

Response of Sky Flower (*Duranta erecta* L. var. *Variegata*) Transplants as Pot-Plant to Growing Media and Water Amounts

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ABSTRACT

A study was conducted under the open field condition at the nursery of Hort. Res. Inst., ARC, Giza, Egypt during 2013 and 2014 seasons with the aim to examine the effect of planting in five different media (sand (S), S + farmyard manure compost (FYM) at either 3 : 1 or 2 : 1 ratio (v/v) and S + poultry manure compost (PMC) at either 3 : 1 or 2 : 1 ratio (v/v)), irrigation with three water amounts (200, 250 and 300 ml/pot) and their interactions on growth and chemical composition of one-year-old transplants of sky flower (*Duranta erecta* L. var. *Variegata*) planted in 20-cm-diameter plastic pots .

The results of this study showed that survival %, all vegetative and root growth parameters (plant height, stem diameter, No. branches and leaves/plant, leaf area, root length, as well as stem, leaves and roots fresh and dry weights) and chemical composition of the leaves (chlorophyll a, b, carotenoids, total carbohydrates, N, p and K) were improved with various significant differences by either supplementing the sand with organic compost used in such work at any ratio or increasing irrigation water quantity in most cases of both seasons. In general, PMC gave better results than FYM, especially at 2 : 1 ratio and 300 ml of water/pot level than the other two levels. However, the superiority was for the combining between planting in sand amended with PMC (2 : 1, v/v) medium and irrigating with 300 ml of water/pot level, as this combination mostly gave the highest values in most aforementioned measurements. Hence, it can be recommended to use such combination in order to score the best performance of the variegated duranta when produced as a decorative foliage-pot-plant.

Keywords: *Duranta erecta* L. var. *Variegata*, the variegated duranta, growing media, water amount, organic compost, vegetative and root growth.

Introduction

Duranta erecta L. var. *Variegata*, sky flower, is a sprawling shrub or a small tree belongs to Family Verbenaceae. Native to West Indies. It can grow to 6 m tall and can spread to an equal width. It is planted as much for its striking creamy white and green variegated foliage and for its lavender flowers that appear almost all year round (Huxley *et al.*, 1992). It is widely grown as an ornamental plant throughout tropical and warm subtropical regions for its creamy yellow margins around the 1-2 inch long serrated leaves, as well as for its showy flowers and fruits that make it a desirable addition to garden. It can be used as a hedge and bringing the potted garden an unique burst of colour and form. Use as basket plant, a mounding bush or train into a standard (Rowezak, 2001). It can be propagated by either seeds or stem cuttings (Robbins and Evans, 2006).

Growing medium and water requirements are considered of the main factors affecting growth and quality of pot plants. So, specifying the medium and water amount most suitable for the commercial production of container grown ornamentals has been investigated by many workers. In this regard, Pipattanawong (2008) mentioned that duranta plants prefer rich organic soil that is somewhat loamy and drains well. It's especially important to keep soil light and well drain at planting in a container. On *Agave americana* cv. *Marginata*, Shahin *et al.*, (2007) reported that irrigating with 150 ml of fresh water/15-cm- diameter clay pot and planting in sand + 10 % loam + 10 % chicken manure compost soil mixture gave the best vegetative and root growth, highest quality and productivity of suckers and the highest content of chlorophyll a, b and carotenoids in the leaves and total carbohydrates, N, P and K in the leaves and roots. Similar observations were also elicited by Abdel-Fattah *et al.*, (2008) on Schefflera, Shahin *et al.*, (2009) on tuberose, El-Sayed *et al.*, (2009) on *Nephrolepis exaltata*, Shahin *et al.*, (2012) on Schefflera and Euonymus, Shahin *et al.*, (2013) on *Ficus benjamina* cv. *Samantha* and *Schefflera arboricola* cv. *Gold Copella* and El-Sayed (2013) who stated that using a mixture of sand + olive meal compost + soybean meal compost + broad bean hulls compost (1: 1: 1: 1; by volume) plus irrigating with 250 ml of water/16-cm-diameter plastic pot was the best way for the highest growth and best performance of *Euonymus japonicus* cv. *Aureus* as a pot plant.

However, this study was done in order to explore the best medium and water quantity suitable for healthy growth and high quality of the variegated *Duranta* when produced as pot plant.

