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RESPONSE OF *Aralia elegantissima* PLANT TO CHEMICAL FERTILIZATION GROWN UNDER DIFFERENT GROWING MEDIA

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ABSTRACT: A pot experimental study was carried out to study the effect of some different mixture growing media and chemical fertilization as well as their interaction on vegetative growth and chemical composition of false aralia *(Aralia elegantissima)* plants. Obtained results showed that: the tallest plant, largest leaf area and the heaviest fresh and dry weights of leaves/plant were recorded on plants grown in a mixture medium involving compost + peat moss + vermiculite at a ratio of 1:1:1 by volume and received chemical fertilization at 7g /pot in the two seasons. Besides, the greatest leaves number/plant was scored by those grown in M3 medium and received chemical fertilization at the high rate in the two seasons. Furthermore, the thickest stem was recorded by those grown in M4 and sprayed with chemical fertilization at the high rate in the two seasons. The greatest leaf nitrogen and total indoles contents as well as the lowest total phenols contents were recorded by the plants grown in a medium containing compost + peat moss + vermiculite and fertilized with chemical fertilization at 7 g /pot in the two seasons. Moreover, the highest leaf phosphorus % was scored by those grown in M2 medium and fertilized with chemical fertilization at the high rate, while the highest value of leaf potassium % was detected by those grown in M3 and supplemented with chemical fertilization at the high rate in the two seasons.

Key words: False aralia, growing media, chemical fertilization, growth and chemical constituents.

INTRODUCTION

False aralia (*Aralia elegantissima*) belongs to Fam. Araliaceae an immensely popular houseplant, false aralia has beautifully textured foliage, with deeply serrated leaflets that start out a copper or burgundy shade and eventually deepened to a rich green. The juvenile plants tend to have more textured foliage, while the adult leaves are more deeply-lobed. Though the plant can reach heights of up to 6 feet when fully mature, it is a slow-growing varietal, so plan on enjoying it petite for at least a few years. False aralia is not especially fast-growing and has relatively low nutritional requirements. False aralia is a pretty indoor plant, beloved for its interesting leaf shape and slim, sprawling height, both of which give it a feather-like appearance (**Sardoei *et al.*, 2014**).

The successful commercial cultivation of any crop depends on many factors like, climate, soil fertility, fertilization, season of growing, planting media etc. It is known that planting media and fertilization are the most important factors affecting ornamental pot plants well-being. Since, there are many plants which spend their life cycle in pots and they need a medium which provides them with their different needs completely, so it is necessary to find suitable media consisted of a number of necessary components in order to achieve this purpose.

The aim of a pot medium is to physically support the plant and to supply adequate oxygen, water and nutrients for god root functions. The plant must be held upright in the medium and the medium must be heavy enough to stabilize the container and keep it in an upright position. A balance between available water and aeration in the planting medium is necessary for plant quality in pots. There must be adequate small pore space to hold water for plant uptake and enough large pores to allow exchange of air in the planting medium to maintain critical oxygen levels. Anaerobic conditions (without oxygen) do not allow the roots to obtain energy from the respiratory process and encourage disease development. Energy is required for root growth, proper hormone balance and nutrient uptake as well as maintenance of cell and organelle membranes. (**Abad *et al.*, 2002).** Soil, peat moss, and vermiculite are generally used as a basic medium for sowing seeds in nurseries because it is

cheap and easy to procure supplementing the soil to make media more porous and adequate source to the nutrients for the seedlings. Additionally, vermiculite has been used for years to amend professional potting soils made from peat moss (called "soilless" mixes or artificial soils because they literally contain no soil) (**Meena *et al.*, 2017**). Essentially, vermiculite is used in the horticultural industry because it provides aeration and drainage, it can retain and hold a substantial amount of water and later release it as needed. The production of ornamental pot plants involves a number of cultural inputs, among these, perhaps the most important is the type of planting medium used. The composition of a planting medium should be well drained, low in soluble salts, with an adequate exchange capacity. Since, innumerable amendment combinations can produce a planting medium with these aspects. It is important to consider the economic, cultural optimums, transportation, labour and handling. It can be said that sand, clay, peat moss, perlite, vermiculite and organic matter are the basic components of the special planting medium (**Hartmann *et al.*, 2002**). Clay has a relatively high cation exchange and water holding capacity. Peat moss is the most desirable organic matter for the preparation of planting media and is the most widely used substrate for potted plant production in nurseries and it accounts for a significant portion of the material used to grow potted plants **(Ribeiro *et al.*, 2007)**. When compost is added to the planting media, it leads to decrease soil pH which in turn increases solubility of nutrients for plant uptake. In some cases, organic materials may act as low release fertilizers. Also, they improve soil fertility, and stimulate root development, induce active biological conditions and enhance activities of micro-organisms, especially those involved in mineralization **(Suresh *et al.*, 2004).** In this concern, **Mohamed (2018)** reported that growing *Dybsis cabadae* plants in a mixture medium containing compost, peat moss and perlite induced the best growth and chemical constituents of this plant.

