



Improving water stress tolerance parameters in cotton (*Gossypium hirsutum* L.) using compost

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ABSTRACT

Objectives: Cotton is known for its sensitivity to water deficit. The aim of this study is to improve the water deficit resistance of this crop by applying compost to the soil.

Methodology and Results: The study was conducted in a greenhouse, in 96 vegetation pots of 10L containing either sandy soil or sandy soil with the compost. The device is a split-plot 4x4 with one plant per pot. Water deficit was induced at the flowering stage of the plant, for 30 days, and consisted of a decrease in irrigation from 70 % to 30 % of the useful water reserve (UWR). At the end of the water-deficient cycle, the contents of total proteins, proline, malondialdehyde, as well as the activity of catalase and ascorbate peroxidase were measured in leaf samples by spectrophotometry. Results showed an increase in the plant's tolerance to water deficit in the presence of compost in the growing soil, indicated by a significant accumulation ($p < 0.05$) of total proteins and proline, associated with increased activity of enzymes in the antioxidant system. Similarly, the use of compost has limited the oxidative damage caused by water stress, by a reduction in the accumulation of cellular malondialdehyde.

Conclusion and application of findings: Thus, producers could use composts made from agricultural residues to both increase productivity and protect plants from water stress.

Keywords: Cotton, water stress, tolerance, compost.