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Materials and Methods

A pot experiment was carried out under the full sun at the nursery of Hort. Res. Inst., ARC, Giza, Egypt throughout the two successive seasons of 2013 and 2014 to detect the most suitable medium and water amount necessary for production of the variegated duranta as a pot plant.

Therefore, one-year-old transplants of sky flower (*Duranta erecta* L. var. Variegata) of about 15-17 cm height, with 2-3 branches carrying about 12-15 leaves were planted on May, 1st for each season in 20-cm-diameter plastic pots (one transplant/pot) filled with one of the following media: pure sand (S) as control, S + farmyard manure (FYM) at either 3: 1 or 2: 1 ratios and S + poultry manure compost (PMC) at the same two previous ratios. All of them were added before 2 cm of the rim. The physical and chemical properties of the used sand in the two seasons and those of FYM and PMC were determined and illustrated in Tables (1) and (2), respectively.

Table 1: The physical and chemical properties of the used sand during the two studied seasons.

Seasons	Particle size distribution (%):				S.P.	pH	E.C. (dS/m)	Cations (meq/L)				Anions (meq/L)		
	Coarse sand	Fine sand	Silt	Clay				Ca ⁺⁺	Mg ⁺⁺	Na ⁺	K ⁺	HCO ₃ ⁻	Cl ⁻	SO ₄ ⁻
2013	89.03	2.05	0.40	8.52	23.01	7.90	3.56	7.50	1.63	33.60	0.50	3.20	22.00	18.03
2014	84.76	6.30	1.49	7.45	21.87	7.80	3.78	19.42	8.33	7.20	0.75	1.60	7.80	26.30

Table 2: Some physical and chemical properties of the used composts during the both seasons

Compost type	O.M.	O.C.	C/N ratio	pH	E.C. (dS/m)	Macro elements (%)					Micro elements (ppm)			
						N	P	K	Ca	Mg	Zn	Fe	Mn	Cu
Farmyard manure	20.76	18.46	12.58	7.90	4.50	1.21	0.62	2.30	0.21	0.79	20.10	1620.00	218.00	54.00
Poultry manure	26.33	23.10	15.10	7.51	3.32	1.85	0.71	1.67	0.28	0.84	53.31	1428.00	310.00	66.00

Immediately after planting, the transplants were irrigated at two days intervals with one of the following water amount treatments: 200, 250 and 300 ml/pot till the end of experiment on October, 30th for both seasons.

A factorial complete randomized design was employed in the two seasons, with three replicates as each one contained five transplants (Mead *et al.*, 1993). The usual agricultural practices necessary for such plantation were done whenever needed.

At the end of each season, data were recorded as follows: survival %, plant height (cm), stem diameter at the base (cm), number of branches and leaves/plant, leaf area (cm²), root length (cm) as well as fresh and dry weights of stem, leaves and roots (g). In fresh leaf samples taken from the middle parts of plants in the only 2nd season, the photosynthetic pigments (chlorophyll a, b and carotenoids, mg/g f.w.) were measured according to the method of Moran, (1982), while in dry ones the percentages of total soluble sugars (Dubois *et al.*, 1966), nitrogen (Pregl, 1945), phosphorus (Luatanab and Olsen, 1965) and potassium (Jackson, 1973) were evaluated.

Data were then tabulated and subjected to analysis of variance using SAS Institute (1994) program, followed by Duncan's Multiple Range Test (Duncan, 1955) to verify the significancy among of the different treatments and their interactions.

Results and Discussion

Effect of growing medium, water amount and their interaction on:

1- Survival % and vegetative and root growth parameters:

Data presented in Table (3) clear that survival % reached the highest value in the first season by planting in the sand supplemented with either FYM at 2 : 1 ratio or with PMC at any ratio, while in the second season, that was true for planting in only sand + PMC at any ratio. Moreover, means of such parameter were progressively increased with increasing water amount to reach the maximum by 300 ml of water/pot treatment in both seasons. However, the highest percent of survival (100 %) was achieved in both seasons by combining between planting in either S + FYM (2: 1) or S + PMC (3: 1 or 2: 1 v/v) and irrigating with 300 ml of water/pot treatment.

In general, the least percent of survival was attained by the least water amount treatment (200 ml/pot), especially with planting in S + FYM (2:1) mixture, as this interaction was fatal giving 100 % mortality in the two seasons.

