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OXIDATIVE STRESS EVALUATION IN TWO SOYBEAN CULTIVARS SUBJECTED TO DROUGHT

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RESUMO

Drought tolerance in plants is a complex trait, resulted of a set of mechanisms that work to avoid or tolerate periods of drought. This stress is one of the most important environmental factors that induce physiological changes in the plant, such as decreased water potential in the cell, stomata closure and the formation of reactive oxygen species (ROS), affecting the growth and development of plants. The aim of this study is to to characterize, physiologically, two soybean cultivars with different patterns of drought tolerance in the field, through the determination of photosynthetic rates, levels of lipid peroxidation, and activity of antioxidant enzymes, under three levels of water deficit. Trifoliolate leaves were evaluated of the third knot soybean in the V5 growth stage of the tolerant cultivar (Embrapa 48), the drought susceptible variety (BR 16), and under three levels of water deficit: no stress or irrigated (-0.1 to 0.1 Mpa), moderate (-1.5 MPa) and severe (-3,0 MPa). Variations in transpiration rate, stomatal conductance and decreased photosynthetic rate were statistically significant between the two cultivars, and the water potentials in the genotype BR-16 anticipated, on average, two days to reach the same water potentials analyzed in comparision to the Embrapa 48. Moreover, the increased activities of antioxidant enzymes and lipid peroxidation were more significant in the cultivar BR-16, which proves to be less drought tolerant in relation to genotype Embrapa 48, confirming agronomic data previously found in the field.

PALAVRAS-CHAVE: Glycine max, oxidative stress, antioxidant enzymes

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