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VARIETAL RESPONSE OF CHILLI (*Capsicum annum*) TO LOW CONCENTRATIONS OF NITROGEN UNDER *IN VITRO* CONDITIONS

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Nitrogen (N) is a constraining factor for the growth and yield performance of crops. Excessive application of N fertilizers increases the cost of production while negatively impacting the environment by polluting the groundwater, as reported in the Kalpitiya area. Thus, the crop varieties that can efficiently respond to lower N concentrations than the recommended doses are equally beneficial for the farmers and the environment. Therefore, a two-factor factorial in Completely Randomized Block was conducted to test four commercial chilli varieties (MICHHY F1, MI *Waraniya*, MI 2 and KA 2) for different N concentrations. Chilli seeds were cultured onto the half-strength Murashige and Skoog (MS) media supplemented with four NH_4NO_3 concentrations, 875.00 (control), 656.25, 437.50, 218.75 mg L^{-1} under *in vitro* conditions. Thirty replicates were used for each treatment. Vegetative parameters of seedlings, including leaf and root number and shoot and root length, were compared after 30 days of culture initiation. The N concentrations ($p < 0.05$) and the genotypes ($p < 0.0001$) influenced the growth performance of the seedlings significantly, but an interaction effect was not observed. KA 2 performed better for leaf number and shoot length, whereas MICHHY F1 was the best for root length. Both varieties performed better for root number. The performance of an individual variety for different N concentrations indicates their stability for the nutrient stress. The comparable root and shoot growth of MICHHY F1 under all N concentrations indicated its adaptability. However, the leaf number decreased significantly after the concentration of 656.25 mg L^{-1} NH_4NO_3. MI *Waraniya* and KA 2 also showed lower sensitivities for the reduced N supplement. MI 2 was highly sensitive to the N concentration, where significant reductions were observed in all parameters. Therefore, MICHHY F1, MI *Waraniya* and KA 2 were selected as the tolerant genotypes for the reduced N supplement.

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Keywords: Genotype, *In vitro*, Nitrogen, Sensitivity, Tolerance