S02P02

Chlorophyll content in banana genotypes submitted to water stress

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Drought is an environmental factor which limits plant growth affecting in greater or lesser degree all stages of crop development. It is vital to evaluate banana genotypes that have potential for drought tolerance through physiological parameters. Physiological responses to drought may vary according to severity and the duration of the imposition of stress on genotypes. Chlorophyll fluorescence measured under drought conditions may also help in the understanding of the physiological processes occurring, whereas the fluorescence standards under these conditions are well established. Photosynthetic efficiency is also related to the chlorophyll content in plants, affecting growth and adaptability to various environmental conditions. The 'BRS Tropical', 'FHIA 23 ', 'Prata Anã' and 'YB4247' banana varieties were analyzed in pots under greenhouse conditions. Water deficit occurred in a span of eighteen consecutive days. The experimental design was completely randomized with daily readings using a portable chlorophyll meter. Measurements were performed in 6 plants of each treatment between 8 and 9 a.m. The genotype which suffered most decline in the chlorophyll index was 'Prata Anã' contrasting with 'FHIA 23', which underwent no significant variation over the study period.

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S02P03

Gene expression networks and *cis*-elements combinatorial models in soybean: circadian clock and drought responses

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Drought is one of the major limiting factors influencing productivity of commercially important crops around the world. In Brazil, drought has severely impacted on soybean production along the years. During the crop year 2011/2012, for example, drought occurrence in the south of the country reduced the soybean expected production in 9.77 million tons (14%). In the same year, according to the USDA, about 88% of the US soybean areas experienced moderate-to-exceptional drought, impacting on productivity and food prices. The circadian clock interacts with diurnal environmental oscillations and modulates plant metabolism in function of the day periods, enhancing fitness. Thus, it could play an important role in modulate drought stress responses. In order to assess the soybean circadian clock genes' network, we used bioinformatics tools, based in Pearson Correlation Coefficients (PCC) and Mutual Rank Position (MP), to evaluate the expression correlations on microarray data available in public databases [http://bioinformatics.cau.edu.cn/SFGD/]. Interestingly, on these networks we identified several abiotic stress-responsive genes, such as *UVB-Resintence 8*, *Dehydration-Responsive Element-Binding* (*DREB*), *Heat Shock Factors* (*HSF)* and *Responsive to Dehydration* 21 (*Rd21),* besides the soybean ortholog circadian clock genes (eg. *GmTOC1, GmELF4, GmGI, GmPRR3* and*GmLUX*).We selected the mostly co-related genes, based on the PCC and MP values, for further investigation regarding the occurrence and distribution of *cis*-elements in their promoter regions, using the Genomatix Software Suite for *in silico* analysis. Our results show the presence of four transcription factors binding site (TFBS) combinatorial models, common to genes from the *GmTOC1*, *GmELF4*, *GmPRR3* and *GmLUX* networks. Additionally, the *in silico* predicted coexpression patterns were confirmed by RNA-seq assays, using soybean cultivar BR16 plants subjected to control and drought stress conditions, evaluated along a 24h's-timecourse.The TFBS combinatorial models identified can help explain the co-expression patterns of the soybean network genes. Our results add information on the soybeanscircadian clock gene

expression networks and suggest a connection between the circadian clock and the drought response pathways in soybean.
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S02P05
Photosynthetic pigments in bean leaves under salinity and mitigated by silicon
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The lands of the world are affected by salinity by 22%. In Brazil, especially in the state of Pernambuco, areas are hit 8 % by salts. In this region, the productivity of the bean crop is of great economic importance and is part of the Brazilian power, is limited by the high salt content in the soil, caused by improper management of irrigation and high soil evaporation. To soften the salt effect on plant comes up using this beneficial element to induce resistance plants to salt stress. Silicon (Si) provides low plant transpiration coefficient, higher chlorophyll content, increased photosynthetic area, while protecting the photosynthetic apparatus. Thus, the present study aimed to evaluate the ability of silicon to mitigate the deleterious effects of salinity on photosynthetic pigments of leaves of bean cv. Princess-EMBRAPA. The survey was conducted in a greenhouse at UAG/UFRPE. Sexually propagated seedlings were transferred to pots with 100% nutrient solution ionic strength with addition of treatments in aeration via compressor. The experimental design was completely randomized in a 5x2 factorial design, with five levels of Si (0, 1, 2, 3 and 4mmol.L^{-1}) and two NaCl (0 and 60mmol.L^{-1}) and four replications. In phenological stage bean (growth) were determined as chlorophylls (Ch) a, b, Ch total and carotenoids. Levels greater than 1 mmol.L^{-1} silicon had high concentrations of the Ch, Ch B, ChT and carotenoids in the leaves of plants with and without the presence of NaCl, including the leaves of control plants. Under conditions with and without the presence of NaCl, the level of silicon that is highlighted with increased carotenoid concentration was 3 mmol.L^{-1}. This increase was 8.1 % higher concentrations of this pigment in the leaves of control plants. It was also found lower concentrations in all photosynthetic pigments for level 1mmol.L^{-1} silicon with and without NaCl, including the plant controls. Concentrations greater than 1mmol.L^{-1}provide increased photosynthetic pigments in bean leaves with and without salt stress. The level of silicon that better stressed without the addition of salt stress was 3 mmol.L^{-1}.
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S02P06
Gas exchange in bean under salinity and attenuated by the silicon
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The lands of the world are affected by salinity by 22%. In Brazil, especially in the state of Pernambuco areas are hit 8 % by salts. In this region, the productivity of the bean crop is of great economic importance and is part of the Brazilian power, is limited by the high salt content in the soil, caused by improper management of irrigation and high soil evaporation. Salinity causes toxicity in plants, decreased osmotic potential, stomatal closure, etc. For plants withstand the salinity comes out using silicon as a beneficial element. Silicon decreases transpiration, photosynthetic area and increases absorption of CO_2, while protecting the photosynthetic apparatus of the plant. Thus, this study aimed to evaluate the effect of silicon as attenuator of the effects of salinity on gas exchange of bean cv. IPA-10. The survey was conducted in a greenhouse at UAG/UFRPE. Sexually propagated seedlings were transferred to pots with 100% nutrient solution ionic strength with addition of treatments in aeration via compressor. The experimental design was completely randomized in a 5x2 factorial design, with five levels of Si (0, 1, 2, 3 and 4mmol.L^{-1}) and two NaCl (0 and 60mmol.L^{-1}) and four replications. Were evaluated transpiration (E), stomatal conductance (gs), net photosynthesis (A) and water use efficiency (A/E) at 10am, with infrared gas analyzer (IRGA). In each variable (E, gs and A) showed no significant difference in the plants of all treatments with silicon, with and without of NaCl. Plants under 4mmol.L^{-1}