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Assesment of different substrates for pot culture in calla lily (*Zantedeschia sprengeri)*

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Abstract
Standardization of a suitable potting media for vegetative and flowering characteristics of Calla lily (*Zantedeschia sprengeri*) was studied in College of Horticulture, VCSG UUHF, Bharsar on 13 different growing media which comprised of different combinations of garden soil, cocopeat and perlite. The experiment was conducted for two successive growing seasons i.e. March 2016 to July 2017 and was laid out in completely randomized block design. Suitable potting media was identified by measuring changes in vegetative and floral characteristics such as plant height, plant spread, stalk length, stalk diameter of flower, number of flowers per plant and per pot etc. In the present study it was found that by the use of coco peat alone it exhibited maximum plant spread (22.51cm), number of leaves per plant (9.20) and leaf area (247.97 cm^2). Earliest first flower bud initiation (30.97 days) and first flower bud opening (8.68 days) was recorded by the use of garden soil + perlite (1:2). Maximum stalk length of flower (54.21 cm), stalk diameter of flower (1.09 cm), spathe length (11.08 cm), spathe diameter (7.77 cm) and weight of fresh flower (35.45 g) was recorded when garden soil + perlite (1:1) was used as a growing media. Thus it can be concluded that growing media combination of garden soil + cocopeat (1:2) i.e. T_8 can effectively be used for improving the overall quality attributes of flower for its use as a cut flower or as a pot plant.

Keywords: Calla lily, garden soil, cocopeat, perlite

Introduction
Calla lily also known as Arum lily or Aroid lily are very attractive plants grown for its large colour full flower spathe and attractive variegated and spotted foliage. Calla lily (*Zantedeschia sp.*) was named after the Greek word for beautiful (Calla) and belongs to Araceae family. It is native to South Africa (Dole and Wilkins, 1999) [7]. Due to its peculiar flower shape, varieties of colour (*viz.,* white, pink, golden, red lavender, black, yellow, orange and dark purple), attractive foliage and good keeping quality of flowers, it is now a days becoming popular. It may be grown as outdoor garden plant, border plant, commercial cut flower and more recently as flowering potted plant (Kuehny, 2000) [12] and despite its use as a cut flower its leaves which are very elegant are also used for flower arrangement.
It is attractive as a pot plant (Singh, 2006) [20] and if it is to be used as a pot plant then potting media is to be kept in consideration. Many growers believe that majority of problems that occur during production are closely linked to the quality of growing media, consequently growers often test several media to select one that works best for them. Hence, an ideal growing media has become first and foremost requirement for successful culture of any plant. It should supply all the essential nutrients in balanced and available forms and should have good water holding capacity, high porosity, good aeration and good structure as well. Now a day, different types of soilless potting media such as peat, coco peat, sphagnum moss, wood substrates, compost, animal manures, rice hulls, vermiculite, perlite and sand are being in use for pot culture.
Production of potted ornamental plants is greatly influenced especially by growth medium components prepared in different proportions has been suggested by Popescu and Popescu (2015) [16] and value of growing media on potted ornamental plants also has been reported by Vendrame *et al.*, 2005 [24]. Hence it is necessary to standardize the potting media for pot culture.

Materials and Methods
The present study was conducted for two successive seasons (March to July 2016 and March to July 2017) and the data was analyzed statistically for both the seasons and also their pooled

data was analyzed. Different types of potting media viz. Perlite, cocopeat at different concentrations along with garden soil was investigated to ascertain its effect on growth and flowering of Calla Lily. For the commencement of experiment plastic pots of 19 × 20cm size were used. Media composition was prepared manually on the experimental site and pot filling was done on the volume to volume basis. A composite soil sample from a depth of 15 to 30 cm was taken and physico-chemical properties of the soil were recorded. Uniform size tubers (2.5 to 3 cm) of Calla lily were selected for planting in the pots. The experiment was laid out in CRD (Completely Randomized Block Design) with thirteen treatments (viz. T_1- garden soil, T2- perlite, T3- coco peat, T4- garden soil + perlite (1: 1), T5- garden soil + perlite (1: 2), T6- garden soil +perlite (2: 1), T7- garden soil + coco peat (1: 1), T8- garden soil + coco peat (1:2), T9- garden soil + coco peat (2:1), T10- garden soil + perlite + coco peat (1:1:1), T11- garden soil + perlite + coco peat (1:2:1), T12- garden soil + perlite + coco peat (1:1:2) and T13- garden soil + perlite + coco peat (2:1:1), which were replicated thrice. Each treatment in one replication consisted of 10 pots, each having one plant per pot. The observations on various parameters were recorded for all thirteen treatments. Eight plants were selected randomly from each replication and tagged for taking various observations on vegetative and flowering parameters.

