

## Effects of phosphate bio-fertilizer and different substrates on some quantitative and qualitative characteristics of ivy geranium (*Pelargonium peltatum*)

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### Abstract

Application of bio-fertilizers and organic compounds is a way to reduce the use of chemical fertilizers. In order to study the effects of organic compounds and phosphate bio-fertilizer on some quantitative and qualitative attributes of ivy geranium (*Pelargonium peltatum*), a factorial experiment based on randomized complete blocks design (RCBD) was carried out using two factors including phosphate bio-fertilizer (Barvar 2) and different substrate in 16 treatments, 4 replications, 64 experimental plots with 256 plants. Phosphate bio-fertilizer (Barvar 2) at two levels (B0: non-application and B1: application of the Barvar 2) and different substrates including 8 treatments (M1: garden soil + sand, M2: garden soil + cocopeat + solid waste compost, M3: garden soil + sand + water tank soil, M4: garden soil + cocopeat + water tank soil, M5: garden soil + sand + solid waste compost, M6: garden soil + sand + solid waste compost + water tank soil, M7: sand + leaf mold + cocopeat + solid waste compost, M8: sand + tea compost + cocopeat + water tank soil) (v/v) were applied. In this study, leaf number, leaf area, inflorescence number, concentration of petal anthocyanin, shoot and root dry weight and shoot phosphorus amount were evaluated. Results showed that both main effects and interactions were significant on all traits. The best treatment was M8B1 (sand + cocopeat + tea compost + water tank soil) along with the Barvar 2 compared to the other treatments. Plants grown in this cultivation bed showed the highest performance in traits such as leaves and inflorescences numbers, with an average of 59.25 leaves and 5.9 inflorescences per plant, among the treatments. Barvar 2 along with this substrate can be used instead of phosphate chemical fertilizer for the better growth of ivy geranium plant.

**Keywords:** Bio-fertilizer, Morphological and physiological attributes, Organic compounds, Ornamental plant, Phosphorus.

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