

Establishment of a plug seedling medium formula and fertilizer application suitable for cultivating the Solanaceae in Vietnam ¹

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Abstract

In this study, the 'Mei-Huei' tomato and 'Red Start' bell pepper were planted in 84-cell round-hole Styrofoam plugs. Six different ratios of histosol and coco peat soil were used as seedling media, and four varying fertilizer amounts were added to the seedlings in the histosol plugs. Accordingly, an investigation was made into seedling techniques for cultivating the Solanaceae in Vietnam, including a plug seedling medium formula and adequate fertilizer application. The experimental results revealed that the ratio of histosol in the seedling medium was positively correlated to the growth of seedlings in the plugs. The relative seedling index (SI) of the 'Mei-Huei' tomato and 'Red Start' bell pepper was more desirable when the ratio of histosol was at least 40% and 60%, respectively. The effect of fertilizer amount on the growth of plug seedlings varied with the different crops. The fertility indices and SI of the 'Mei-Huei' tomato were significantly and positively correlated to the culture solution concentration and the frequency of culture solution replacement. Fertilize with 500 times aqueous solution of New Baide Fertilizer No. 6 (20-10-20) once a week. The plant height of the plug seedlings is 135.8 mm, the stem diameter is 3.09 mm, the number of leaves is 5.6, the fresh weight above the ground is 1.71 g, and the relative seedling index is 0.0882, are significantly the best. Regarding the 'Red Start' bell pepper, the highest indices were observed when a 1000-fold 20-10-20 culture solution were applied twice a week. The plant height is 119.3 mm, the stem diameter is 2.89 mm, the number of leaves is 7.8, and the aboveground fresh weight is 1.69 g. In Huyện Đức Trọng, Tỉnh Lâm Đồng, Vietnam, on-site trial planting of Solanaceae seedlings in plugs was also conducted. The results revealed that the 'Mei-Huei' tomato planted in histosol significantly exhibited the highest ratio of stem diameter to plant-height, indicating a positive effect on the SI. The cost of using seedling-specific histosol as a medium to cultivate a single seedling was approximately NT\$0.08, a mere 6% increase compared to using local media from Vietnam. With contemporary seedling techniques such as professional seedling protected cultivation and adequate management of fertilizers, water, and pest control, superior seedlings can be cultivated and permanently planted to achieve a desirable fertility rate. The proposed cultivation scheme demonstrates potentials for promotion and further development.

Keywords: plug, seedling, medium, fertilizer, protected culture

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