Results and Discussion

Vegetative Characters

Nutrition brings changes in the growth attributes of any crop. Vegetative growth and development are best measured in terms of plant height, number of leaves, leaf area and plant spread.

The results of the present investigation revealed significant differences with respect to plant height (Table 1). It is vivid from the data that maximum plant height (54.13 cm) was attained in the plants having garden soil + coco peat (1:2) i.e. T_8 as a growing media and was found to be statistically at par with T_6 (48.90 cm), T_5 (49.49 cm), T_{11} (50.07 cm) & T_{10} (51.10 cm). Minimum (42.31 cm) plant height was recorded when perlite (T_2) was used as a growing media. The increased plant height due to the growing media throughout the experimental period might be due to the retention of optimum moisture, good aeration in the root zone and the ability of these growing media to supply ample quantities of nutrients to plants in order to sustain the development and growth of roots and shoots. Increased nitrogen content of the growing media with the increased proportions of cocopeat to soil in the preparations of potting mixtures had been reported by Baskar and Saravanan in (1997) [4]. Our findings get supported from Wazir *et al*., 2009 [25] in Alstroemeria and Gowda and Ramakrishna (2009) [9] in Anthurium.

Table 1: Effect of different substrates on the vegetative characters of Calla Lily

Treatments	Plant Height ± SE(m)	Plant Spread ± SE(m)	Number of leaves per plant ± SE(m)	Leaf area ± SE(m)
T_1	44.60 ± 1.24	18.92 ± 0.28	6.77 ±0.50	5.24±0.47
T_2	42.31 ± 2.22	17.61 ± 0.28	5.47 ±0.52	6.35*±0.20
T_3	48.26 ± 0.84	22.51* ± 0.84	9.20* ±0.95	7.26*±0.20
T_4	43.28 ± 2.28	18.61 ±0.57	7.97 ±0.34	7.77*±0.24
T_5	49.49 ± 0.67	18.20 ±0.58	6.73 ±0.64	5.40±0.46
T_6	48.90 ±0.92	17.97 ±0.68	7.60 ±0.36	5.79±0.59
T_7	46.10 ±0.85	18.42 ±0.18	7.47 ±0.22	5.87±0.48
T_8	54.13 *±0.72	18.15 ±1.24	8.13 ±0.27	7.73*±0.28
T_9	47.72 ±0.61	18.01 ±0.77	8.37 ±0.88	6.23±0.39
T_{10}	51.10 *±2.13	17.49 ±0.26	7.63 ±0.72	5.96±0.29
T_{11}	50.07* ±1.39	17.28 ±0.14	7.73 ±0.29	6.69*±0.18
T_{12}	44.62 ±2.88	18.28 ±0.58	7.60 ±0.35	5.77±0.34
T_{13}	46.34 ±3.42	17.65 ±1.21	8.13 ±0.48	6.62*±0.22
SE(d)	2.53	0.96	0.78	0.51
$C.D._{(0.05)}$	5.24	1.99	1.61	1.05
C.V.	6.54	6.40	12.56	9.75

Data presented in Table 1 summarizes the effect of different substrates on plant spread of Calla lily. Plant spread determines the vigour of plants in different directions. A well spread plant looks pleasing and artistic. It was significantly influenced by the use of different substrates during the course of investigation. Treatment containing cocopeat i.e. T_3 alone exhibited maximum (22.51 cm) plant spread and it was superior over all the treatments and statistically significant over garden soil i.e. T_1, however minimum plant spread of 17.28 cm was recorded in treatment T_{11} i.e. garden soil + perlite + coco peat (1:2:1). This increase ismight be due to the moisture availability and nutritional status of cocopeat media. The higher water holding capacity, aeration and available organic matter of the cocopeat might be responsible for increased vegetative growth. This is in line with the findings of Dewayne *et al*., 2003 [6] as they reported that physical properties like aeration and water holding capacity are probably the most important factors in plant development. The above results are also corrobated with the findings of Awang *et al*., 2010 [1] in *Celosia cristata*.

