

**PHYSIOLOGICAL AND AGRONOMIC TRAITS OF FIVE COWPEA
VARIETIES GROWN IN ANURADHAPURA,
SRI LANKA**

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Cowpea (*Vigna unguiculata*) is a major grain legume crop in the tropics and subtropics. It supplies both rural and urban consumers with nutritious grain and a less-priced source of protein. The main aim of the study was to evaluate the physiological and agronomic traits of five cowpea varieties grown in Anuradhapura, Sri Lanka. The study was conducted in the research field of the faculty with MI 35, *Waruni*, ANKCP 01, *Bombay*, and *Dawala* cowpea varieties with six replicates. Chlorophyll fluorescence parameters: (fluorescence yield in light-adapted - PhiPS2 and dark-adapted - Fv/Fm leaves with their electron transport rate - ETR, and agronomic parameters: harvest index (HI), actual total yield, hundred seed weight, number of seeds per pods and number of pods per plant were measured. Leaf area index (LAI), leaf mass per unit area (LMA), whole plant leaf area, vein length per unit area and turgor loss point (Ψ_{TLP}) were also measured. The total yield was significantly ($p < 0.05$) higher in *Waruni* ($749.73 \pm 24.40 \text{ kg ha}^{-1}$). The yield showed a tradeoff relationship with the Ψ_{TLP} ($p = 0.0297$). The HI was significantly different ($p < 0.05$) between varieties and it strongly related with PhiPS2 ($p = 0.029$) and pods per plant. The study concludes that physiological and agronomic traits correlate with yield and the variety *Waruni* are superior compared to the others, which confirms our previous studies.

Keywords: Cowpea, Electron transport rate, Fluorescence