On the same line, were those results of vegetative and root growth characters, expressed as plant height (cm), stem diameter (cm), No. branches and leaves/plant, leaf area (cm²), root length (cm), as well as fresh and dry weights of stem, leaves and roots (g) as shown in Tables (4, 5, 6 and 7), where the means of such traits were

markedly improved by either compost application to the growing medium or rising amount of irrigating water with significant differences when compared to control in most cases of both seasons.

Table 3: Effect of growing medium, water amount and their interaction on survival % of *Duranta erecta* L. var. Variegata plants during 2013 and 2014 seasons.

Water amount (ml/pot)	2013				2014			
	200	250	300	Mean	200	250	300	Mean
Sand (S)	33.30e	40.00de	67.33c	46.88c	26.33e	33.76e	58.40cd	39.50d
S + FYM (3 : 1)	33.35e	83.36b	80.00b	65.57b	33.33e	63.88c	80.00b	59.07c
S + FYM (2 : 1)	0.00f	67.00c	100.00a	83.50a	0.00f	56.00d	100.00a	78.00b
S + PMC (3 : 1)	50.00d	100.00a	100.00a	83.33a	76.33bc	100.00a	100.00a	92.11a
S + PMC (2 : 1)	67.33c	90.00ab	100.00a	85.78a	76.33bc	100.00a	100.00a	92.11a
Mean	46.00c	76.07b	89.47a		53.08c	70.73b	87.68a	

* FYM = farmyard manure , and PMC = Poultry manure compost.

Means within a column or row having the same letters are not significantly different according to Duncan's Multiple Range Test at 5 % level.

Table 4: Effect of growing medium, water amount and their interaction on some vegetative growth traits of *Duranta erecta* L. var. Variegata plants during 2013 and 2014 seasons.

Water amount (ml/pot)	Plant height (cm)				Stem diameter (cm)				No. branches/plant			
	200	250	300	Mean	200	250	300	Mean	200	250	300	Mean
First season: 2013												
Sand (S)	36.80d	38.20cd	47.10bc	40.70b	0.46d	0.48cd	0.50c	0.48c	5.78d	6.97cd	8.00c	6.92d
S + FYM (3:1)	37.75cd	40.75cd	51.26b	43.25b	0.48cd	0.49c	0.52bc	0.50bc	7.33cd	7.88cd	8.33c	7.85c
S + FYM (2:1)	0.00e	47.85bc	56.95ab	52.40a	0.00e	0.50c	0.54b	0.52bc	0.00e	8.50bc	10.00b	9.25b
S + PMC (3:1)	39.56cd	53.70b	59.00a	50.75a	0.51bc	0.53b	0.56b	0.53b	8.00c	9.00bc	10.00b	9.00b
S + PMC (2:1)	42.30c	55.51ab	60.97a	52.93a	0.53b	0.57ab	0.63a	0.58a	9.68bc	10.00b	12.33a	10.67a
Mean	39.10c	47.20b	55.06a		0.50b	0.52ab	0.55a		7.70c	8.47b	9.73a	
Second season: 2014												
Sand (S)	39.74g	41.05fg	47.78e	42.86d	0.50d	0.52cd	0.54c	0.52bc	6.16e	7.00d	8.00cd	7.05c
S + FYM (3:1)	40.81fg	43.56f	54.00c	46.12c	0.53cd	0.53cd	0.56bc	0.54b	7.58cd	8.00cd	9.00c	8.19bc
S + FYM (2:1)	0.00h	46.33e	58.39b	52.36b	0.00e	0.55c	0.60b	0.58ab	0.00f	8.14cd	9.91b	9.03b
S + PMC (3:1)	42.66f	51.68d	63.00ab	52.45b	0.55c	0.58bc	0.60b	0.58ab	8.67c	9.76bc	10.33b	9.59ab
S + PMC (2:1)	46.07e	56.75bc	65.81a	56.21a	0.58bc	0.62ab	0.67a	0.62a	9.33bc	10.50b	12.10a	10.64a
Mean	42.32c	47.78b	57.80a		0.54b	0.56ab	0.60a		7.94b	8.68b	9.87	

* FYM = farmyard manure , and PMC = Poultry manure compost.

Means within a column or row having the same letters are not significantly different according to Duncan's Multiple Range Test at 5 % level.

Table 5: Effect of growing medium, water amount and their interaction on some growth traits of *Duranta erecta* L. var. Variegata plants during 2013 and 2014 seasons.

