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Research Article

Factors Affecting Seedling Growth Performance and Quality of Two *Acacia Species and Shinus Molle* on Nursery Stage, Southern Oromia, Ethiopia

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Abstract

The study was carried out within the Nursery of the Department of Forestry, at Sinana Agricultural Research Center, on the effects of different soils media and varying pot sizes on the early growth of *Acacia abyssinica, Acacia saligna and Shinus molle* were investigated. Four different soils media used were forest soil (FS), compost (Co), sand soil (SS) and local soil (LS) in different pots size (PS1=8 cm=control, PS2=10 cm and PS3=12 cm lay flats) 15 cm in length and five growing media (GM) or soil mix proportion based on volume GM1= (2 part local/Top soil:2 part forest soil:1 part sand; GM2=2 part local soil:2 compost: 1 part sand; GM3=1 part local soil:2 part forest soil:2 part sand; GM4=3 part local soil:2 part compost:1 sand soil and GM5=3 local soil:2 forest soil:1 sand=control) were filled up of different types of soil named above, and quantified using weighing balance. The experiment was laid out in Randomized Complete Block Design (RCBD) at the Forestry nursery in the study area. The study involved the use of five (5) planting media and three different plastic pots in three (3) replicates. The parameters measured are plant height (cm), seedling root collar diameter (mm) and dry matter (shoot, root and root to shoot ratio). The data collected at the end of twenty weeks were subjected to Analysis of Variance (ANOVA) and means were separated using Duncan test showed that *Schinus molle, A.abyssinica* and *A.saligina* tree species plant and grown in large pot size (PS2) and growing media (GM3) had the highest performance with mean value of plant height 19.83cm, 7.833cm and 13.167cm and seedling root collar diameter in GM5PS3 (4.09mm), GM4PS3 (3.35mm) and GM4PS1 (3.97mm) respectively were high significantly ($P< 0.05$). It is therefore recommended that large pot size (PS3) and GM2 and GM3growing media be used for optimal production of all *Schinus molle, A.abyssinica* and *A.saligina* tree species seedling production at nursery stage and their plantation success. This study revealed that optimum ratio of compost and forest soil in growing media and relatively big container/pot size have favorable good quality of seedling growth for all studied tree species for all growth parameters. This is may be due to nutrient variation in the growing media which is farther needs investigation on growing media nutrients contents.

Keywords

Potting Mixture, Seedling Morphology, Acacia, Schinus Molle

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1. Introduction

Appropriate nursery and tree planting technologies are vital for successful afforestation and reforestation. Nursery practices have effect on the vigour of seedlings and accordingly on the success of their transplantation in the field as [1, 2]. Growth medium has been found to be the most critical factor determining seedling quality in the nursery, acting as a reservoir for nutrients, moisture and oxygen supply to the growing plant [3]. Basically, potting substrate is a plant's first food and its primarily support is for growing seedling, storing and supplying nutrients, water and air to the root system as long as they are in the nursery [4]. Optimum pot size and favorable soil conditions are indispensable for the success of a nursery for normal seedling growth [5]. The decision to use which pot size and what soil mixture is also affected by different factors, including availability, local preference, cost and convenience. On one hand, it may be advantageous to use smaller pot sizes to reduce handling and transport costs, but on the other hand, larger pot sizes with their greater soil volume might give added safety to seedlings though they are costly and difficult to transport [6]. Nursery rooting media mixtures play a key role in improving soil physical and chemical properties and thereby, increasing seedling growth and penetrating capacity of roots, suitable environment with proper aeration, sufficient water and nutrient supply is offered by the medium, excellent root system developed, which, in turn, resulted in luxurious growth of plants [7].

Nursery planting pots have been reported as one of the main factors affecting the successful development of seedlings [8, 9], with large planting pots producing seedlings with a longer tap root during the nursery period, which favours the growth of a deep root system in the field [10, 11]. The soil mix can greatly influence both the vigor and the water status of the seedling through its effects on aeration, nutrition, and water holding capacity of the root plug [12]. A good growing media provides adequate anchors or support to the plant, a reservoir for nutrients and water allows the release of oxygen to the roots and gas exchange between the roots and the atmosphere outside the roots substrate. The quality of seedlings is greatly affected by the growth media under nursery [13]. It is obtained from a nursery affects the re-establishment in the field and the final productivity of the orchard [3]. The quality of the potting medium is universally recognized as being one of the foundation stones upon which the successful growing of pot plants is built on [14]. This implies that by careful selection, mixing, and handling of the components of the potting soil, once can provide the best possible growing conditions to the plants to survive after transplanting into in the field. Generally, tree growth is a function of the genetic potential of the species and environmental condition [15].