Leaves are the photosynthetic part of a plant. Number of leaves are genetic factors which could be modified by physical and chemical conditions of growing media and the season in which the crop is grown. In the pooled analysis, it was investigated that treatment T_3 i.e. cocopeat exhibited maximum (9.20) number of leaves per plant and was found to be statistically at par with treatment T_9 (8.37), T_8 (8.13), T_{13} (8.13), T_4 (7.97), T_{11} (7.73), T_{10} (7.63), T_{12} (7.60) & T_6 (7.60), whereas, the plant grown in perlite (T_2) has minimum (5.47) number of leaves. Growing media which comprises of cocopeat (T_3) was found statistically significant over garden soil (T_1). The increase in number of leaves could be attributed to the fact that the organic component i.e. cocopeat might have improved the physical structure of the substrate by reducing weight which in turn increases its water holding properties. It also has high cation exchange capacity (CEC) and thus can store nutrients until needed by the plant. All these factors might have contributed to cell multiplication, cell enlargement and differentiation which could have resulted in better photosynthesis and ultimately the plant exhibited more number of leaves per plant. Similar findings were reported by Gowda and Ramakrishna (2009) [9] in Anthurium and Gupta *et al*., 2004 [5] in Gerbera cv. Paganini

and they reported that cocopeat alone enhanced the plant growth parameters *viz*. plant spread and number of leaves per plant.

A perusal of data presented in Table 4.2 revealed that growing media have exhibited significant effects on leaf area during the course of investigation. Maximum (247.97 cm^2) leaf area was observed in plants containing cocopeat (T_3) as a growing media and was found to be statistically at par with treatment T_8 (238.48 cm^2) & T_9 (215.98 cm^2), whereas, minimum (169.84 cm^2) leaf area was recorded in treatment T_2 i.e. perlite. Comparative analysis revealed that treatments T_3 (247.97 cm^2), T_8 (238.48 cm^2) & T_9 (215.98 cm^2) were statistically significant over T_1 i.e. garden soil. Increase in leaf area of Calla lily can be attributed to favourable physio-chemical properties like low bulk density, high porosity, lower pH value, higher moisture availability and higher retention of nutrients in cocopeat based media that supported proper growth of plants. This is in line with the findings of Singh (2008) [21]. Baskar and Saravanan (1997) [4] investigated that increased proportion of cocopeat in growing media increases nitrogen content in the plant. Increased plant spread and number of leaves per plant in T_3 i.e. cocopeat proves adequate nitrogen availability in the growing media. Barreto and Jagtap (2002) [2] also observed best vegetative growth in cocopeat alone while assessing different substrates *viz*., coco peat, peat, soilrite, perlite, vermicompost, compost and garden soil in various proportions under pot culture for Gerbera cv. Sangria.

Rahbarian and Sardoie (2014) [18] in *Ficus benjamina* and Basheer and Thekkayam (2012) [3] in *Anthurium andreanum* cv. Tropical conducted an experiment on different potting media and observed that cocopeat with other growing media exhibited maximum leaf area and concluded that increase in leaf area might be related to the good physical properties of cocopeat and enhanced nutrient composition and its reported ability to convert nutrients into a readily available form to the plants.

Flowering Characters

The time taken for first flower bud initiation is an important character which decides early flower yield. The data taken from the field was statistically analyzed and is presented in Table 4.3. It is evident from the Table 4.3 that numbers of days taken to first flower bud initiation were found statistically significant during the course of investigation. In the pooled analysis, it was observed that growing media combination of garden soil + perlite (1: 2) i.e. T_5 took minimum days (30.97) for first flower bud initiation and was statistically at par with all the treatments except T_1, T_2, T_4, T_8& T_{11}. Maximum (47.87) days taken for first flower bud initiation was observed when garden soil was used as a growing media, i.e. T_1. All the treatments were found to be statistically significant over garden soil (T_1). This might be due to the physiochemical properties of the growing media which possibly resulted in nutrients availability to the plants with high water availability and air content at the root zone by use of perlite as a growing media component (Maloupa *et al*., 1992) [14].