Water amount (ml/pot)	No. of leaves/plant				Leaf area (cm ²)				Root length (cm.)			
	200	250	300	Mean	200	250	300	Mean	200	250	300	Mean
First season: 2013												
Sand (S)	48.10h	52.00gh	68.27e	56.12c	20.81e	22.08de	23.12cd	22.00d	25.40e	28.00d	33.21c	28.87c
S + FYM (3 : 1)	50.51h	56.00g	71.60de	59.37c	21.68de	23.07d	24.80c	23.18c	27.63de	36.21bc	41.30ab	35.05ab
S + FYM (2 : 1)	0.00i	61.33f	85.46c	73.40b	0.00f	23.56cd	26.13bc	24.85b	0.00f	28.00d	34.98bc	31.99b
S + PMC (3 : 1)	62.37ef	74.00d	92.00b	76.12b	22.25de	25.73bc	27.20b	25.06b	26.50de	28.90d	35.59bc	30.33b
S + PMC (2 : 1)	66.51e	89.43bc	99.67a	85.20a	23.53cd	27.34b	29.46a	26.78a	32.81c	38.45b	43.90a	38.39a
Mean	56.87c	66.55b	83.40a		22.07c	24.36b	26.14a		28.09c	31.91b	37.80a	
Second season: 2014												
Sand (S)	48.76h	53.33gh	65.80e	55.96d	21.84e	23.18de	24.28cd	23.10d	26.30d	29.51d	32.97c	29.59c
S + FYM (3 : 1)	54.50gh	56.96g	73.84d	61.77c	22.76de	24.22d	26.04c	24.34c	28.16d	31.24cd	35.48bc	31.63bc
S + FYM (2 : 1)	0.00i	63.00ef	78.38cd	70.69b	0.00f	25.00cd	27.45bc	26.23b	0.00e	32.10c	38.50b	35.30ab
S + PMC (3 : 1)	59.00f	73.56d	89.51b	74.02b	23.40de	27.01bc	28.56b	26.32b	28.63d	33.28c	39.10b	33.67b
S + PMC (2 : 1)	64.78e	81.36c	97.45a	81.20a	24.72cd	28.71b	30.91a	28.11a	33.90c	33.28c	44.85a	38.49a
Mean	56.76c	65.64b	81.00a		23.18c	25.63b	27.45a		29.25c	36.72bc	38.18a	

* FYM = farmyard manure , and PMC = Poultry manure compost.

Means within a column or row having the same letters are not significantly different according to Duncan's Multiple Range Test at 5 % level.

The superiority, however was for the combination of planting in S + PMC (2 : 1) medium and irrigating with 300 ml of water/pot, which gave the utmost high means in most instances of the two seasons and followed by the connecting between culturing in S + PMC (3 : 1) medium + irrigating with the same rate of water (300 ml/pot). This may indicate the role of organic compost in improving structure and texture of the growing medium, increasing fertility and cation exchange capacity plus enhancing the water holding capacity of the

medium, and consequently water uptake by plants, which often leads to activating all vital processes and producing more metabolites necessary for good and healthy growth (Gonzalez and Cooperband, 2003). On the other side, irrigation with enough water usually prevents the synthesis of abscisic acid (ABA), which negatively affect root growth, induces defoliation, lowers absorption of minerals and hence inhibiting plant growth (Hoffman *et al.*, 1999).

Table 6: Effect of growing medium, water amount and their interaction on fresh weight of *Duranta erecta* L. var. Variegata stem, leaves and roots during 2013 and 2014 seasons.