Fertilizing plants causes them to grow more rapidly and efficiently, just like ensuring a manufacturing plant has all the raw materials it needs for a production line. Fertilizers are essential to produce out the best features of ornamental potted plants. For natural plants to grow and thrive they need a number of chemical elements, but the most important are nitrogen, phosphorus and potassium. Most packaged fertilizers contain these three macronutrients. Nitrogen is especially important, and every amino acid in plants contains nitrogen as an essential component for plants to manufacture new cells (**Marschner, 1997**). Phosphorus which has been called the key to life is essential for cell division and for development of meristematic tissues and it is very important for carbohydrates transformation due to multitude of phosphorylation reaction and to energy rich phosphate bond (**Lambers *et al.*, 2000**). Potassium is important for growth and elongation probably due to its function as an osmoticum and may react synergistically with IAA. Moreover, it promotes CO_2 assimilation and translocation of carbohydrates from the leaves to storage tissues (**Mengel and Kirkby, 1987**). In this concern, **Mohamed (2018)** reported that fertilized *Dypsis cabadae* plants with chemical fertilizer at 8 g/plant improved the growth and chemical composition as compared with un-fertilized plants.

Therefore, the present study was carried out to explore the most suitable growing media and chemical fertilization for best growth and quality of false aralia plants.

MATERIALS AND METHODS

A pot experimental study was conducted at the Floriculture Nursery of the Horticulture Department, Faculty of Agriculture at Moshtohor, Benha University, during 2017 and 2018 seasons to study the effect of some different mixture planting media and chemical fertilization as well as their interaction on vegetative growth and chemical composition of false aralia *(Aralia eligantissima)* plants.

Plant Material

False aralia *(Aralia eligantissima)* seedlings were used for the present study, for this purpose well established three months old healthy and uniform sized seedlings having 12-14 leaves and 20-25 cm height were selected for conducting this study. The seedlings were obtained from Floriculture Nursery of the Horticulture Department, Faculty of Agriculture at Moshtohor, Benha University. The plants were re-potted in plastic pots of 25 cm diameter (one seedling / pot) packed with the five chosen planting media, mention later, and placed in a partial shade (12000-14000 lux) under lath house condition on 1st February, for the two seasons of this study.

Procedure and Lay-out of the Experiment

Two factors were involved in the present study, the first was the growing medium and the second was chemical fertilization. The different five planting media chosen; sand + clay (1:1 by volume) (M1), sand + clay + vermiculite (1:1:1 by volume) (M2) sand + clay + peat moss (1:1:1 by volume) (M3), sand + clay + compost (1:1 by volume) (M4), and compost + peat moss + vermiculite (1:1:1 by volume) (M5). All chosen planting media were analyzed for their chemical parameters (Table, a).

Fertilization treatments

False aralia plants received chemical fertilizer (using ammonium nitrate (33% N), calcium superphosphate (15.5% P2O5) and potassium sulfate (48% K2O). A mixture of the three fertilizers, with a ratio of 1:1:1 (N: P2O5: K2O), was prepared and applied to the plants at the rate of 3, 5 and 7 g/pot as

top dressing seven times at monthly interval, starting after one month from planting time in the two seasons of this study. Common agricultural practices (irrigation, manual weed control, etc.) were conducted when needed. The layout of the experiment was designed to provide a factorial experiment in randomized complete blocks. The study contained 20 treatments (5 planting media x 4 rates of chemical fertilization) with three replicates. Each replicate contained 6 pots. The study was finished on 30th December during the two seasons.