Acacia species are legumes and, in symbiotic association with root-nodule bacteria, is a partner in fixation of atmospheric N (N fixation). Estimation of the total quantity of legume N fixed worldwide is an exercise in informed guesswork, but the amount is of the order of 70–100 million tonnes annually. Since the known number of Acacia species represents some 6–7% of the 20,000 species of legumes, acacias must make a substantial contribution to the total quantity of N fixed in terrestrial natural systems. Acacia saligna (Labill.) H. Wendl. belongs to the family of Fabaceae. Amharic (akacha saligna); English (willow wattle, weeping wattle, Port Jackson willow, orange wattle, golden-wreath wattle, blue-leafed wattle). Acacia abyssinica Hochst. ex Benth. Sub sp. abyssinica belongs to the family Fabaceae (Leguminosae), sub-family Mimosoideae. This family is the third largest family of all the flowering plants and is commonly known as the pod-bearing family. Acacia abyssinica is a superb source of fuel (fire wood and charcoal). Well formed stems are used for poles, posts and tool handles, building purposes, agricultural implements, railway sleepers, intend heavy construction [16, 17]. Schinus molle is a member of the Anacardiaceae family which is found in Africa, South Europe, Middle East and the subtropical areas like Peru, Brazil, Columbia, Chile, Bolivia, Ecuador, Uruguay and Argentina [18, 19]. S molle (Anacardiaceae) is pepper tree original to South America and is widely spread in tropical and subtropical parts of the globe [20]. It is planted as an ornamental plant in valleys, a public garden and along roads or as shade plant in temperate places.

There are few natural different materials with all the elements required for healthy root growth so potting media is usually blends of different elements and different pot sizes material were important vigor seedling at the nursery stage. The larger-scale and small tree planting, which is becoming increasingly important in our country special in Oromia Regional state specifically in Bale Zones for both commercial as well as environmental reasons, requires healthy seedlings for success. A balanced soil substrate the major priority and the different pot sizes should be found prior to any field-planting program to ensure good root and shoot development for the planting stock, therefore, such important parameters (appropriate and balance substrate plus optimum pot size) for such healthy and vigiour seedling production on nursery for appreciable success of plantation on the field were lacking.

2. Materials and Methods

2.1. Study Area

This study was conducted at the Forestry Nursery of the Department of Forestry, at Sinana Agricultural Research Center, which located an altitude about 2400 m.a.s.l in Oromia Regional State (7° N latitude and 40° E longitudes). The area is high altitude; sub humid with bimodal rainfall pattern, experiencing an average annual rainfall of 860 mm and monthly mean maximum and minimum air temperatures

were 19.5°C and 9.6°C, and for the long term (mean) was 21.1°C and 9.4°C, respectively. The dominant soil type is pellic Vertisol and slightly acidic.

2.2. Seed Procurement, Seed Sowing and Filling of Polythene Pot

Acacia abyssinica, Acacia saligna and *Shinus molle* seeds were selected and purchased from the available sources of the National Tree Seed Project, Ethiopia Forestry Research Center. This is well-known in the country which provided good trees/shrubs seeds quality. Seeds were used appropriate seed pretreatment using boiling water for *A.abyssinica* and cold water for both *A.saligina* and *Shinus molle* to increase germination. Bottom perforated polythene pots were filled with various planting media of forest soil (FS), compost (Co), sand soil (SS) and local soil (LS) in different pots size (PS_1=8 cm=control, PS_2=10 cm and PS_3=12 cm lay flats) 15 cm in length and the growing media (GM) or soil mix proportion based on volume GM_1= (2 part local/Top soil:2 part forest soil:1 part sand; GM_2=2 part local soil:2 compost: 1 part sand; GM_3=1 part local soil:2 part forest soil:2 part sand; GM_4=3 part local soil:2 part compost:1 sand soil and GM_5=3 local soil:2 forest soil:1 sand=control). Compost was prepared from locally easily available materials five months ahead of potting. Finally, all materials were sieved, and pot filled. The pretreatment seeds of *Acacia abyssinica, Acacia saligna* and *Schinus molle* were direct sowing in potted soil. Watering of the sown seed was done consistently every day after planting or sows the seed to give the seed every condition needed for proper growth.

