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Comparison of pepper (Piper nigrum L.) plant production under different polythene humid chamber systems

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Currently farmers are interested in cultivating local pepper selections due to their higher yield and quality characteristics. The main problem of these local selections is high plant casualties at the nursery stage. Therefore this study was conducted to investigate the suitable humid chamber systems for efficient plant production of local pepper selections.

Factorial combination of treatments consisting of three propagator systems [transparent (TPHC) and white polythene humid chambers (WPHC), without polythene humid chamber NOPHC)], three varieties (GK49, MB12 and Panniyur-1) and two cutting types (single and two nodal) were used. Fifty cuttings were used per treatment in each replicate. All treatments were replicated three times. RCBD was used as the experimental design. Data were collected on success percentage and shoot and root growth parameters. Data were analyzed using ANOVA in SAS package and LSD was used to compare the treatments.

One month after establishment, the percentage of cuttings with new shoot development was higher in TPHC (65.8%) and WPHC (68.1 %) than NOPHC (9.6%). However, after 5 months, the percentage of cuttings with new shoot development was similar in all three propagator systems (51.9-59.7%). Five months after cutting establishment, higher shoot height (TPHC, 27 cm; WPHC, 25.6 cm), number of leaves (TPHC, 5.5; WPHC, 5.2) and shoot dry weight (TPHC, 2.4 g; WPHC, 2.5 g) were given in TPHC and WPHC than the treatment without the polythene humid chamber. A higher root length and root volume were observed in TPHC (25.6 cm and 2.4 ml) and WPHC (26.2 cm and 2.5 ml) polythene humid chambers than the treatment without polythene humid chambers (20.5 cm and 1.9 ml) Significantly higher number of roots (10) was observed in TPHC than in the other two systems (8.9 in WPHC and 8.4 in NOPHC). The effect of types of polythene humid chamber was not significant on root fresh and dry weight. Among the three varieties used, significantly higher shoot height (Panniyur- 25.7 cm, GK49-23.6 cm and MB12-23.8 cm), number of leaves (Panniyur-6, GK49-5, MB12-5), shoot fresh weight (Panniyur-15.2 g, MB12-13.3, GK49-12.6 g) and root volume (Panniyur-2.46 ml, MB12-2.26 ml and GK49-2.04 ml) were given in Panniyur-1 than in the two local selections. Between the two cutting types, number of roots (10-two, 9-single), root volume (2.33ml-two, 2.17ml-single), shoot fresh weight (14.8 g-two, 12.7 g-single), shoot dry weight (2.4 g-two, 2.2 g-single) were significantly higher in two nodal cuttings than in single nodal cuttings. The overall results of the experiment revealed that the use of polythene humid chamber (transparent or white) is beneficial to raise pepper plants of local selections with higher shoot and root growth.