

## Effects of Soil Compositions and Environmental Factors on Growth of Bell Flower

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### [Introduction]

Plant tissue culture is an integral part of the plant biotechnology. Thus, the cultivated platycodon can be used to optimize the growth of crops, promote the growth of crops, increase the efficiency of stable propagation, and protect crops from external pests. This experiment was carried out to investigate the effects of cultivated soil composition and proper environmental conditions for the acclimation of soil culture.

### [Materials and Methods]

Nine kinds of cultivated soil with different mixing ratios were cultured in the growth chamber, such as Horticultural bed soil (S), peatmoss (Pm), cocopeat (C), vermiculite (V) and perlite (P) to determine suitable soil for acclimation. To investigate the luminous intensities, 10, 15, 30, and 60  $\mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$  were maintained, and the temperature was maintained in the following manner; 15, 20, 25, 30 °C.

### [Results and Discussions]

In the case of *Platycodon grandiflorum* with green petal, the lowest growth (1.7 cm) was observed from the soil (PmV) while the highest growth (27.4 cm) was observed from the soil (SVP) mixed with vermiculite, and perlite soil at a ratio of 2: 1: 1. *P. grandiflorum* for. *duplex* showed the most vigorous growth (32.2 cm) when the soil was used for only (S), and the soil (SV) at a ratio of 2: 1. Soil (SVP) at a ratio of 2: 1: 1 showed similar growth in the order of the next, but there was no significant difference. The growth of the top part of *P. grandiflorum* with green petal showed the highest plant height (28.2 cm) with the highest luminosity at 60  $\mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$  under the light intensity, while the light intensity decreased with decreasing luminous intensity. In the case of acclimation temperature, the plant height of *P. grandiflorum* with green petal was the highest (32.2 cm) at 25 °C. However, the plant height of the *P. grandiflorum* for. *duplex* was 28.0 cm and 28.2 cm at 20 °C and 25 °C, but the growth was remarkably suppressed at 30 °C.

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