

## Effect of the particle size of aqua-soil media on the growth performance of *Bacopa monnieri* (Lunuwila) plant

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### Abstract

The substrate will create a suitable environment for the growth of aquatic plants. It provides a place to roots, source of nutrients and in some cases medium to reproduce. Inappropriate particle size of the substrate will affect the growth of aquatic plants, thus this study focused on investigating a suitable particle or grain size of aquarium soil for the growth performances of the popular ornamental aquatic plant *Bacopa monnieri*. Aqua soil prepared using compost and topsoil (1:1 as a powder) was used as the control treatment. Three different grain sizes of aquarium soil (T1 -3 mm, T2-5 mm, and T3-7 mm) were prepared by making balls from the mixture. The stem cuttings of *Bacopa* plants (10 cm) were potted in pots (5 cm diameter, 7 cm height) with relevant aqua-soil mixtures in submerged condition (10 cm above plant) for seven weeks period. Plant wet weight, dry weight, plant height, root length, leaf length, leaf width, leaf area, and number of leaves/ plants were taken to measure the growth performance of the plant. As water quality parameters, water temperature, pH, conductivity, TDS, TSS and DO were measured. Results indicated that the maximum height shown by plants in T2 (14.08±1.07 cm) and both those of T2 and T3 were significantly higher when compared to control and T1. The final dry weight and % dry weight gain of plants in T2 was significantly higher when compared to that of T1, T3 and control. The % wet weight gain of plants in T2 was significantly higher compared to that of the control. The results showed that T2 showed significantly higher plant dry weight (1.09±0.19) g, % wet weight gain (44.85±4.28), % dry weight gain (46.33±3.37), number of leaves (24.00±4.75) and chlorophyll content (16.01±0.82 µg/g) compared to other treatments. There is no significant difference in conductivity, TDS, TSS and DO values among all the treatments. The study revealed that aquarium soil with the grain size of 5 mm (T2) was the most effective aquarium soil type among tested treatments for the efficient growth of *Bacopa* plant.

### Keywords

*Bacopa monnieri*, particle size of substrate, plant growth, aqua soil