2.3. Experimental Design

The experiment was laid out in Randomized Complete Block Design (RCBD) at the Forestry nursery in the study area. The study involved the use of five (5) planting media and three different plastic pots in three (3) replicates. The treatments were: 1. Different pots size (PS_1=8 cm=control, PS_2=10 cm and PS_3=12 cm lay flats) 15 cm in length and 2. The growing media/soil mix proportion based on volume GM_1; GM_2; GM_3; GM_4 and GM_5 (control) were planted for the study. This study was observed for the duration of four (4) months while variables were measured ever two weeks starting from the one month after the required plant seed uniformly germinated and some were transplanted.

2.4. Data Collection and Analysis

Data on growth variables were measured; these include seedling heights were measured from the collar region to the tip of the seedlings using graduated ruler. Collar diameters were measured using a veneer or digital caliper. The growth variables were measured in every two (2) weeks interval for a period of four (4) months. The growth variables (seedling heights and collar diameter) data obtained was subjected to two-way analysis of variance (ANOVA) by using Duncan's Multiple Range Test (DMRT) to identify whether there was a significant difference (at the 5% probability threshold) between the means of the treatments as a function of the variables studied. To do this, Genstat 18th EDITION used to analyze the data.

3. Results

3.1. Growth Parameter (Height and Root Collar Diameter)

3.1.1. Growing Containers (Pot Sizes)

The ANOVA showed that the mean measured height of *Schnus molle and A.sbyssinica* seedling plants recorded the highest shoot height on PS_3 14.73cm and 9.73cm respectively were significantly different for both tree species on all growing media ratios. But there were no significant height and root collar diameter difference between pot sizes for both Schnus molle and *A.saligina* tree species with in all growing media ratio (Table 1).

3.1.2. Substrates (Growing Media)

According to the analysis of variance which confirmed or shown that mean measured height of *A.abyssinica* and *Shunus molle* seedlings plants on media growth soil mixture (composite) ratios were statistically significantly different among growing media ratios and opposite for root collar diameter for both species.

Table 1. *ANOVA Result on the Comparative (two-way interactions) Effects of Different Growing Media (GM) and Pot Size (PS) Seedling's height (Ht) and Root Collar Diameter (RCD) study species after four (5) months in the Nursery Study Area.*

Tree/shrubs spps	***A. abyssinica***		***A.saligina***		***Sch.mole***	
Treatment combination	**Ht (cm)**	**RCD (mm)**	**Ht (cm)**	**RCD (mm)**	**Ht (cm)**	**RCD (mm)**
1. Pot Size (PS)						
PS1	5.56[a]	2.479[a]	8.087[a]	3.243[a]	8.73[a]	3.431[a]
PS2	7.413[b]	2.966[b]	7.867[a]	3.233[a]	10.30[a]	3.249[a]

Tree/shrubs spps	***A. abyssinica***		***A.saligina***		***Sch.mole***	
Treatment combination	**Ht (cm)**	**RCD (mm)**	**Ht (cm)**	**RCD (mm)**	**Ht (cm)**	**RCD (mm)**
PS3	9.733^{c}	3.098^{b}	9.347^{a}	3.93^{a}	14.73^{b}	3.509^{a}
CV	18.80	16.80	48	17.2	21.60	16.70
LSD (5%)	1.07	0.36	3.029	0.4329	1.821	0.4247
2. Growth media (GM)						
GM1	8.522^{bc}	2.627^{a}	6.444^{a}	2.848^{a}	11.67^{ab}	3.29^{a}
GM2	7.556^{ab}	2.948^{a}	10.089^{a}	3.542^{b}	14.00^{b}	3.568^{a}
GM3	9.111^{c}	2.88^{a}	8.833^{a}	3.546^{b}	11.28^{a}	3.206^{a}
GM4	6.356^{a}	3.088^{a}	8.522^{a}	3.541^{b}	9.61^{a}	3.509^{a}
GM5	6.30^{a}	2.699^{a}	8.278^{a}	3.304^{ab}	9.72^{a}	3.409^{a}
CV	18.80	16.80	48	17.2	21.60	16.70
LSD (5%)	1.38	0.46	3.91	0.55	2.35	0.54
3. Interaction effects						
GM1PS1	6.50^{abcde}	2.377^{a}	6.333^{ab}	3.163^{abc}	8.00^{a}	3.553^{ab}
GM2PS1	6.00^{abcd}	2.377^{a}	7.10^{abc}	3.030^{abc}	10.67^{ab}	3.747^{ab}
GM3PS1	5.667^{abc}	2.40^{a}	8.5abc	3.36^{bc}	8.67^{a}	3.243^{ab}
GM4PS1	4.567^{a}	2.70^{abc}	9.833^{abc}	3.97^{c}	8.00^{a}	3.127^{a}
GM5PS1	5.067^{ab}	2.543^{ab}	8.667abc	2.693^{ab}	8.33^{a}	3.483^{ab}
GM1PS2	5.90^{abc}	2.51^{ab}	2.833^{a}	2.377^{a}	9.83^{ab}	2.823^{a}
GM2PS2	8.833^{e}	3.287^{bc}	10.00^{bc}	3.317^{c}	11.50^{ab}	3.383^{ab}
GM3PS2	8.833^{de}	2.96^{abc}	10.667^{bc}	3.35^{bc}	11.33^{ab}	3.123^{a}
GM4PS2	6.833^{abcde}	3.21b^{c}	8.833^{abc}	3.44^{bc}	9.83^{ab}	3.313^{ab}
GM5PS2	7.167^{bcde}	2.923^{abc}	7.00^{abc}	3.28^{abc}	9.00^{a}	3.483^{ab}
GM1PS3	13.167^{f}	2.993^{abc}	10.167^{bc}	3.003^{abc}	17.17^{bc}	3.493^{ab}
GM2PS3	7.833^{cde}	3.24b^{c}	13.167^{c}	3.88^{c}	19.83^{c}	3.573^{ab}
GM3PS3	13.333^{f}	3.28b^{c}	7.333^{abc}	3.927^{c}	13.83^{abc}	3,25^{ab}
GM4PS3	7.667^{cde}	3.353c	6.90^{abc}	3.213^{abc}	11.00^{ab}	4.087^{b}
GM5PS3	6.667^{abcde}	2.623^{abc}	9.167^{abc}	3.94^{c}	11.83^{ab}	3.483^{ab}
CV	18.80	16.80	48	17.2	21.60	16.70
LSD (5%)	2.38	0.80	6.77	0.96	4.07	0.94

