

Study on impacts of shade and substrates on optimum growth of micro-propagated *Cryptocoryne wendtii*.

M.T.R.V.Lakmali^{1*}, A.C.W.W.M.C.L.K.Coswatte¹, V. Pahalawattaarachchi² and S.C.Jayamanne¹

¹Department of Animal science, Uva Wellassa University, Badulla, Sri Lanka

²National Aquatic Resources Research and Development Agency (NARA), Crow Island Colombo — 15, Sri Lanka

Cryptocoryne wendtii which belongs to the Araceae family play a main role in the ornamental aquatic plant industry of Sri Lanka. Micro-propagation is used as a method for large scale multiplication of this plant. However transferring of micro-propagated plants to the outer environment is challenging and needs best hardening substrate to achieve optimum growth. Therefore, this study was focused to determine the best hardening substrate and shade condition. Eight weeks old 45 plants of in-vitro rooted plants were hardened using three different substrates; coir fiber (A), clay pebbles (B), stone wools (C) and three different shades; without shade (1), 80% shade (2), 60% shade (3) for two months. Five replicates were used under different substrates and shade conditions: A(1,2,3) , B(1,2,3) , C(1,2,3). Growth performances of plants were measured using growth rates; stem length (S), root length (R), number of leaves (L) in all treatments at each substrate and shade. Collected data were subjected to statistical analysis at $p < 0.05$. According to the results, characteristics of substrates and shade (fixed factors) significantly affect on the growth performance of *C.wendtii* ($p < 0.05$). Mean stem length of plants were SA1(10.47cm±.14), SA2(9.78cm±.14), SA3(9.80cm±.14), SB1(9.74cm±.14), SB2(9.72cm±.14), SB3(10.54cm±.14), SC1(10.28cm±.14), SC2(10.10cm ±.14) and SC3(10.33cm±.14) in all the treatments. Mean numbers of leaves are; LA1 (10.5±.16), LA2(9.8±.16), LA3(9.9±.16), LB1(9.7±.16), LB2(9.8±.16), LB3 (10.5±.16), LC1(10.3±.16), LC2(10.1±.16), LC3(10.3±.16) in different treatments, while mean values of root length are recorded as; RA1(3.45cm±.16), RA2 (2.8cm±.16), RA3(2.9cm±.16), RB1(2.7cm±.16), RB2(2.8cm±.16), RB3 (3.5cm±.16), RC1(3.3cm±.16), RC2(3.1cm±.16), RC3(3.2cm±.16). The highest mean values for S, L, R were recorded by stone wool (C) substrate. The results of this study are important to achieve best growth performance of micro-propagated *C. wendtii* plants for ornamental aquatic plant industry.

Keywords: Micro propagation, Hardening, *Cryptocoryne wendtii*, Substrate, Shade