

**SCREENING COCONUT VARIETIES FOR
HEAT/DROUGHT TOLERANCE USING
CARBOHYDRATE CONTENT IN THE
DEVELOPING ANTHERS**

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ABSTRACT

Exposure to higher than optimal temperature reduces yield in coconut. The effect of heat stress on pollen characteristics is associated with changes in carbohydrate metabolism in the developing anthers. The study was conducted to investigate the effect of heat/drought stress on carbohydrate concentration of coconut anthers in their final stages of development and its relation with nut setting of four coconut varieties ; Sri Lankan Tall (TT), Dwarf x Tall (DT), San Ramon (SR) and Dwarf Red (DR) during two seasons March and June 2011. The highest starch and total soluble sugars (TSS) contents were observed in March (255.68 mg/g dw⁻¹ and 167.31 mg/g dw⁻¹) and the lowest in June (138.61 mg/g dw⁻¹ and 102.25 mg/g dw⁻¹) with longer duration of exposure to high temperature (≥ 32 °C) in April to June compared with January to March period. Starch and total soluble sugar was highest in Tall followed by Dwarf x Tall compared to that of San Ramon and Dwarf Red. Tall variety showed the highest number of female flowers, set nuts and fallen nuts. Number of set nuts (SN) and Set nut percentage (% NS) were highest in June and April to May respectively. Tall and Dwarf x Tall varieties were found to be more heat tolerant and Dwarf Red was found to be more heat sensitive among four varieties tested with respective to their carbohydrate metabolism in developing anthers at the final stages. The study has to be continued to confirm these results.