Table a. The chemical characteristics of the five chosen planting media

parameter / Media	pH	EC ($dS.m^{-1}$)	Organic matter (%)	Available nitrogen (mg/Kg)	Available phosphorus (mg/Kg)	Available potassium (mg/Kg)
Sand + Clay (M1)	7.68	0.87	1.72	3659	564	527
Sand +Clay + vermiculite (M2)	7.29	0.72	0.92	4965	412	478
Sand + Clay + peat moss (M3)	7.01	1.02	2.14	3954	696	563
Sand + Clay + compost (M4)	6.98	0.96	2.01	4954	591	524
Compost + peatmoss + vermiculite (M5)	6.71	0.64	2.64	6147	682	714

Recorded data

Vegetative growth parameters

1-Plant height (cm), 2- Leaf area (cm2), 3- Number of leaves / plants, 4-Fresh and dry weights of leaves/plant (g) and 6- Stem diameter (cm).

Chemical composition determination

- Total nitrogen was measured in sample solutions by using the modified micro-kjeldahl method as described by **Pregl (1945).**

- Phosphorus was determined colourimetrically in spectronic (20) spectrophotometer using the method described by **Trouge and Meyer (1939).**

- Potassium (%) was determined using flame-photometry method according to **Cottenie *et al.* (1982)**.

- Total indoles and total phenols as mg / 100 g fw were determined according to **A.O.A.C. (1990)**

Statistical analysis

All obtained data in both seasons of study were subjected to analysis of variance as factorial experiments in a complete randomized block design. L.S.D. method was used to differentiate between means according to **Snedecor and Cochran (1989).**

RESULTS AND DISCUSSION

Vegetative growth aspect

Data presented in Tables, 1-6 indicated that all chosen growing media statistically influenced vegetative growth parameters of false aralia plant (*Aralia elegantissima*) in the two seasons. In this concern, the highest values of plant height, leaf area, fresh and dry weights of leaves/plant was scored by those grown in medium containing 1 part compost: 1 part peat moss: 1 part vermiculite (by volume) (M5) in comparison with the other media, while the highest leaves number/plant was gained by using a medium involving 1 part sand: 1part clay: 1 part peat moss (M3) in the two seasons. The thickest stem was detected by using medium containing 1-part sand: 1part clay: 1-part compost, (M4) in the two seasons. Referring to the effect of chemical fertilization on vegetative growth parameters, data in the same Tables showed that increasing chemical fertilization rate from 0.0 to 7g / pot caused a gradual increase in these characters in the two seasons. In this respect, the highest values were gained by the high rate of chemical fertilization, followed by the medium rate of chemical fertilization (5 g / pot) in the two seasons. Irrespective un-fertilized plants, the lowest values of these parameters were obtained by using the low rate of the studied chemical fertilization (3 g / pot) in the two seasons. Furthermore, the interaction effect between the tested growing media and chemical fertilization (NPK) had a positive effect on vegetative growth parameters as the tallest plant, largest leaf area and the heaviest fresh and dry weights of leaves/plant were recorded on plants grown in a mixture medium involving compost + peat moss + vermiculite at a ratio of 1:1:1 by volume and received chemical fertilization at 7g /pot, in the two seasons. Besides, the greatest leaves number/plant was scored by those grown in M3 medium and received chemical fertilization at the high rate in the two seasons. Furthermore, the thickest stem was recorded by those grown in M4 and sprayed with chemical fertilization at the high rate in the two seasons. On contrary, the lowest values of these parameters were gained by using a medium containing sand and clay and receiving no chemical fertilization in the first and second seasons, respectively. The remained treatments occupied an intermediate position between the abovementioned treatments in the two seasons of this study.

