

Effect of N, P, and K on the Growth and Flowering of *Platycodon grandiflorum* for. *duplex*

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[Introduction]

Recently, the interest on the secondary metabolites of medicinal plants has attained scientists concern due to the development of various health functional foods. *Platycodon grandiflorum* for. *duplex* has been used to explore the pharmacological efficacy of *P. grandiflorum* for. *duplex* roots. Thus, *P. grandiflorum* for. *duplex* root extracts have paved the way for studying health foods and medicines of various medicinal plants. However, a sustainable supply is necessary to use it as raw materials of health foods and medicines, but the studies on this issue have been grossly overlooked.

[Materials and Methods]

The one year old *P. grandiflorum* for. *duplex* roots (10~15g) were used as experimental materials. The seeds were grown weekly on 1/2000a wagner pot packed with soil (4kg) of the affiliated practical forest in the Woosong Information University. Fertilization conditions were set in per pot in the following manner; nitrogen: active phosphorus: potassium = 6g: 7g: 3g as a standard. The morphological parameters were investigated.

[Results and Discussions]

The plant height was significantly higher than that of the control (T0) regardless of the type of fertilization. The highest value was 85.7 cm in the complete group (T4). In leaf growth, leaf width was 4.5 cm and 4.4 cm in non nitrogen group (T1) and complete group (T4), respectively. Leaf length was the longest, 8.5 cm in T4. The other treatments were in the range of 6.8 to 7.8 cm and showed no significance. In the complete group (T4), the branching index was found to be 15.5, indicating that the formation of the branch was vigorous. The total leaf area was 905.1 cm² and 966.9 cm² per plant in T1 and T4 respectively. Chlorophyll content was high in the range of 20.7~23.8mg·g F. wt in all treatments except the T0 and T1. However, the number of flowering was 10.8 and 11.8 in T0 and T3, respectively, showed good flowering number in the range of 14.2~15.1. There was no significant difference in the number of openings depending on the type of fertilizer. In the subterranean part, the root length was longer by the fertilization treatment than the T0, especially in the T4, the highest value was 20.9 cm. The root diameter showed similar tendency to the root length, but the T3 and the T4 showed good results of 21.6 mm and 23.4 mm, respectively.

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