ASSESSMENT OF VEGETATIVE GROWTH AND YIELD OF *Capsicum annuum* IN THE LOW COUNTRY INTERMEDIATE ZONE IN SRI LANKA

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ABSTRACT

Capsicum annuum (chilli) is a widely cultivated crop in Sri Lanka and globally with significant economic and nutritional value. This study aimed to assessment the vegetative growth performance of nine *Capsicum annuum* varieties in the Low Country Intermediate Zone (IL1a) in Sri Lanka. The nine chilli varieties; *MICH 3*, *KA 2*, *MI Green*, *Arunalu*, *Galkiriyagama Selection*, *Waraniya Purple*, *Waraniya Green* , *MI Waraniya* 1, *MI2* recommended chilli varieties by DOA, Sri Lanka were used for the study. The varieties were arranged in a pot experiment in a Completely Randomized Design (CRD) by using 9 replicates. Plant morphological traits and environmental factors, temperature, rainfall, humidity, and photoperiod were recorded to analyze their influence on plant performance. The results demonstrated significant variation of morphological traits among the tested varieties. Among the tested varieties, *MICH3 and Waraniya purple* exhibited maximum plant height (63.88±10.30cm, 64.00±4.31cm) and *MI Waraniya1* exhibited maximum leaf length, (17.0125±0.1356cm) indicating strong vegetative growth. The variety *MI2* reported the highest leaf production (173.13±12.01), reflecting enhanced photosynthetic potential. Leaf width was consistently greater in *MI Waraniya1* (8.15±0.075cm) and *Waraniya Green* (8.025±0.0378cm), while *MICH3* (23.75±4.43) exceeded in branch development, suggesting better overall plant architecture. *Galkiriyagama selection* produced the highest number of flowers (11.88±4.22), indicating strong reproductive potential. Biplot analysis reported that temperature and relative humidity are strongly associated with plant growth parameters in the Low Country Wet Zone. Plant Height of the tested varieties in the Low Country Wet Zone, associated with higher RH and temperature. In the IL1a, photoperiod plays a more significant role in determining plant height. The number of branches is strongly correlated with temperature and RH, implying that these factors enhance vegetative growth in the Low Country Wet Zone. The number of Leaves of the selected chilli varieties in the IL1a, leaf production is more influenced by photoperiod. In the Low Country Wet Zone, RH and temperature have a stronger influence, likely improving leaf expansion and formation. The PCA biplot indicates that the varieties tested at Low Country Wet Zone thrive under higher RH and temperature.

Key words: *Capsicum annuum*, Environmental factors, Growth performance, Low Country Intermediate Zone

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