*Means on the same column with different superscripts letter(s) are statistically significant ($p \leq 0.05$) using Duncan's Multiple Range Test (DMRT).
Growing Media (GM) =GM_1=2 top soil:2 Forest soil:1 sand soil; GM_2=2 Top soil:2 Compost:1 Sand soil; GM_3=1 Top soil:2 Forest soil:2 Sand soil; MG_4=3 top soil:2 Compost:1 Sand soil; and GM_5=Control=3 top soil:2 Forest soil:1 Sand soil.
Pot Size (PS) =PS_1=8 cm; PS_2=10 cm and PS_3=12 cm lay flats and 15 cm length for all pot size.

3.2. Interaction Effects (Growing Media Xs Pot Size)

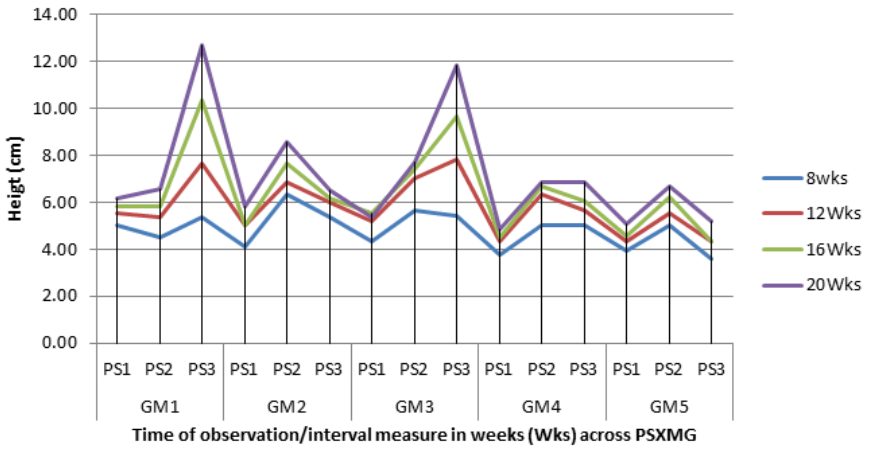
The interaction effects of growing media (GM) and pot size (PS) on the optimum seedling early growth performance of *Acacia abyssinica, Acacia saligna and Shinus molle* were different in different growing media soil mixtures and growing pot size interactions.