Table 1. Effect of some planting media and chemical fertilization as well as their combination on plant height of Aralia *elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Plant height (cm)				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
	1st season				
M_1	86.4	93.5	102.0	114.3	99.1
M_2	89.2	97.2	108.4	119.0	103.5
M_3	96.8	116.2	131.9	142.3	121.8
M_4	102.1	109.4	128.2	140.7	120.1
M_5	104.8	121.4	138.9	146.8	128.0
Mean	95.9	107.5	121.9	132.6	
L.S.D at 0.05 for	Fertilization=4.12		Media =4.94	Interaction=9.89	
	2nd season				
M_1	82.6	96.8	108.4	119.5	101.8
M_2	86.2	98.5	112.6	121.4	104.7
M_3	94.3	104.9	129.2	146.2	118.7
M_4	94.1	116.2	121.4	141.9	118.4
M_5	102.6	119.6	136.4	154.2	128.2
Mean	92.0	107.2	121.6	136.6	
L.S.D at 0.05 for	Fertilization=5.17		Media =6.20	Interaction=12.41	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 2. Effect of some planting media and chemical fertilization as well as their combination on leaves number of Aralia *elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaves number/plant				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
	1st season				
M_1	32.4	36.2	41.2	43.6	38.4
M_2	34.8	38.9	39.7	46.0	39.9
M_3	41.9	45.2	51.4	53.2	47.9
M_4	36.7	39.8	48.3	48.6	43.4
M_5	39.2	41.8	46.8	51.9	45.0
Mean	37.0	40.4	45.5	48.7	
L.S.D at 0.05 for	Fertilization=2.13		Media =2.56	Interaction=5.11	
	2nd season				
M_1	34.8	36.8	41.9	45.2	39.7
M_2	36.0	39.4	46.2	48.1	42.4
M_3	43.2	46.3	49.2	54.8	48.4
M_4	41.0	43.7	47.3	49.3	45.3
M_5	42.4	45.4	49.0	52.8	47.4
Mean	39.5	42.3	46.7	50.0	
L.S.D at 0.05 for	Fertilization= 1.89		Media = 2.27	Interaction=4.54	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 3. Effect of some planting media and chemical fertilization as well as their combination on leaf area cm^2 of *Aralia elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaf area cm^2				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	86.4	95.6	121.3	136.2	109.9
M_2	92.3	98.5	126.0	139.2	114.0
M_3	96.8	104.6	134.6	146.2	120.6
M_4	94.3	108.2	131.2	145.0	119.7
M_5	98.0	112.3	138.5	152.6	125.4
Mean	93.6	103.8	130.3	143.8	
L.S.D at 0.05 for	Fertilization=6.09		Media = 7.31	Interaction=14.62	
			2nd season		
M_1	92.8	119.2	136.2	142.5	122.7
M_2	98.4	121.6	136.9	145.0	125.5
M_3	110.2	132.4	143.2	153.2	134.8
M_4	108.5	129.6	141.7	149.6	132.4
M_5	118.3	138.2	148.2	164.8	142.4
Mean	105.6	128.2	141.2	151.0	
L.S.D at 0.05 for	Fertilization=7.81		Media =9.37	Interaction=18.74	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 4. Effect of some planting media and chemical fertilization as well as their combination on leaves fresh weight/ plant of *Aralia elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaves fresh weight / plant (g)				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	271.2	342.0	496.1	584.2	423.4
M_2	312.8	372.4	491.4	639.0	453.9
M_3	403.0	468.0	603.4	773.2	561.9
M_4	338.4	421.2	628.8	696.1	521.1
M_5	382.2	459.2	634.6	779.8	564.0
Mean	341.5	412.6	570.9	694.5	
L.S.D at 0.05 for	Fertilization=36.2		Media =43.4	Interaction=86.9	
			2nd season		
M_1	312.2	428.1	557.4	638.3	484.0
M_2	352.4	471.7	625.0	696.5	536.4
M_3	473.6	607.5	700.4	826.3	652.0
M_4	442.3	554.0	662.5	730.6	597.4
M_5	495.1	621.3	725.2	854.8	674.1
Mean	415.1	536.5	654.1	749.3	
L.S.D at 0.05 for	Fertilization= 41.9		Media =50.3	Interaction=100.6	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 5. Effect of some planting media and chemical fertilization as well as their combination on leaves dry weight / plant of *Aralia elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaves dry weight / plant (g)				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	46.0	57.8	83.4	98.6	71.5
M_2	53.2	63.1	83.0	107.9	76.8
M_3	68.3	79.3	100.0	131.2	94.7
M_4	57.2	71.2	106.2	118.0	88.2
M_5	64.7	77.7	108.0	132.3	95.7
Mean	57.9	69.9	96.1	117.6	
L.S.D at 0.05 for	Fertilization= 4.84		Media =5.81	Interaction=11.6	
			2nd season		
M_1	55.2	76.4	99.6	114.0	86.3
M_2	63.1	84.5	112.0	125.1	96.2
M_3	85.2	108.9	125.8	147.7	116.9
M_4	79.4	99.4	119.6	131.0	107.4
M_5	89.3	111.2	129.8	154.2	121.1
Mean	74.4	96.1	117.4	134.4	
L.S.D at 0.05 for	Fertilization= 7.15		Media = 8.58	Interaction=17.16	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 6. Effect of some planting media and chemical fertilization as well as their combination on stem diameter of *Aralia elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Stem diameter (cm)				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	0.82	0.88	1.04	1.16	0.98
M_2	0.86	0.98	1.08	1.18	1.03
M_3	0.89	1.07	1.14	1.21	1.08
M_4	0.96	1.12	1.19	1.24	1.13
M_5	0.92	1.09	1.16	1.22	1.10
Mean	0.89	1.03	1.12	1.20	
L.S.D at 0.05 for	Fertilization= 0.12		Media =0.14	Interaction=0.28	
			2nd season		
M_1	0.87	0.96	1.10	1.19	1.03
M_2	0.93	1.00	1.15	1.21	1.07
M_3	1.05	1.14	1.22	1.29	1.18
M_4	1.13	1.20	1.28	1.36	1.24
M_5	1.09	1.18	1.26	1.32	1.21
Mean	1.01	1.10	1.20	1.27	
L.S.D at 0.05 for	Fertilization=0.11		Media =0.13	Interaction=0.26	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

