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Effect of Pot Size on Performance of Syngonium and Philodendron

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A B S T R A C T

An investigation on effect of pot size on performance of syngonium and philodendron was laid out at College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli during the year 2020-21 and 2021-22 in completely randomized design and replicated seven times and revealed that in syngonium from the pooled data of two seasons, the maximum survive (88.10 %) was recorded in treatment S_1 i.e. 20 × 18 (cm) pot size which was found to be at par with the treatment S_2 i.e. 18 × 16 (cm) (86.87 %). It was observed in syngonium that the treatment S_1 i.e. 20 × 18 (cm) pot size recorded maximum fresh and dry leaf weight (5.61 and 1.12 g), fresh and dry stem weight (458.82 and 44.78 g), fresh and dry root weight (352.34 and 36.92 g), longest root weight (38.47 cm) and number of primary roots (56.45). It was observed in philodendron, from the pooled data of two seasons, the maximum survive (88.10 %) was recorded in treatment S_1 i.e. 20 × 18 (cm) pot size which was found to be at par with the treatment S_2 i.e. 18 × 16 (cm) (87.14 %). It was observed in philodendron that the treatment S_1 i.e. 20 × 18 (cm) pot size recorded maximum fresh and dry leaf weight (5.44 and 1.09 g), fresh and dry stem weight (436.23 and 40.49 g), fresh and dry root weight (357.51 and 35.61 g), longest root weight (31.64 cm) and number of primary roots (116.64).

Introduction

Ornamental plants are of considerable commercial importance for instant gardening and for indoor, as well as, outdoor decoration. Potted plants can be carried wherever needed. These may be either of ornamental foliage or flowering. They are used for indoor decoration at homes, offices, commercial complexes, corporate offices, hotels, malls, and for decoration of sites during various functions or occasions. The importance of these plants is increasing because with the growing population and lack of open spaces, one has to largely depend on potted plants for decorating their surroundings. Examples of potted plants are philodendron, aglaonema, aralia, azalea, calathea, chlorophytum, croton, diffenbachia, dracaena, ferns, ficus, kalanchoe, maranta, money plant, senecio, syngonium, etc. The role of open spaces like parks and plants in checking air pollution is a well-known

fact. Parks are considered as the lungs of cities. Ornamental plants help improve the environment aesthetically and health-wise. Growing plants inside a house is known as indoor gardening. It not only makes the appearance of indoors beautiful, pleasant and attractive but also improves the air quality and adds freshness to an area. The use of foliage plants for interior decoration or interior plant scaping has become an integral part of contemporary design, playing an important role in our life (Manaker, 1997). Ornamental plants also serve some less obvious uses such as for fragrance, for attracting wildlife and for cleaning the air (Jenkins *et al.*, 1992).

Potted ornamental foliage plants are getting momentum nowadays due to rapid urbanization and changing lifestyles of people across the world. They are very easy to transport and hence used for instant outdoor landscaping as well as indoor gardening. Potted plants include both flowering and foliage plant. Foliage plants are generally grown for their attractive foliage and can be kept for longer periods under indoor conditions. Among them syngonium and philodendron, popularly known as foliage plants is one of the most versatile, recognizable and widely used group of tropical herbaceous ornamental foliage plants used by professional interior landscapers for decades.

Materials and Methods

The experiment was conducted at the Hi-Tech unit, College of Horticulture, Dapoli, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist-Ratnagiri (M.S) during the period 2020-21 and 2021-22. Experiment was "Effect of pot size on performance of syngonium and philodendron.

Two crops syngonium and philodendron were studied with three different pot size *viz.*, S_1 : 20 × 18 (cm), S_2 :18 × 16 (cm) and S_3 :15 × 13 (cm). Media required for the experiment *i*.e., coco-peat, rice husk, FYM, charcoal and coconut husk and was laid out in completely randomized design and replicated seven times. The 50 % shade net structure was constructed at High-Tech College of Horticulture Dapoli. 210 plants of each species Syngonium *(Syngonium podophyllum)* and Philodendron *(Philodendron imbe)* used for the experiment. Observations on various growth parameters taken at end of the experiment *viz.* survival percentage fresh and dry leaf weight, fresh and dry stem weight, fresh and dry root weight, longest root length and number of primary roots were recorded at proper stage and analyzed statistically by the method suggested by Panse and Sukhatme (1978).

Application of fertilizers for proper growth and development at regular interval was followed for syngonium and philodendron. Fertilizers were given two weeks after transplanting. Foliar spray of water soluble fertilizer (19:19:19) (2g/l) twice in the week and magnesium sulphate (1g/l) and calcium nitrate (1g/l) was given at one month interval. Micronutrient spray was given at one week intervals @ (1g / l).

Results and Discussion

The data presented in table 1 and 2 revealed that, The effect of these pot size treatments with respect to survival percentage and growth parameters which are taken at end of the experiment for two years. Observations take at monthly interval in both syngonium and philodendron crops. The results are presented under following heads.