According to the ANOVA the mean measured parameters

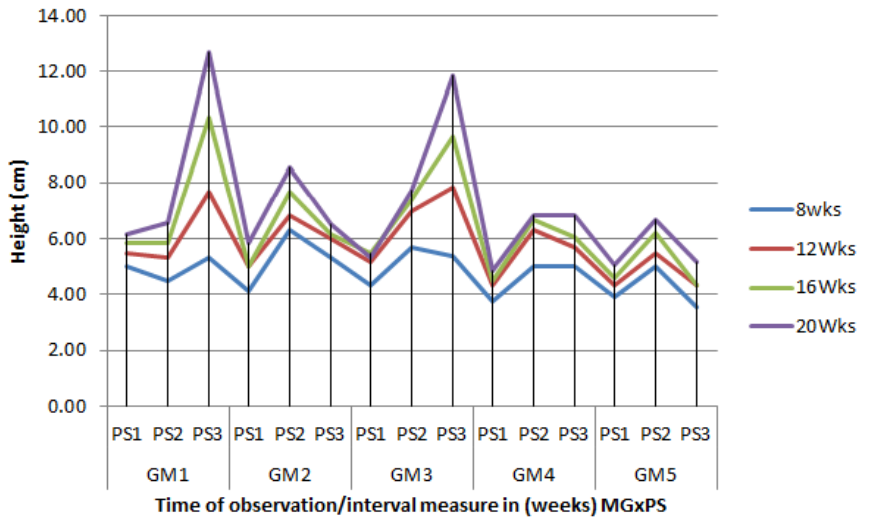
of height and root collar diameter of the *Acacia abyssinica, Acacia saligna* and *Shinus molle* plant seedlings shown on (Table 1). The rate of *Acacia abyssinica, Acacia saligna* and *Shinus molle* seedling growth increments in height and root collar diameter were different with in constant interval of one month from the first (8 weeks after sowing) to final 20 weeks after sowing were varied within and among growth parameters (height and collar diameter) (Figures 1a, b & c and 2a, b & c).

3.2.1. Height Measured Parameter

The ANOVA shown that the mean highest height measured of *Acacia abyssinica* plant seedlings on the interactions of growing media soil mixture or composite ratios and different pot sizes GM_3xPS_3 (13.33 cm) was significantly different (p=0.0000, 0.0000, 0.0000, and 0.0000) from that observed on GM_4xPS_1 (4.567cm); GM_5xPS_1(5.067cm); GM_3xPS_1(5.667cm) and GM_1xPS_1(6.50cm) were, respectively. The highest height recorded for *A.saligina* (13.17cm) and *Shinus molle* (19.83cm) both tress species on GM_2xPS_3 and each tree species have high statistically significant different among different interaction with in a given species. The highest height growth recorded between 12 and 16 weeks after sowing for all interactions (MGxPS) which leads/shown the height grown difference significant or not (Table 1). In case of seedling height growth parameter the relatively highest height growth rate recorded between the age of 12 and 16 weeks after sowing (wksAs) with the same or constant managements even if the experiment was done in open environment. This age or time when both *Acacia species and Shinus molle* seedling height growth was highest which contributed the all experiment growth significant difference observed among the different interaction effects growth media and pot sizes (Figure 1a, b & c).



(a)



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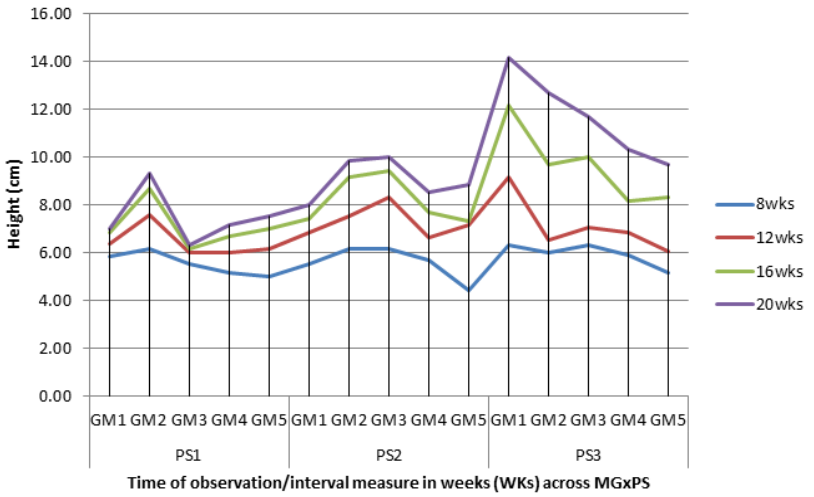
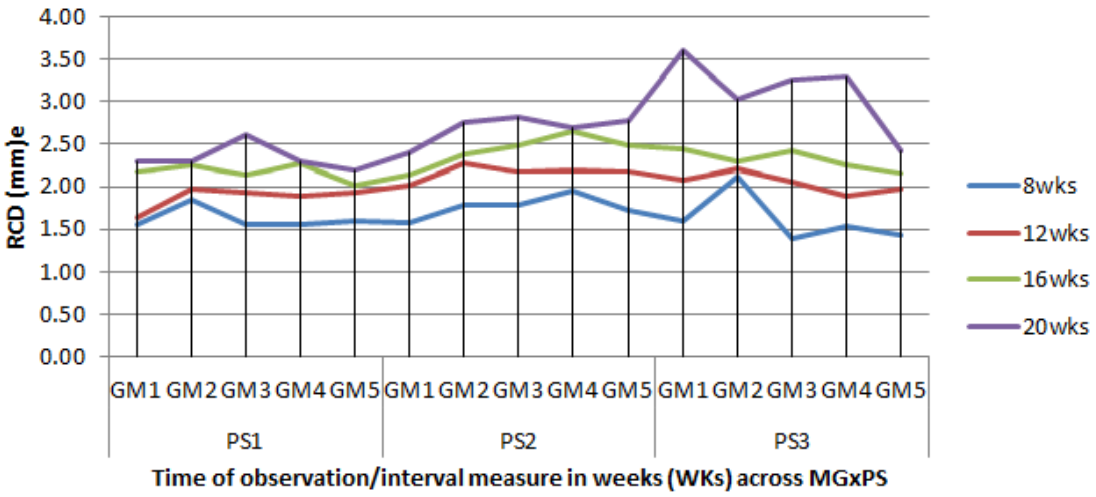