Water amount (ml/pot)	Stem fresh weight (g)				Leaves fresh weight (g)				Roots fresh weight (g)			
	200	250	300	Mean	200	250	300	Mean	200	250	300	Mean
First season: 2013												
Sand (S)	5.20f	6.90e	8.00d	6.70b	10.08g	15.35f	17.51e	14.31d	8.75h	12.07f	15.00e	11.94d
S + FYM (3 : 1)	6.52e	7.41de	8.91c	7.61b	11.93g	17.98e	18.86d	16.26c	10.26g	16.31d	18.14c	14.90c
S + FYM (2 : 1)	0.00g	9.22c	10.73bc	9.98a	0.00h	18.67d	22.11bc	20.39ab	0.00i	14.20ef	16.10d	15.15c
S + PMC (3 : 1)	7.14de	10.37bc	13.05ab	10.19a	17.15e	20.13cd	23.14b	20.14b	13.05ef	17.12cd	19.56b	16.58b
S + PMC (2 : 1)	7.76d	11.29b	14.52a	11.19a	18.65d	21.37c	26.26a	22.09a	14.37e	18.87bc	21.93a	18.38a
Mean	6.66c	9.04b	11.04a		14.45c	18.70b	21.58a		11.60c	15.72b	18.15a	
Second season: 2014												
Sand (S)	5.38f	6.03e	7.26de	6.22d	10.89f	16.20e	18.36d	15.15d	9.27h	10.33gh	13.14f	10.91d
S + FYM (3 : 1)	6.93de	6.52de	8.11d	7.19c	12.82f	18.90d	19.91cd	17.21c	10.89g	15.66e	17.63cd	14.73c
S + FYM (2 : 1)	0.00g	8.10d	9.62c	8.86bc	0.00g	20.10cd	23.16bc	21.63ab	0.00i	15.21e	17.28d	16.25b
S + PMC (3 : 1)	7.58de	8.79cd	11.56b	9.31b	16.42e	21.68c	25.00b	21.03b	12.46fg	18.36cd	20.74b	17.19ab
S + PMC (2 : 1)	8.21d	10.40bc	13.00a	10.54a	17.88de	23.03bc	27.98a	22.96a	13.78f	19.00c	22.40a	18.39a
Mean	7.03c	7.97b	9.91a		14.50c	19.98b	22.88a		11.60c	15.71b	18.24a	

* FYM = farmyard manure, and PMC = Poultry manure compost.

Means within a column or row having the same letters are not significantly different according to Duncan's Multiple Range Test at 5 % level.

Table 7: Effect of growing medium, water amount and their interaction on dry weight of *Duranta erecta* L. var. Variegata stem, leaves and roots during 2013 and 2014 seasons.

Water amount (ml/pot)	Stem dry weight (g)				Leaves dry weight (g)				Roots dry weight (g)			
	200	250	300	Mean	200	250	300	Mean	200	250	300	Mean
First season: 2013												
Sand (S)	1.29d	1.90cd	2.17bc	1.79c	1.20e	2.25d	2.83cd	2.09c	3.03f	5.94de	7.74cd	5.57c
S + FYM (3 : 1)	1.40cd	2.00c	2.49bc	1.96c	1.37de	2.43cd	3.20bc	2.33c	3.75f	7.36cd	8.90bc	6.67bc
S + FYM (2 : 1)	0.00e	2.42bc	2.93b	2.68b	0.00f	3.00c	3.84bc	3.42ab	0.00g	6.50d	8.05c	7.28b
S + PMC (3 : 1)	1.67cd	2.73bc	3.00ab	2.47b	2.14d	3.25bc	4.48b	3.29b	5.27e	8.23c	9.81b	7.77ab
S + PMC (2 : 1)	2.96b	3.13ab	3.91a	3.33a	2.90cd	3.57bc	6.01a	4.16a	6.68d	8.92bc	11.00a	8.87a
Mean	1.83b	2.44ab	2.90a		1.90c	2.90b	4.07a		4.68c	7.39b	9.10a	
Second season: 2014												
Sand (S)	1.38c	2.03bc	2.35b	1.92b	1.30e	1.74d	2.27cd	1.77d	3.26g	5.01ef	6.93cd	5.07c
S + FYM (3 : 1)	1.51c	2.18bc	2.59b	2.09b	1.46de	1.96cd	3.36bc	2.26d	4.00fg	6.48d	8.36bc	6.28bc
S + FYM (2 : 1)	0.00d	2.34b	2.96ab	2.65ab	0.00f	3.25bc	3.67bc	3.46ab	0.00h	6.70d	7.99c	7.35b
S + PMC (3 : 1)	1.83bc	2.58b	3.18ab	2.53ab	1.90cd	3.48bc	4.10b	3.16c	4.93f	8.49bc	10.05ab	7.82ab
S + PMC (2 : 1)	2.99ab	3.17ab	3.72a	3.29a	2.75c	3.72bc	5.46a	3.98a	6.39e	9.10b	11.20a	8.90a
Mean	1.93b	2.46ab	2.96ab		1.85c	2.83b	3.77a		4.65c	7.16b	8.91a	

* FYM = farmyard manure, and PMC = Poultry manure compost.

Means within a column or row having the same letters are not significantly different according to Duncan's Multiple Range Test at 5 % level.