The aforementioned results of growing media are in conformity with those reported by **Muhabat Shah *et al.* (2006)** on *Ficus binnendijkii* 'Amstel Queen', **Younis *et al.* (2010)** on *Codiaeum variegatum*, , **Khalaj *et al.* (2011)** on *Gerbera jamesonii* L., **Aklibasinda *et al.*, (2011)** on *Pinus sylvestris*, **Aklibasinda *et al.* (2011)** on *Pinus sylvestris*, **Abouzar (2012)** on *Ficus benjamina*, **Yousif and Kako (2012)** on *Hyacinthus orientalis* L., **Ikram *et al.* (2012)** on tuberose plant, **Kakoei and Salehi (2013)** on *Spathiphyllum wallisii* Regel, **Herath *et al.* (2013)** on *Ophiopogon sp.*, **Tahir *et al.* (2013)** on *Antirrhinum majus* L., **Youssef (2014)** on *Beaucarnea recurvate* and **Mohamed (2018)** growing *Dypsis cabadae* palm plants in a medium contained compost + peat moss + perlite or a medium composed of clay + sand + compost + peat moss + perlite induced the best vegetative growth of this plant.

Whereas the results of chemical fertilization are in harmony with those attained by **Abou El-Ella (2007)** on *Acanthus mollis*, **Hussein (2009)** on *Cryptostegia grandiflora*, **Abd El-All (2011)** on *Aspidistra elatior*, **Habib (2012)** on *Caryota mitis* Lour, **Wanderley et al. (2012)** on areca bamboo palm (*Dypsis lutescens*), **Youssef and Abd El-Aal (2014)** on *Hippeastrum vittatum*, **Youssef (2014)** fertilized *Beaucarnea recurvata* with kristalon fertilizer at 6 g /pot is necessary for improving the growth, quality and nutritional status of the plants and **Mazhar and Eid (2016)** showed that Kristalon at 80 mg/m 2+ 80 ml/ m2 gave the maximum values of all growth parameters of *Gladiolus grandiflorus* in both seasons compared with untreated plants. Also, **Sakr (2017)** showed that the combination of ½ NPK + compost tea+ sheep manure tea was the best treatment examined for improving vegetative growth as compared to the control (NPK treatment) in most cases of *Calendula officinalis* plant, moreover **Mohamed (2018)** growing *Dypsis cabadae* palm plants in a medium contained compost + peat moss + perlite or a medium composed of clay + sand + compost+ peat moss +perlite and supplemented with kristalon fertilizer at 8g/pot produced the best growth and quality of this plant.

Chemical composition determinations

Data in Table, 7-11 indicated that using M5 medium exhibited to be the most promising one for detecting the highest leaves nitrogen and total indoles content as well as the lowest leaf total phenols content in the two seasons. The highest leaf phosphorus and potassium content were gained by M2 and M3, respectively as an average of both seasons. On the other hand, the lowest values of these parameters were gained by M1 in the two seasons. Also, all tested applications of chemical fertilization increased the values of these parameters, especially using the highest rate (7g/pot) when compared with un-fertilized plants in the two seasons. As for the interaction effect between growing media and chemical fertilization, data in the same Tables showed that all resulted combination between growing media and chemical fertilization succeeded in improving the values of these parameter, with superiority for the combination of chemical fertilization at 7 g/pot in both seasons. In this respect, the greatest leaf nitrogen and total indoles contents as well as the lowest total phenols contents were recorded by the plants grown in a medium containing compost + peat moss + vermiculite and fertilized with chemical fertilization at 7 g /pot, in the two seasons. Moreover, the highest leaf phosphorus % was scored by those grown in M2 medium and fertilized with chemical fertilization at the high rate, while the highest value of leaf potassium % was detected by those grown in M3 and supplemented with chemical fertilization at the high rate in the two seasons.