(c)

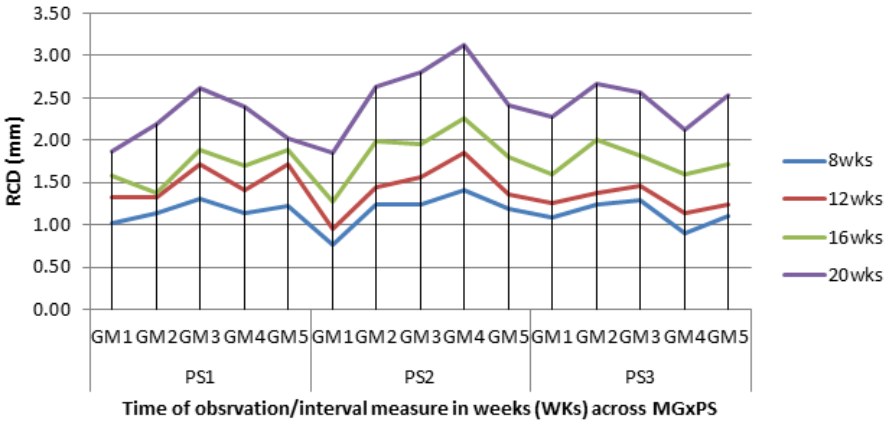
Figure 1. *(a). Observation time interval height measured for A.abyssinica. (b). Observation time interval height measured for A.saligina. (c). Observation time interval height measured for Shinus molle.*

3.2.2. Root Collar Diameter (RCD)

In case of root collar diameter growth parameter ANOVA shown that the mean measured highest root collar diameters of *Shinus molle* (4.08mm) and *A.abyssinica* (3.35mm) respectively on GM_4xPS_3 were statistically significantly different (p=0.009, 0.003, 0.006) from that seedlings root collar diameter measured on GM_1 PS_2 (2.823mm); GM_3 PS_2 (3.123mm); and GM_4 PS_1 (3.127mm), respectively. The mean measured root collar diameters growth of plant seedlings ranged from 4.087mm (GM_4xPS_3) to 3.123 mm (GM_3xPS_2) for Shinus molle tree species (Table 1 and Figure 6). In case of seedling root collar diameter growth parameter the highest RCD growth rate recorded between the age of 12 and 16 weeks after sowing (wksAs) for both Acacia species and *Schinus molle* tree species but the highest RCD growth rate between 4 and 8 for *Schinus mollee* with the same or constant managements even if the experiment was done in open environment. This age or time when all tree species seedling RCD growth was higher this contributed the all experiment growth significant difference observed among the different interaction effects growth media and pot sizes especially for large pot sizes (P_3) (Figure 2a, b & c).