The previous results are in good accordance with those revealed by Shahin *et al.*, (2007) on *Agave americana* cv. Marginata, Abdel-Fattah *et al.*, (2008) on *Schefflera*, El-Sayed *et al.*, (2009) on *Nephrolepis exaltata*. In this concern, Shahin *et al.*, (2013) stated that planting transplants of either *Ficus benjamina* cv. Samantha and *S. arboricola* cv. Gold Copella in sand amended with FYM compost at equal parts by volume was the best option for the best growth and highest quality.

2- Chemical composition:

From data presented in Table (8), it is obvious that chlorophyll a and b content in the leaves (mg/g f.w.) was increased in response to amending sand with any type of compost used in such trial to reach the maximum in the medium of sand fortified with PMC at 2 : 1 ratio. Moreover, the content of these two pigments was progressively increased with increasing the amount of irrigation water, where 300 ml/pot treatment gave the highest content. However, combining between planting in S + PMC (2 : 1) medium and irrigating with 300 ml/pot level recorded the utmost high content of such two pigments over all other interactions. As for carotenoids content (mg/g f.w.), it was decreased as a result of adding organic compost, especially at planting in

S + FYM (3 : 1) and S + PMC (2 : 1) media, which gave the least content (0.176 mg/g f.w.), while increasing water quantity caused a gradual increment in the content of this pigment. On the other side, the effect of interactions on such parameter was different except for the interaction between planting in S + PMC at 3 : 1 ratio and watering with the medium level (250 ml/pot) that increased content of this pigment to 0.342 against 0.225 mg/g f.w. for sand (control). Also, combining between planting in S + FYM (2 : 1) medium and irrigating with 300 ml/pot level raised the content of such pigment to 0.275 mg/g f.w. against 0.214 mg/g f.w. for control.

The percent of total carbohydrates took a similar trend to that of chlorophyll a and b, as it increased by applying organic compost to the sand, with the mastery of PMC which scored the highest content relative to FYM. Furthermore, rising the amount of irrigation water resulted a progressive increment in such component. So, the highest content at all was recorded by the combination of planting in S + PMC (2 : 1) medium + watering with 300 ml/pot level, followed by a combination of planting in S + PMC (3 : 1) medium + watering with 300 ml/pot level and that of planting in S + PMC (2 : 1) + irrigating with 250 ml/pot level. Similarly, were those results of N, P and K content as percentages (Table, 8).

Table 8: Effect of growing medium, water amount and their interaction on chemical composition of *Duranta erecta* L. var. Variegata leaves during 2014 season.

Media	Water amount (ml/pot)	Chlorophyll a (mg/g f.w.)				Chlorophyll b (mg/g f.w.)				Carotenoids (mg/g. f.w.)				Total carbohydrates (%)			
		200	250	300	Mean	200	250	300	Mean	200	250	300	Mean	200	250	300	Mean
Sand (S)		0.546	0.548	0.559	0.557	0.090	0.119	0.132	0.114	0.282	0.225	0.214	0.240	11.56	12.63	13.76	12.65
S + FYM (3:1)		0.551	0.567	0.562	0.560	0.100	0.121	0.135	0.119	0.131	0.156	0.241	0.176	12.68	13.41	16	14.03
S + FYM (2:1)		0.00	0.588	0.592	0.590	0.00	0.148	0.172	0.160	0.00	0.180	0.275	0.228	0.00	12.8	14.76	13.78
S + PMC (3:1)		0.561	0.711	0.766	0.679	0.109	0.126	0.150	0.128	0.145	0.342	0.229	0.239	13.7	19.39	23.71	18.93
S + PMC (2:1)		0.572	0.761	0.778	0.704	0.128	0.193	0.179	0.167	0.096	0.234	0.199	0.176	14.56	23.73	26.94	21.74
Mean		0.558	0.635	0.652	0.107	0.142	0.134		0.164	0.228	0.232			13.13	16.39	19.04	
		N (%)				P (%)				K (%)							
		200	250	300	Mean	200	250	300	Mean	200	250	300	Mean				
Sand (S)		1.659	1.704	2.216	1.860	0.324	0.331	0.339	0.331	1.540	1.576	1.667	1.594				
S + FYM (3:1)		1.778	2.212	2.310	2.100	0.421	0.456	0.358	0.412	1.586	1.678	1.693	1.652				
S + FYM (2:1)		0.00	1.979	2.318	2.149	0.00	0.627	0.399	0.513	0.00	1.665	1.679	1.672				
S + PMC (3:1)		1.783	2.105	2.501	2.130	0.402	0.478	0.481	0.454	1.678	1.724	1.736	1.713				
S + PMC (2:1)		1.991	2.276	2.779	2.349	0.524	0.630	0.652	0.602	1.885	1.699	1.886	1.823				
Mean		1.803	2.055	2.425	0.418	0.505	0.446		1.672	1.669	1.732						

* FYM = farmyard manure, and PMC = Poultry manure compost.

