**Screening and Assessment of Selected Capsicum (*Capsicum annuum* L.) Varieties and Inbred Lines for Drought Tolerant at Vegetative Stage**

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Extreme weather events are occurring more often and water stress was found to be one of the main constraints to capsicum (*Capsicum annuum* L.) production in the world (Rezwan Molla et al., 2021). As a solution to the issue, this study was undertaken to screen and assessment of four of capsicum varieties (HYW, Gannoruwa Prarthana, CA8, Muria,) and three inbred lines (1782, 300, ISPN-5) for drought stress tolerant at the vegetative stage. Water-stressed (W2) and well-watered (W1) conditions were imposed at the vegetative stage. All varieties contained 3 replicates for each treatment. Seedlings which 27 days old were exposed to drought stress induced by restricted watering for 7 days. Then, recovered for 7 days. Treatment combinations were arranged in a Complete Randomized Design (CRD). Root and shoot length, root and shoot dry weight, root shoot weight ratio, leaf area, petiole weight, stomatal density, and chlorophyll content were recorded for both well-watered and water stressed crops and the differences were determined. According to the analysis, distinct changes were not identified among the genotypes. Drought tolerant characteristics were identified of Muria, HYW, and ISPN-5 with respect to the morphological, physiological and anatomical parameters. The highest shoot length was observed in CA- 8 (66.08A ± 1.97). The lowest shoot length showed in the inbred line 300 (46.17 C ± 0.95) with a significant difference (P<0.05) from all other treatments. There was a highest average petiole weight in the variety HYW (1.29A ± 0.04). The highest average shoot fresh weight showed in the inbred line ISPN-5 (89.12A ± 2.42) and the highest chlorophyll content showed in the variety ISPN-5 (48.89 ± 1.05). A noticeable flowering delay was observed among the water stressed genotypes comparing to the control. All genotypes at the vegetative stage possessed high recovery percentage following the re-watering phase.

Keywords: Capsicum, Chlorophyll**,** Drought, Stomata