(a)



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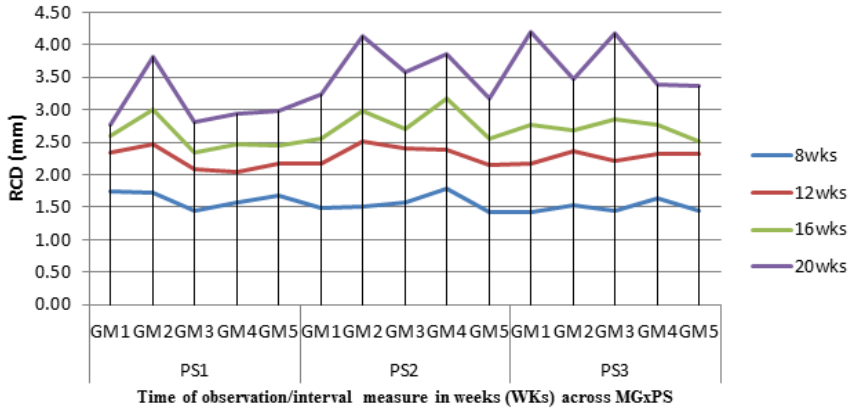
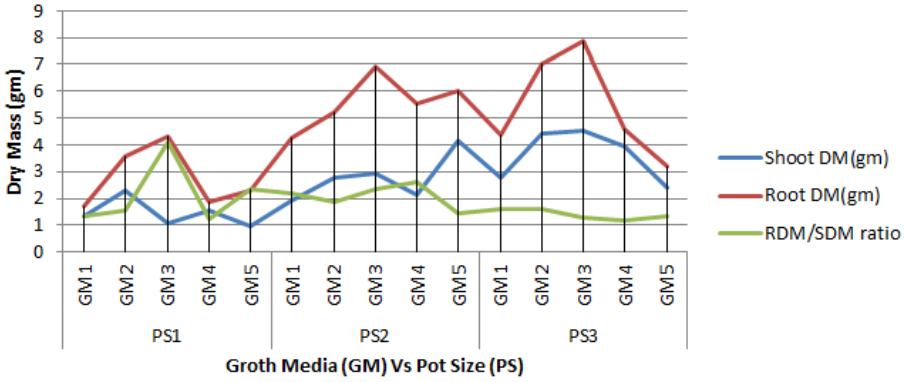


(c)

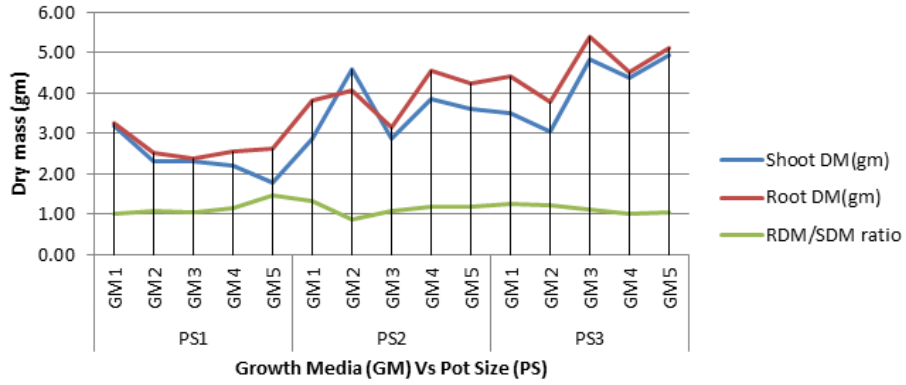
Figure 2. *(a). Observation time interval RCD measured for A.abyssinica. (b). Observation time interval RCD measured for A.saligina.(c). Observation time interval RCD measured for Shinus molle.*

3.3. Shoot and Root Dry Matter

The result revealed that all pot sizes had significantly higher root dry mass/weight which implied had significantly higher root to shoot ratio for both *A.abyssinica* and *A.saligina* tree species while less root to shoot ratio for *Schinus molle*. The highest root and root to shoot ratio dry matter weight per a seedling was found in MG_3 (1 basic/top soil: 2 forest soil: 1 sand soil mixture) for both tested acacia tree species (Figure 3a, b). However, bigger pot size (10cm) had significantly higher root length, fresh root weight, root dry matter and root to shoot ratio as compared to smaller (8cm) pot size for all tested tree species (Figure 3a, b & c).



(a)



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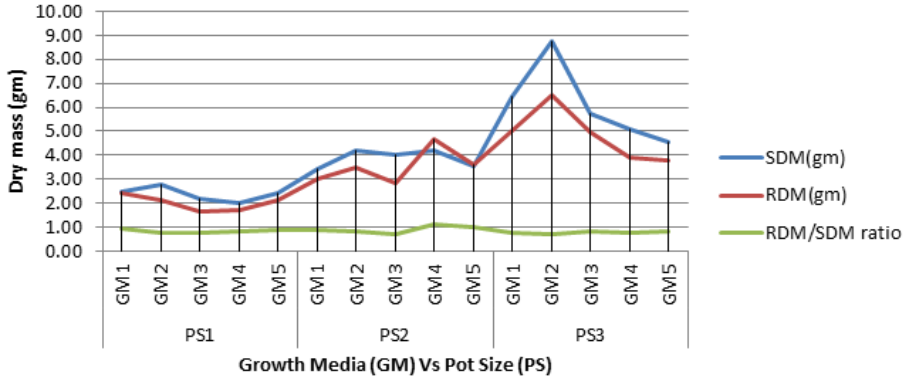