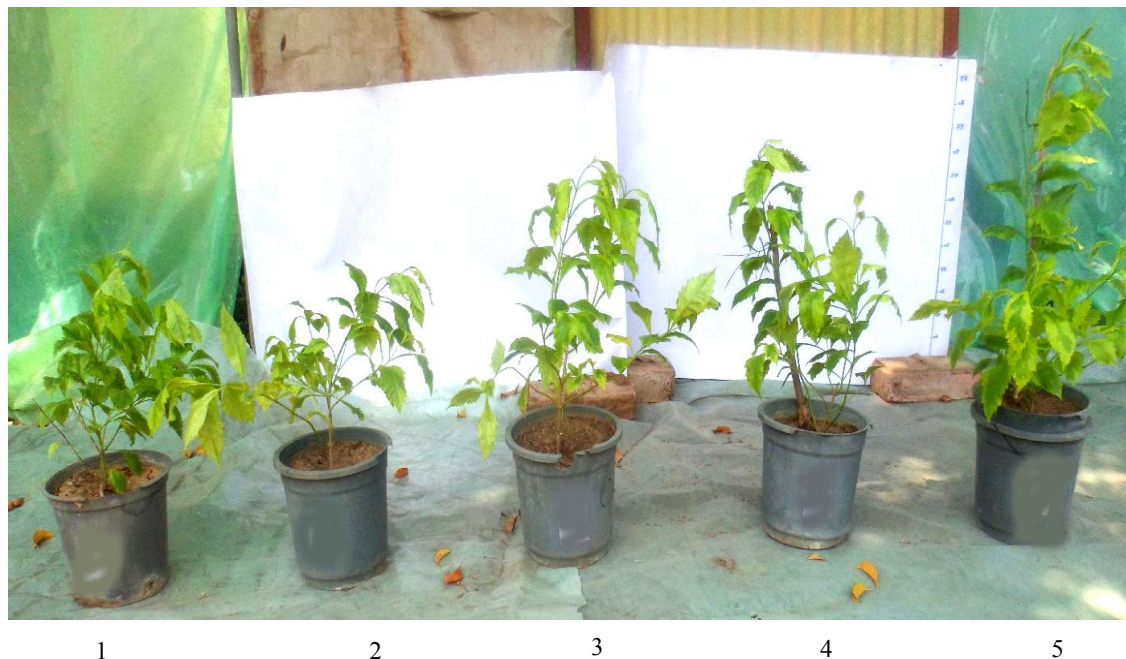


Fig. 1: Effect of media on growth of plants irrigated with 300 ml of water/plant.

1) S. (control). 2) S + FYM (3:1). 3) S + FYM (2:1). 4) S + PMC (3:1) 5) S + PMC (2:1)



Fig. 2: Effect of water amount on growth of plants in S + PMC (2:1) medium
1) 200 ml/plant. 2) 250 ml/plant 3) 300 ml/plant

These results may indicate the role of organic compost especially PMC is supplying *Duranta* transplants with various nutrients necessary for more and healthy growth. In this regard, Gonzalez and Cooperband (2003) demonstrated that duck manure increased total soil content of C, N, P and Cu, as well as available P, S, K, Ca, Mg and Zn. Analogous observations were also obtained by Shahin *et al.*, (2009) on tuberose, El-Sayed *et al.*, (2013) on *Euonymus* and Youssef and El-Sayed, (2013) who declared that application of organic compost to the growing medium of *Euonymus* was necessary for getting a healthy growth of this foliage-pot-plant. From the previous findings, it can be advised to cultivate one-year-old transplants of the variegated *Duranta* in sand + poultry manure compost (2: 1, v/v) medium and irrigate them with 300 ml of water/20-cm-diameter plastic pot to obtain a decorative foliage-pot-plant.

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