As far as number of days taken to first flower bud opening is concerned, it varied significantly with respect to different treatments used which is presented in Table 2. In the pooled data of the two consecutive years, treatment T_5i.e garden soil + perlite (1: 2) recorded to have minimum (8.68) number of days taken to first flower bud opening and was found to be statistically at par with T_{10} (9.58) T_3 (9.69) & T_9 (9.73), however maximum (14.20) number of days taken to first flower bud opening was observed in T_1 i.e. garden soil. It was also investigated that except treatment T_4 (13.90) all the treatments were found statistically significant over T_1 i.e. garden soil. Sindhu *et al.,* 2010 [19] reported that incorporation of the amendments such as garden soil, FYM, vermicompost and samridhi showed the increasing trend in available N, P and K content in the growing media which caused an increase in the synthesis of cytokinin in the root tissue and its simultaneous transport to axillary buds would have resulted in better sink for mobilization of photo assimilates at a rapid rate. This might have helped in the early transformation from vegetative to reproductive phase and thus early bud initiation and bud opening of flowers. Similar results have been reported by Kumar *et al*., 2011 and Singh *et al*., 2013 [13, 22] in Gladiolus.

Table 2: Effect of different substrates on the flowering characters of Calla Lily

Treatments	Days Taken to First Flower Bud Initiation ± SE(m)	Days Taken to First Flower Bud Opening ± SE(m)	Stalk Length of Flower ± SE(m)	Stalk Diameter of Flower ± SE(m)	Number of Flowers per Plant ± SE(m)	Number of Flowers per Pot ± SE(m)	Weight of Fresh Flower ± SE(m)	Vase Life ± SE(m)
T_1	47.87±2.28	14.20±0.25	37.39±1.56	0.75±0.02	1.27±0.03	2.93±0.13	24.91±1.57	20.83±2.33
T_2	39.07*±0.67	12.17*±0.69	40.85±1.47	0.82*±0.03	1.23±0.03	1.47*±0.07	25.64±0.37	25.83*±0.60
T_3	33.57*±1.57	9.69*±0.28	46.72*±0.75	0.88*±0.03	1.57*±0.09	6.60*±0.50	30.36*±1.26	27.83*±1.30
T_4	38.87*±3.54	13.90±0.53	54.21*±1.65	1.09*±0.04	1.47*±0.03	4.33*±0.47	35.45*±0.61	25.33*±0.88
T_5	30.97*±1.27	8.68*±0.22	42.68*±0.80	0.80±0.01	1.37±0.03	3.80±0.42	24.24±0.96	27.33*±0.88
T_6	37.37*±1.62	11.10*±0.81	41.27±0.92	0.79±0.02	1.37±0.07	3.73±0.70	24.41±1.85	20.10±0.91
T_7	34.70*±3.02	11.67*±0.58	43.11*±0.52	0.85*±0.02	1.57*±0.07	6.73*±0.24	27.57±2.48	28.17*±1.42
T_8	39.90*±4.25	10.40*±0.23	38.76±1.71	0.79±0.01	1.73*±0.07	7.00*±0.20	29.79*±1.05	29.17*±1.17
T_9	34.47*±1.57	9.73*±0.22	37.41±2.29	0.78±0.02	1.53*±0.09	3.07±0.18	28.86±1.15	24.67±2.91
T_{10}	38.20*±3.22	9.58*±0.45	41.57*±0.29	0.77±0.02	1.47*±0.03	3.13±0.24	29.20*±1.62	21.50±1.26
T_{11}	39.27*±2.05	10.60*±0.32	45.87*±2.37	0.80±0.01	1.33±0.09	3.13±0.29	29.78*±1.13	24.67±0.93
T_{12}	36.87*±2.28	12.67*±0.54	37.38±1.21	0.74±0.02	1.33±0.03	4.27*±0.41	24.08±1.89	20.67±0.73
T_{13}	37.27*±2.31	11.13*±0.20	41.87*±0.90	0.77±0.01	1.37±0.07	4.60*±0.20	27.19±1.37	19.61±0.29
SE(d)	3.50	0.64	1.99	0.03	0.09	0.50	2.03	1.95
$C.D._{(0.05)}$	7.24	1.33	4.11	0.06	0.18	1.03	4.20	4.04
C.V.	11.42	7.03	5.77	4.15	7.34	14.54	8.95	9.85

During the course of investigation, significant effect of media was observed on number of flowers per plant and number of flowers per pot. It is clearly depicted in Table 2 that treatment combination of garden soil + coco peat (1:2) i.e. T_8 as a growing media produced maximum (1.73) number of flowers per plant which was statistically at par with treatments T_7&

T_3, both having 1.57 number of flowers per plant, whereas, minimum (1.23) number of flowers per plant were recorded in treatment T_2 i.e. perlite. Treatments T_8 (1.73), T_3 (1.57), T_7 (1.57), T_9 (1.53) T_{10} (1.47) & T_4 (1.47) were found statistically significant over garden soil i.e. T_1.