On the opposite, the lowest results were scored by using a medium containing sand + clay and receiving no chemical fertilization in the two seasons. The rest treatments occupied an intermediate position between the aforementioned treatments in the two seasons of this experiment.

Table 7. Effect of some planting media and chemical fertilization as well as their combination on leaf N% of *Aralia elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaf N %				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	1.46	1.52	1.63	1.61	1.56
M_2	1.49	1.56	1.54	1.68	1.57
M_3	1.56	1.63	1.72	1.79	1.68
M_4	1.52	1.51	1.71	1.76	1.63
M_5	1.60	1.64	1.73	1.84	1.70
Mean	1.53	1.57	1.67	1.74	
L.S.D at 0.05 for	Fertilization=0.11		Media = 0.13	Interaction=0.26	
			2nd season		
M_1	1.39	1.49	1.68	1.72	1.57
M_2	1.42	1.41	1.53	1.51	1.47
M_3	1.56	1.68	1.66	1.78	1.67
M_4	1.49	1.48	1.64	1.76	1.59
M_5	1.64	1.63	1.75	1.89	1.73
Mean	1.50	1.54	1.65	1.73	
L.S.D at 0.05 for	Fertilization=0.09		Media =0.11	Interaction=0.22	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 8. Effect of some planting media and chemical fertilization as well as their combination on leaf P % of Aralia *elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaf P %				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	0.108	0.111	0.126	0.134	0.120
M_2	0.162	0.173	0.169	0.179	0.171
M_3	0.134	0.132	0.156	0.160	0.146
M_4	0.141	0.158	0.154	0.168	0.155
M_5	0.139	0.146	0.166	0.164	0.154
Mean	0.137	0.144	0.154	0.161	
L.S.D at 0.05 for	Fertilization=0.014		Media = 0.017	Interaction=0.034	
			2nd season		
M_1	0.112	0.127	0.125	0.130	0.124
M_2	0.171	0.168	0.186	0.192	0.179
M_3	0.156	0.168	0.165	0.173	0.166
M_4	0.148	0.179	0.174	0.186	0.172
M_5	0.151	0.178	0.176	0.181	0.172
Mean	0.148	0.164	0.165	0.172	
L.S.D at 0.05 for	Fertilization=0.012		Media =0.014	Interaction=0.028	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 9. Effect of some planting media and chemical fertilization as well as their combination on leaf K % of *Aralia elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaf K %				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	1.18	1.26	1.39	1.36	1.30
M_2	1.24	1.22	1.41	1.48	1.34
M_3	1.46	1.43	1.62	1.71	1.56
M_4	1.41	1.53	1.51	1.63	1.52
M_5	1.43	1.57	1.64	1.68	1.58
Mean	1.34	1.40	1.51	1.57	
L.S.D at 0.05 for	Fertilization=0.13		Media =0.16	Interaction=0.32	
			2nd season		
M_1	1.21	1.34	1.31	1.39	1.31
M_2	1.30	1.39	1.43	1.41	1.38
M_3	1.38	1.63	1.61	1.48	1.60
M_4	1.36	1.34	1.62	1.65	1.49
M_5	1.42	1.40	1.69	1.74	1.56
Mean	1.33	1.42	1.53	1.59	
L.S.D at 0.05 for	Fertilization=0.14		Media =0.17	Interaction=0.34	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 10. Effect of some planting media and chemical fertilization as well as their combination on leaf total indoles (mg/100g f.w) of Aralia *elegantissima* plants during 2018 and 2019 seasons

