Selection of suitable rootstock for cucumber (*Cucumis sativus*) cultivation grown under protected house condition

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Grafting is an effective method to enhance crop growth and yield by increasing plant tolerance to root related stress. Therefore, this study was carried out to find suitable rootstock for cucumber grafting at the Regional Agriculture Research & Development Center, *Bandarawela* from March 2024 to August 2024. The experiment was designed as a Completely Randomized Design (CRD) with four replicates using four types of cucurbits as root stock in hole insertion grafting of cucumber. Each replicate consisted of 10 plants. The five treatments tested were T1:bottle gourd + cucumber, T2: pumpkin + cucumber, T3: ash pumpkin + cucumber, T4: *kakiri* + cucumber and T5: cucumber without grafting (control). Grafting success rate was evaluated 10 days after grafting. Treatments 1, 2, 3 and 4 showed 77.5%, 87.5%, 17.5%, and 0% grafting success rate respectively. Therefore, data (plant height, number of leaves per plant, total wet and dry weight of plant, wet and dry weight of shoots and roots per plant, maximum root length per plant) were recorded only in T1, T2, and T5 treatments. The data were analyzed with Minitab using ANOVA procedure at 0.05 significant levels. Plant height was measured from 10 days to 20 days after grafting. Results revealed that there was a significant difference ($p \leq 0.05$) in plant height among treatments throughout this period. Significantly higher plant height was recorded in T1 (bottle gourd + cucumber) compared to T2 and T5 treatments. However, there was no significant difference ($p \geq 0.05$) in the number of leaves per plant among treatments. Significantly higher fresh and dry weight of shoots, maximum root length, fresh and dry weight of plant was also recorded in T1 treatment compared to other treatments. Fresh and dry weight of roots were significantly higher in T1 and T2 compared to T5 treatment. Therefore, it can be concluded that bottle gourd is a suitable rootstock among tested rootstocks for successful grafting of cucumber. Further studies are needed to evaluate the performance of these plants under protected house conditions.

Keywords: *Bottle gourd, Cucumis sativus, Cucurbits, Grafting, Rootstock*