The perusal of data presented in Table 2, clearly indicates that number of flowers per pot was not significantly affected by the use of different substrates. Minimum (1.47) number of flowers per pot was recorded in T_2, whereas, maximum (7.00) number of flowers per pot was recorded in T_8.This increase in number of flowers per plant can be attributed to the use of garden soil with cocopeat as a growing media which possibly have increased the nutrient status and physical properties and also the vegetative growth was recorded maximum in this media, so it would have influenced positively on flower production. Yusef (1997) [26] also reported increased flower diameter and number of flowers per plant by application of organic fertilizers on Petunia, Snapdragon and Marigold.

Also, the physical and chemical characteristics of the growing medium might have exerted substantial effect on growth of Calla lily plants. Cocopeat as a growing media might have provided better growing condition and garden soil along with cocopeat must have increased the nutritional status of the growing media thus ultimately resulting in vigorous vegetative growth and increased carbohydrate reserve with the proper uptake of all available nutrients and thus increase in the number of flowers per plant and per pot. These findings are supported with the findings of Gupta *et al*., 2004 [10] in Gerbera as they reported that media containing cocopeat exhibited maximum number of flowers per plant.

Stalk length and stalk diameter are important characters of a cut flower. The data presented in Table 4.5 revealed that different types of growing media and their combination have a significant effect on stalk length of flower during the growing season. The pooled data of two consecutive years clearly depicts that treatment T_4 i.e. garden soil + perlite (1: 1) exhibited maximum (54.21 cm) stalk length and it was found to be superior over all the other treatments. Minimum stalk length (37.38 cm) was recorded when garden soil + perlite + coco peat (1:1:2) i.e. T_{12} was used as a growing media. Comparing the results with control (T_1), it was found that treatments T_3, T_4, T_5, T_7, T_{10}, T_{11} and T_{13} were statistically significant.

The perusal of data depicts that maximum stalk (1.09 cm) diameter was recorded in treatment T_4 i.e. garden soil + perlite (1:1) and was found to be statistically superior over all the other treatments. Treatment T_{12} having garden soil + perlite + coco peat (1:1:2) as a growing media recorded minimum (0.74 cm) stalk diameter. Comparative analysis revealed that treatments T_4 (1.09 cm), T_3 (0.88 cm), T_7 (0.85 cm) & T_2 (0.82 cm) were found to be statistically significant over control.

Increase in stalk length and stalk diameter might be ascribed to availability of nutrients such as nitrogen, phosphorus and potassium and their assimilation, which might have lead to increased formation of plant metabolites that further help to build the plant tissues for increased stalk length and stalk diameter of the flower. Nutrition is also considered as one of the controlling factor of the flowering and it has been reported by Purohit and Ranjan (2002) [17] that high ratio of carbohydrate to nutrients, particularly nitrogen (C: N ratio) favours flowering of a plant. It might also be due to better aeration and water retention capacity of perlite which possibly have provided good growing environment for the Calla roots and thus might be helpful in absorption of nutrients from the growing media which ultimately have resulted in better stalk length and stalk diameter of a flower. Similar results were also reported by Nowak and Strojny (2004) [15] in Gerbera.

The data presented in Table 4.4 revealed the effect of different treatments on flower spathe length and was found to be statistically significant. In pooled analysis, when garden soil + perlite (1:1) i.e. T_4 was used as a growing media it was found to be statistically superior over all other treatments having maximum spathe length of 11.08 and minimum (9.08 cm) spathe length was recorded in pot containing garden soil (T_1) as a growing media. On the other hand, while comparing all the treatments with garden soil it was investigated that treatment T_4 (11.08 cm), T_8 (10.26 cm), T_3 (9.90 cm), T_{11} (9.69 cm), T_7 (9.63 cm), T_9 (9.63 cm) & T_5 (9.57 cm) were statistically significant.

