

Effect of different planting substrates on vegetative and physiologic characteristics and nutrients content of rose (*Rosa hybrida* var. Grandgala) in hydroponic system

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Abstract

Rose is one of the most important flowers in the world, and is ranked first in the market of cutting flowers. An experiment was carried out to study the effects of different planting substrate on the quality and quantity of rose (*Rosa hybrida* var. Grandgala) flower. In this experiment, one-year-old rooted cuttings of commercial rose cv. Grandgala were transferred into different growing media including: 25% perlite + 75% cocopeat, 50% perlite+ 50% cocopeat, 75% perlite+ 25% cocopeat, and washed sand, and nourished by one-half Hoagland's solution, with pH of 6.5, for six months. In this study, effects of different planting media on different characteristics such as vegetative growth, photosynthetic parameters and nutrients were investigated. Results showed that planting media influenced all studied factors and differences between the four medium were clearly visible. Plants grown in medium with 25% perlite+ 75% cocopeat had the highest increase in growth photosynthetic parameters, and nutrients' concentration as compared to other treatments. For example, increasing the percentage of cocopeat caused an increase in the number of buds on the plant. Number of buds in 25% perlite+ 75% cocopeat treatment increased 36% over washed-sand treatment. Also, the highest photochemical quantum yield of PS II photochemistry (Fv/Fm) was observed in 25% perlite+ 75% cocopeat treatment and the lowest Fv/Fm (0.724) in the plants grown in 75% perlite+25% cocopeat, respectively. According to the results, mixture of 25% perlite+ 75% cocopeat substrate was a suitable medium for hydroponic cultivation of rose var. Grandgala.

Keywords: Hoagland solution, Perlite, Cocopeat, SPAD, Chlorophyll fluorescence.

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