides no vascular connections between the cob and endosperm, but possess high activities of nitrogen assimilating enzymes. Its major role is to modify the cob vascular system amino acid pool composition to better suit the requirements of the developing endosperm. Nitrogen metabolism in the PPCh tissue may, therefore, influence individual kernel development and consequently play an important role in determining grain yield capacity in maize. The objectives of the two experiments reported in this work were: (1) to determine the effect of nitrogen supply on the activities of the nitrogen assimilating enzymes glutamine synthetase (GS), NADH-dependent glutamate synthase (NADH-GOGAT), glutamate dehydrogenase (GDH) and of phosphoenolpyruvate carboxylase (PEPC) in the pedicel-placento-chalaza (PPCh) tissue of maize genotypes contrasting in their responsiveness to nitrogen (N) fertilization, and (2) to verify if the activities of these enzymes in the PPCh tissue are correlated to individual kernel weight. Hybrids were grown in the field under low (16 kg/ha) and high (116 kg/ha) N supply and hand pollinated at silking. Enzyme activities were measured 30 days after pollination (DAP) and individual kernel weight was determined after black layer formation. Nitrogen supply did not influence individual kernel weight, soluble protein, GS and PEPC activities. However inconsistent results were observed for NADH-GOGAT and GDH over experimental years. Enzyme activities varied among genotypes, but correlation determinations indicated that individual kernel weight was not associated with soluble protein content and GS activity, with discrepant results observed for NADH-GOGAT and GDH over years. However, a positive and significant correlation was observed between kernel weight and PEPC activity in both experiments. This finding merits further investigations over a larger number of genotypes and different environmental conditions. It suggests that genotypes with increased PEPC activity in the PPCh tissue have increased kernel weight and that this enzyme plays an important role in determining grain yield in maize. (CNPq and Embrapa/SEP)

REGULAÇÃO DA ATIVIDADE DA DESIDROGENASE DO ISOCITRATO DEPENDENTE DE NAD^+ DE MITOCÔNDRIAS DE TUBÉRCULOS DE BATATA (*SOLANUM TUBEROSUM* L.)

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A desidrogenase do isocitrato dependente de NAD^+ (EC 1.1.1.41) (IDH-NAD^+) é uma enzima que catalisa a descarboxilação oxidativa do isocitrato formando 2-oxoglutarato e NADH. Acredita-se que esta e as enzimas desidrogenase do piruvato e desidrogenase do 2-oxoglutarato sejam as principais enzimas regulatórias do ciclo de Krebs. Em animais, elas são reguladas por íons cálcio e por nucleotídeos de adenina, dentre outros fatores. A IDH-NAD^+ parece ser regulada diferentemente entre os fungos, as leveduras e os vegetais. Assim, objetivando uma caracterização dessa enzima e o estudo da sua regulação por cátions divalentes e pela razão ADP:ATP, foram isoladas mitocôndrias de tubérculos de batata, que foram avaliadas em meio de reação contendo HEPES 25 mM, NAD^+ 0,5 mM, Isocitrato 0,3 mM e Triton X-100 0,04%. A atividade enzimática foi avaliada espectrofotometricamente, a 340 nm, a partir do NADH produzido. A enzima apresentou atividade ótima a 35°C e pH 7,5. A atividade da IDH-NAD^+ foi maior que o controle (sem cátions) quando os íons Mn^{2+} ou Mg^{2+} foram adicionados isoladamente ao meio de reação, nas respectivas faixas de concentração de 1 a 1000 μM e 50 a 2000 μM, observando-se aumentos lineares com os incrementos na concentração dos cátions nas referidas faixas. Com Mn^{2+} 1 mM, foram obtidos K_M igual a 0.27 mM e $V_{máx}$ igual a 19 ηM min^{-1}. A adição de Ca^{2+} 0.1 mM (em presença de Mn^{2+} 1 mM) reduziu o valor de K_M para 0.18 mM, sem alterar o valor de $V_{máx}$. Adições de ADP e/ou ATP não afetaram a atividade da IDH-NAD^+, em meio de reação contendo Mn^{2+} 1 mM. (CAPES)

BEHAVIOUR OF SEEDLINGS OF THREE SPECIES, *CEDRELLA FISSILIS, MELIA AZEDARACH* AND *ARAUCARIA ANGUSTIFOLIA*, ON HYDROPONIC MEDIUM UNDER DIFFERENT pH CONDITIONS

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When the shoots of seedlings of the three species *Cedrella fissilis, Melia azedarach* and *Araucaria angustifolia* were 15 to 20 cm high, they were removed from the pots with the aid of running water and placed in 25 liter tanks, with their shoot attached to the side of a modified cloth peg and the root system