COMPARATIVE EVALUATION OF GROWTH RESPONSES IN SELECTED TOMATO (*SOLANUM LYCOPERICUM L.)* VARIETIES UNDER SUNLIGHT AND SHADE CONDITIONS

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This study evaluated the effects of three growing environments; Net House with Full Sunlight Condition (NHFS), Net House with Shade Net Condition (NHSN) and Open-Field Ambient Condition (OFAC) on the growth performance of five local improved varieties (*Lanka Sour*, *Bathiya*, *KC1*, *Ravi* and *Tharindu)* and two imported hybrid varieties (*Platinum* and *Aruni)*. The study was conducted at the University of Sri Jayewardenepura using a Randomized Complete Block Design (RCBD) with four replications. Growth parameters of plant height (PH), number of leaves (NL), stem diameter (SD), leaf width (LW), leaf length (LL), chlorophyll content (CH), number of flowers (NF) and number of fruits (NR) were measured during the experimental period of 6 months. One-way ANOVA with Tukey's post hoc test at a 95% significance level was used in accordance with Pearson correlation and simple linear regression analysis. The results indicated that SD (4.44±0.16cm and 4.60±0.42cm), CH (65.17±1.39 and 41.00±1.58), NF (16.80± 0.42 and 20.50±1.39) and NR (9.40±0.47 and 2.00±0.84) of *Aruni* and *Tharindu* respectively, were significantly higher under NHFS with 45% shade effect. PH (150.92±0.50cm and 117.64±0.88cm), LW (6.22±0.26cm and 5.88±0.12cm) and LL (11.18±0.24cm and 10.20±0.25cm) of *Aruni* and *Platinum* were significantly higher under NHSN with 55% shade effect. OFAC had inconsistent plant growth due to variation of the environment. The strongest positive correlation between PH and NR under NHSN conditions ($r = 0.726$) indicated that taller plants produce more fruits. Overall, *Aruni* performed best in most parameters as an imported variety. As a local variety, *Tharindu* performed best in NF and NR under NHFS conditions. The study concluded that NHFS with 45% shade effect provides the most favorable environment, and *Aruni* is a comparatively adaptive variety irrespective of the shade control.

Keywords: *Aruni*, controlled environments, light intensity, morphological variation