



Dr. J. S. Dhillon
17.02.2019

Souvenir de Presentation

International Conference **Sugarcon-2019**



**Green Technologies for Sustainable Development of
Sugar & Integrated Industries**

February 16-19, 2019

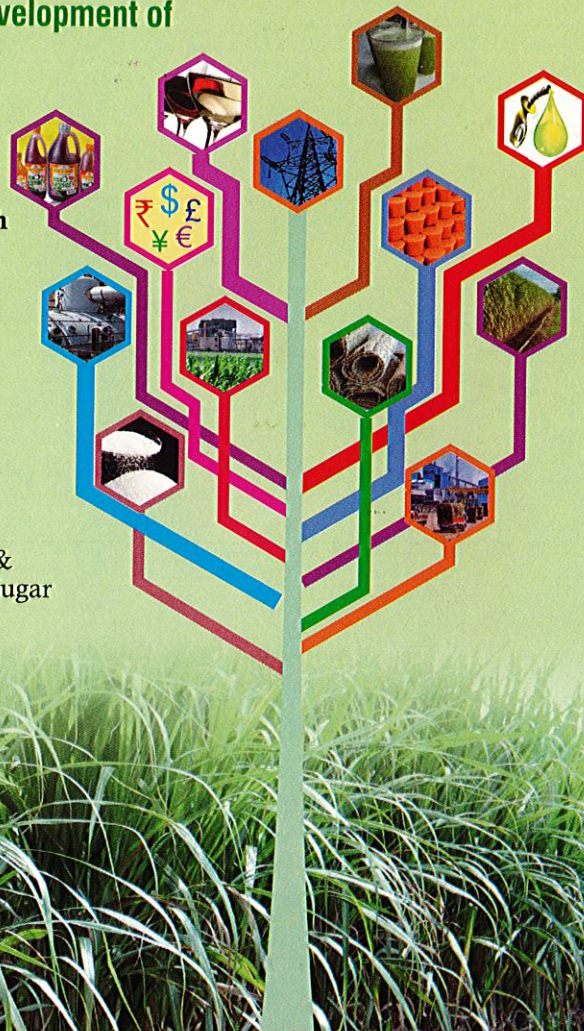
Venue

ICAR-Indian Institute of Sugarcane Research
Lucknow, Uttar Pradesh, India



Organized by

Society for Sugar Research & Promotion
ICAR-Indian Institute of Sugarcane Research &
International Association for Professionals in Sugar
and Integrated Technologies



SugarTech

Springer



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Venue

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CONCURRENT SESSION B-III

STRESSED-ECOSYSTEMS AND IMPROVED CROP PRODUCTIVITY FOR BETTER FARM RETURN

LEAD PAPERS

B-III-L-1

The varietal variation in photosynthesis and transpiration efficiency at initial growth stage of sugarcane at elevated atmospheric CO₂ and temperature

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A field experiment was conducted in 2017/18 at the Sugarcane Research Institute, Uda Walawe, Sri Lanka with eight commercial sugarcane varieties under well-watered conditions in open-top chambers and in the open field to determine their varietal variation of leaf net photosynthesis rate (A_n) and transpiration efficiency (T_E) at elevated atmospheric carbon dioxide concentration (ECO_2) and air temperature (ETem) in a split-plot design with three replicates. Two levels of each CO₂ (~400 and 665 ppm) and temperature (~34 and 37°C) were used as treatments in the main-plots and the eight varieties in the sub-plots. A_n and transpiration rate were measured at 86 days after planting using the portable photosynthesis system and T_E was calculated. Significant interaction effects on A_n and T_E among the varieties, and the levels of CO₂ and temperature were observed. Elevated CO₂ did not affect A_n , but it increased T_E in all the varieties. ETem decreased T_E in all the varieties. The combined effect of ECO_2 and ETem decreased A_n and increased T_E in all varieties with the ECO_2 effect being dominant over ETem. The varieties SL 83 06 and SL 96 128 had the highest A_n while SL 83 06 and SL 90 6237 had the highest T_E at ECO_2 and ETem conditions.