Parameters / Media	Leaf total indoles (mg/100g f.w)				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
			1st season		
M_1	121.8	134.2	146.2	145.6	137.0
M_2	126.4	139.2	149.2	154.4	142.3
M_3	138.2	153.2	151.4	169.5	153.1
M_4	136.4	134.2	150.0	158.5	144.8
M_5	142.0	140.9	168.3	176.8	157.0
Mean	133.0	140.3	153.0	161.0	
L.S.D at 0.05 for	Fertilization=5.17		Media =6.20	Interaction=12.41	
			2nd season		
M_1	127.5	139.2	137.8	146.2	137.7
M_2	136.2	134.0	146.4	151.8	142.1
M_3	143.5	141.9	159.2	172.6	154.3
M_4	141.2	159.5	158.0	161.2	155.0
M_5	145.3	163.0	171.2	179.7	164.8
Mean	138.7	147.5	154.5	162.3	
L.S.D at 0.05 for	Fertilization=7.11		Media =8.53	Interaction=17.10	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

Table 11. Effect of some planting media and chemical fertilization as well as their combination on leaf total phenols (mg/100 g f.w) of Aralia plants during 2018 and 2019 seasons

Parameters / Media	Leaf total phenols (mg/100 g f.w)				
	Chemical fertilization				
	0.0	3g/plant	5g/plant	7g/plant	Mean
	1st season				
M_1	164.2	156.4	146.4	150.2	154.3
M_2	159.5	148.3	142.3	139.0	147.3
M_3	138.2	141.2	128.1	121.3	132.2
M_4	139.7	132.4	142.5	136.7	137.8
M_5	131.5	128.4	122.4	117.5	125.0
Mean	146.6	141.3	136.3	132.9	
L.S.D at 0.05 for	Fertilization=4.09		Media =4.91	Interaction=9.82	
	2nd season				
M_1	159.3	151.8	141.8	141.8	149.9
M_2	151.8	138.4	136.2	136.2	142.1
M_3	136.0	131.4	116.4	116.4	126.5
M_4	139.7	141.2	120.0	120.0	132.3
M_5	132.8	133.0	112.5	112.5	124.9
Mean	143.9	139.2	125.4	125.4	
L.S.D at 0.05 for	Fertilization=3.17		Media =3.80	Interaction=7.61	

Where, M_1=Sand+clay M_2=Sand+clay+vermiculite, M_3=Sand+clay+peatmoss, M_4=Sand+clay+compost and M_5=compost+vermiculite+peatmoss

The aforementioned results of growing media concerning chemical constituents are in conformity with those reported by **Ostos *et al.* (2008)** on *Pistacia lentiscus*, **Khalaj *et al.* (2011)** on *Gerbera jamesonii* L., **Khattak *et al.* (2011)** on *Vinca rosea*, **Habib (2012)** on *Caryota mitis* Lour, **Aklibasinda *et al.* (2011)** on *Pinus sylvestris*, **Abouzar (2012)** on *Ficus benjamina*, **Alidoust *et al.* (2012)** on Dracaena, **Waseem *et al.* (2013)** on *Matthiola incana*, **Youssef (2014)** on *Beaucarnea recurvata*, **Mohamed (2018)** growing *Dypsis cabadae* palm plants in a medium contained compost + peat moss + perlite or a medium composed of clay + sand + compost + peat moss + perlite induced the highest leaf nitrogen phosphorus, potassium ant total carbohydrates contents of this plant. While, the abovementioned results of chemical fertilization are in harmony with those attained by **Youssef and Goma (2007)** on *Iris tingitana*, **El-Naggar and El-Nasharty (2009)** on *Hippeastrum vittatum*, **Abd El-All (2011)** on *Aspidistra elatior*, **Rodrigo *et al.* (2011)** on *Pinus nigra* and *Betula papyrifera*, **Habib (2012)** on *Caryota mitis* Lour, **Wanderley et al. (2012)** on areca bamboo palm (*Dypsis lutescens*), **Youssef and Abd El-Aal (2014)** on *Hippeastrum vittatum*. **Youssef (2014)** on *Beaucarnea recurvate* and **Mohamed (2018)** growing *Dypsis cabadae* palm plants in a medium contained compost + peat moss + perlite or a medium composed of clay + sand + compost+ peat moss +perlite and supplemented with kristalon fertilizer at 8g/pot produced the highest leaf nitrogen phosphorus, potassium ant total carbohydrates contents of this plant.

Conclusively, growing false aralia plant (*Aralia eligantissima*) plants in a medium containing compost + peat moss + vermiculite or a medium composed of sand + clay + peat moss (1:1:1 by volume) and supplemented with chemical fertilizer at 7g/pot produced the best growth, chemical constituents and quality of this plant

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