The perusal of data from Table 2, revealed that T_4 i.e. garden soil + perlite (1: 1) as a growing media performed best in comparison of other growing media with a maximum (7.77 cm) spathe diameter and was statistically at par with T_8 (7.73 cm) & T_3 (7.72 cm), whereas, minimum (5.24 cm) spathe diameter was recorded for garden soil i.e. T_1. While comparing the treatments with garden soil (T_1) it was found that treatment T_4 (7.77 cm), T_8 (7.73 cm), T_3 (7.27 cm), T_{11} (6.69 cm), T_{13} (6.62 cm) & T_2 (6.35 cm) were statistically significant. The difference in cut flower quality parameters during the experimental period might be due to the different growing medium percentage in the pots which in turn facilitates availability of essential nutrients resulting in increase in cell division, cell elongation and cell size. The increased flower spathe length and flower diameter may be related to the optimum growing condition of the medium. Maximum spathe length and spathe diameter might be due to the fact that root aeration was more due to the use of perlite and thus compactness of growing media has been avoided and drainage was facilitated by media which affected the uptake of nutrients by the plants thereby producing superior quality flowers.

The increase in the size of flower may be also due to the cumulative effect of all growth parameters observed throughout the growing period. On the other hand physical properties of perlite to retain water superficially and release slowly at a relatively low tension (Maloupa *et al*, 1992) [14] and therefore, excellent drainage of the medium and aeration of the rhizosphere might be the factors affecting qualitative characters of the Calla flowers. Similar findings in Gerbera containing perlite as a growing media have been reported by Syros *et al*., 2001 [23]. They observed that increased level of potassium allowed more carbohydrates translocation to the root system which increases qualitative plant growth in ornamental plants. Our findings are corrobated with the findings of Fakhri *et al.*, 1995 [8] in Gerbera and reported maximum flower diameter in a media consisting of perlite. The increase in the size of flower may be also due to the cumulative effect of all growth parameters observed throughout the growing period of Calla.

The perusal of data presented in Table 2 summarizes the effect of different treatments on weight of fresh flower and have exhibited significant effect on weight of fresh flower during the course of investigation.

Pooled analysis of data revealed that maximum (35.45 g) weight of fresh flower was recorded with the treatment combination of garden soil + perlite (1:1) i.e. T_4 and was found superior over all the other treatments, whereas, when garden soil + perlite + coco peat (1:1:2) i.e. (T_{12}) was used as a growing media it exhibited minimum (24.08 g) weight of

fresh flower. Comparative analysis revealed that treatments T_4 (35.45 g), T_3 (30.36 g), T_8 (29.79 g), T_{11} (29.78 g) & T_{10} (29.20 g) were found statistically significant over garden soil i.e. T_1. Maximum flower stalk length, stalk diameter, spathe length and spathe diameter might be the possible reason for increase in weight of fresh flower within the same treatment or the physiochemical properties of the growing media might have shown the increase in flower weight as in Gerbera reported by Dewayne *et al*., 2003 [6].

There was a significant difference with respect to vase life of cut flowers during the experimental period as influenced by various treatments. The data recorded (Table 1) clearly indicates that maximum (29.17) vase life was recorded in treatment T_8 i.e. garden soil + coco peat (1:2) which was found to be statistically at par with T_2, T_3, T_4, T_5& T_7. Minimum vase life 19.61 was recorded in the treatment T_{13} i.e. garden soil + perlite + coco peat (2:1:1). Comparative analysis of all the treatments with garden soil revealed that treatments T_2, T_3, T_4, T_5, T_7 & T8 were statistically significant. The better performance of this media in vase life might be due to its ability of superior growth throughout the experimental period and overall food nutrient status of flowers under this treatment provided the best quality flowers. Our findings are also in close agreement with the earlier reports of Bhatia *et al.,* 2004, [5] they observed that media consisting of soil with coco peat was found as the best medium for enhancing the vase life in Carnation cv. Sunrise. In Anthurium, Jawaharlal *et al.,* 2001 [11] studied that media having coco peat increased inflorescence longevity. They reported that coco peat maintained higher water content in media which leading to enhanced longevity and vase life of flowers.

Thus from the present investigation, it can be concluded that growing media have a widespread role on the cultivation of Calla lily (*Zantedeschia sprengeri*) and garden soil + cocopeat (1:2) can be recommended for successful cultivation of Calla lily. Beside the various use of Calla lily as pot plant, for foliage beauty and cut flower, if it is grown especially as a cut flower, garden soil + perlite (1:1) can be used, as this media exhibited maximum stalk length, stalk diameter, spathe length, spathe diameter and weight of fresh flower which are required characters for a good cut flower. In India, it is still a potential emerging flower and requires extensive research and improvement programme for commercialization.

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