



Photosynthesis, photoprotection and antioxidant activity of *Jatropha curcas* L. under drought deficit and recovery

Marcelo Francisco Pompelli¹, Ricardo Luís Barata², Hermerson Vitorino³, Eduardo Rebello Gonçalves³, Eduardo Vicente Rolim³, Mauro Guida Santos¹, Jarcilene Silva de Almeida Cortez¹, Vilma Marques Ferreira³, Eurico Eduardo Lemos³, Laurício Endres³

¹Laboratório de Ecofisiologia Vegetal, Universidade Federal de Pernambuco, Departamento de Botânica. Rua Prof^o Moraes Rego s/n, Cidade Universitária, Recife-PE 50670-901, (81) 2126-8844, mpompelli@yahoo.com.br; ²Instituto Superior de Agronomia, Universidade Técnica de Lisboa, Lisboa, Portugal; ³Laboratório de Fisiologia Vegetal, Universidade Federal de Alagoas, Maceió, AL.

Biodiesel is an alternative to petroleum diesel fuel. It is a renewable, a biodegradable, and also a non-toxic fuel. The general interest to produce biodiesel from *Jatropha curcas* seeds oil has increased but its ability to grow on drought-prone areas has barely been investigated. The objective of this work was to identify some physiological processes that allow *Jatropha* to produce in severe arid conditions by studying its leaf gas exchange and antioxidant systems under drought stress and recovering. It was measured the activity of antioxidant enzymes involved in the scavenge of reactive oxygen species (ROS), as superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX), glutamine synthetase (GS), as well as malondialdehyde (MDA) content. It was also analyzed the chlorophyll (CHL), carotenoids, amino acids and soluble proteins contents. Net photosynthesis (A) and stomata conductance (g_s) decreased associate with drought stress and dropped to zero in soil water beneath 5%. Drought induced decrease in stomatal and non-stomatal photosynthetic activity. The activities of SOD, CAT, APX and GS and MDA content in leaves were significantly higher in the water-stressed plants compared to well-watered plants and decreased when the plants were rewatered. These observations suggest that oxidative stress resulting from drought deficit in *Jatropha curcas* could result in the production of antioxidative enzymes to counteract the oxidative damage, and the enzymes may contribute to its ability to survive in the adverse arid environment.

Keywords: purging nut, drought, antioxidant system, photoprotection

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