

**Variations in fructan metabolism of *Vernonia herbacea* (Vell.) Rusby (Asteraceae) in response to water deficit and their relation to drought tolerance**

Paola Mitie Aparecida Garcia; Amanda Francine Asega; Emerson Alves da Silva; Rita de Cássia Leone Figueiredo-Ribeiro; Maria Angela Machado de Carvalho.

Seção de Fisiologia e Bioquímica de Plantas, Instituto de Botânica, São Paulo, SP

Inulin-type fructans are the main reserve carbohydrates in the underground organs of Asteraceae species from the cerrado. *Vernonia herbacea* is one of this species and the plants accumulate about 80% of inulin in the underground organs (rhizophores). Besides its role as reserve compounds, fructans seem to act as osmotic regulators, favoring the growth and development of plants under drought conditions. The aim of this work was to analyze the fructan composition and metabolism in plants submitted to complete suspension of irrigation for 22 days and to different irrigation frequencies, every 7, 14 and 28 days. The plants kept under different irrigation frequencies showed a decrease in water potential ( $\Psi_w$ ) of shoot and rhizophores and maintenance of turgor and photosynthesis. The total suspension of irrigation caused gradual decrease in photosynthesis, without significant variation of rhizophore turgor. The enzymes of fructan metabolism promoted an increase in the yield of reducing sugars and short chain fructans, resulting in a higher ratio oligosaccharides:polysaccharides, which probably contributed to the reduction of  $\Psi_w$  and the maintenance of turgescence. Thus, the results presented herein are consistent with the hypothesis that fructans act as osmotic regulators in *Vernonia herbacea*, since the plants showed changes in the metabolism of these carbohydrates, allowing tissues a low water loss during the water suspension treatments.

Key-words: inulin, Cerrado, water stress

Acknowledgments: FAPESP, CNPq, PIBIC/CNPq