Syngonium

It was observed in syngonium, from the pooled data of two seasons that the maximum survive (88.10 %) was recorded in treatment S_1 i.e. 20 × 18 (cm) pot size which was found to be at par with the treatment S_2 i.e. 18 × 16 (cm) (86.87 %). Similar results were reported by to Kinuyu (2017) this may be due to survival increased with increase in pot size. Whereas, minimum survive (80.00%) was recorded in treatment S_3 i.e. 15 × 13 (cm) pot size. It was observed in syngonium that the treatment S_1 i.e. 20 × 18 (cm) pot size recorded maximum fresh and dry leaf weight (5.61 and 1.12 g), fresh and dry stem

weight (458.82 and 44.78 g), fresh and dry root weight (352.34 and 36.92 g), longest root weight (38.47 cm) and number of primary roots (56.45).

Whereas, minimum fresh and dry leaf weight (5.09 and 1.02 g), fresh and dry stem weight (449.78 and 39.27 g), fresh and dry root weight (343.86 and 31.95 g), longest root weight (33.46 cm) and number of primary roots (50.06) were recorded in S_3 i.e. 15 × 13 (cm) pot size. In general, as container size increases plant leaf length and breadth, shoot biomass and root biomass increase (Cantliffe, 1993). Growth rates of shoots and roots are interdependent (Tonutti, 1990).

Philodendron

It was observed in philodendron, from the pooled data of two seasons, the maximum survive (88.10 %) was recorded in treatment S_1 i.e. 20 × 18 (cm) pot size which was found to be at par with the treatment S_2 i.e. 18 × 16 (cm) (87.14 %). Whereas, minimum survive (79.52 %) was recorded in treatment S_3 i.e. 15 × 13 (cm) pot size. It was observed in philodendron that the treatment S_1 i.e. 20 × 18 (cm) pot size recorded maximum fresh and dry leaf weight (5.44 and 1.09 g), fresh and dry stem weight (436.23 and 40.49 g), fresh and dry root weight (357.51 and 35.61 g), longest root weight (31.64 cm) and number of primary roots (116.64).

These results get the support of findings of Gulcu *et al.,* (2010) in *Crimean juniper* and Gupta (2013) in *Primula malacoides* Franch. Whereas, minimum fresh and dry leaf weight (4.63 and 0.93 g), fresh and dry stem weight (422.63 and 35.24 g), fresh and dry root weight (340.53 and 29.45 g), longest root weight (26.67 cm) and number of primary roots (99.29) were recorded in S_3 i.e. 15 × 13 (cm) pot size.

Table.1 Effect of pot size on growth parameters of syngonium

Treatments	Survival (%)	Leaf fresh weight (g)	Leaf dry weight (g)	Fresh stem weight(g)	Dry stem weight (g)	Longest root length (cm)	Number of primary roots	Fresh root weight (g)	Dry root weight (g)
S_1	88.10	5.61	1.12	458.82	44.78	38.47	56.45	352.34	36.92
S_2	86.67	5.25	1.05	454.10	41.07	36.06	52.91	347.54	35.45
S_3	80.00	5.09	1.02	449.78	39.27	33.46	50.06	343.86	31.95
SE(m) ±	1.10	0.07	0.01	1.15	0.83	0.52	0.80	1.08	0.62
CD at 1%	4.48	0.27	0.05	4.67	3.37	2.10	3.24	4.39	2.54

Table.2 Effect of pot size on growth parameters of philodendron.

Treatments	Survival (%)	Leaf fresh weight (g)	Leaf dry weight (g)	Fresh stem weight(g)	Dry stem weigh t(g)	Longest root length (cm)	Number of primary roots	Fresh root weight (g)	Dry root weight (g)
S_1	88.10	5.44	1.09	436.23	40.49	31.64	116.64	357.51	35.61
S_2	87.14	5.02	1.00	431.77	38.48	29.60	106.07	347.52	32.62
S_3	79.52	4.63	0.93	422.63	35.24	26.67	99.29	340.53	29.45
SE(m) ±	1.65	0.11	0.02	1.54	0.60	0.59	1.14	1.46	1.01
CD at 1%	6.71	0.44	0.09	6.27	2.46	2.40	4.65	5.94	4.13

During present investigation, effect of pot size on indoor ornamental plants syngonium and philodendron, the pot size (20×18 cm) and (18 × 16 cm) were found suitable with respect to survival (88.10 and 86.87 %) and (88.10 and 87.14 %). Pot sizes (20 ×18 cm) and (18 × 16 cm) were found most suitable with respect growth parameters taken at end of the experiment i.e. fresh and dry leaf weight, fresh and dry stem weight, fresh and dry root weight, longest root weight and number of primary roots in both the ornamental species syngonium and philodendron.

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