

GLYCINE BETAINE: A STRESS ALLEVIATOR FOR IMMATURE TEA

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Drought affect the productivity of tea [*Camellia sinensis* (L). O. Kuntze] and cause negative impacts on the tea industry. Adaption of precautionary measures are extremely important to protect the immature teas from random droughts occur due to climate change. Though, chemical recommendations are available for the drought alleviation in tea, need of prior application make it unlikely to use, as early detection of drought is not practical. Therefore, a convenient drought stress mitigation strategy was tested with the foliar application of Glycine betaine for one-year-old potted tea plants of TRI 5000 series, accession numbers 12/11 and 23/5. A glasshouse experiment was conducted at Tea Research Institute of Sri Lanka with stimulated drought condition imposed by withholding water application for two weeks to achieve 50% field capacity. The experiment was carried out as a Completely Randomized Design with five treatments namely; K₂SO₄ (20% K₂SO₄), GB20 (20 gL⁻¹ Glycine betaine), GB12 (12 gL⁻¹ Glycine betaine), GB4 (04 gL⁻¹ Glycine betaine) and WS (Water Spray) as foliar applications with 13 replicates per each treatment. Physiological parameters *i.e.* photosynthesis, stomatal conductance, transpiration rate, temperature, relative water content (RWC) and biochemical parameters *i.e.* proline and sugar content of tea plants exposed to drought stress were assessed. A significantly higher proline content ($p \leq 0.05$) was recorded in GB20 treatment. Sugar content showed a variable response during experimental period. Significantly high ($p \leq 0.05$) RWC, transpiration rate and stomatal conductance were recorded by both GB20 and K₂SO₄. In conclusion, GB20 treatment has given either superior or comparable results to the current TRI recommendation of K₂SO₄. Further investigation is in progress to confirm the results prior to any recommendation.

Keywords: Climate change, Drought mitigation, Glycine betaine, Proline, Tea