(c)

Figure 3. *(a). Observation time interval root and shoot dry mass measured for A.abyssinica. (b). Observation time interval root and shoot dry mass measured for A.Saligina. (c). Observation time interval root and shoot dry mass measured for Schinus molle.*

4. Discussions

The result on the height growth of *Acacia abyssinica* showed that the highest height was recorded on GM_3xPS_3 (the composite or soil mixed ratio 1Top soil: 2forest soil: 2Sand soil with in 12 cm plastic pots) and followed by GM_1XPS_3 (the composite soil ratio 2top soil: 2Forest soil: 1sand soil with in similar pot size). These results agree with the work of [21] who obtained the higher seedlings height of decomposed poultry droppings than others treatments with P. bicolor plant. The result on seedlings growth collar diameter *Acacia abyssinica* and *Schinus molle* implied that the best mean root collar diameter (girth) thicker was recorded on GM_4xPS_3 (3Top soil: 2Compost: 1sandy soil) composite soil with 12 cm plastic bags/pots. Relatively slow growth recorded in GM_1xPS_2 (2topsoil: 2forest soil: 1sandy soil) mixed ratio within 10 cm plastic pot size for *Schinus molle* tree species. General this study result agrees with the work of [22] also suggested that soil, sand and compost in the ratio of 1:1:2 is the best for growth and survival of *Acacia catechu* Willd, seedlings. The finding collaborates with the work of [23] who reported highest plant height of *Jatropha curcas* and [24] of *Adansonia digitata* in the mixture. The result disagrees with [25] who recorded better increment in topsoil of *Persea americana*. This also contradicts the work of [26] who recorded better performance in river sand. These findings agree with the work of [27] who recorded least diameter in fine sand. The study has demonstrated that both *Acacia* species and *Schinus molle* seedling early growth responded differently to the various composite soil mixture growing media and different polythene pot sizes. However, GM_2 (2topsoil: 2compost: 1sandy soil) >GM_4 (3top soil: 2compost: 1sand soil) >GM_3 (1top soil: 2forest soil: 2sand soil) with large pot size (PS_3) give the best result with respect to all measured growth parameters for both *Acacia* species and *Schinus molle*. According to this study result revealed the root to shoot ratio of all dry matter mass/weight greater than 1(one) for both acacia tree species which showed seedlings attained or reflect a good quality seedling than *Shinus molle* tree species seedling in all growing media ratio and comparatively with in large pot size. A similar study by [28] shown that seedlings grown in larger containers generally grew more and produced the largest seedlings. The higher root to- shoot ratio and root weight tend to survive better, as relatively large root system supply the water requirements of their relatively small shoot [29] and it is considered a desirable trait in dryland areas [30], as relatively large root system supply the

water requirements of their small shoot [29]. The effect of pot sizes on seedling growth depends on the species type to be grown [31].

5. Conclusion

The finding of this experimental study revealed/showed that relatively higher growth recorded in GM_2 (2 top soil:2 compost:1 sand soil) >GM_4 (3top soil: 2compost: 1sand soil) >GM_3 (1top soil: 2 forest soil: 2sand soil) ratio of composite growing media; this could be good soil characteristics of compost and forest soil is non-toxic, good aeration, water holding capacity and rich in NPK with in large pot sizes (PS_3) which favoring the rapid early growth for both *Acacia* species and *Schinus molle tree* species.

Based on this finding the following combinations treatments are proposed to get optimum and quality seedling growth in nursery for both *Acacia* species and *Schinus molle* species were first GM_2 followed by GM_4 and GM_3 composite soil mixed ratio as 3rd option for plant growing media in large (12 cm) lay flats polythene pots. This study revealed high root to shoot ratio of all dry matter mass/weight greater than 1(one) for both acacia tree species which showed seedlings attained or reflect a good quality seedling than *Shinus molle* tree species. The higher root to- shoot ratio and root weight tend to survive better, as relatively large root system supply the water requirements of their relatively small shoot and it is considered a desirable trait in water defecated areas. To obtain the best or optimum seedling quality were the interaction effects of growing media and appropriated containers (pot sizes) were important and basic than doing experiment separately. Knowing the best growing media was the major determinant to get the best quality seedlings at the nursery for successful plantation. Studies have shown that growth media affect plant growth parameters characteristics (height, root collar diameter and root to shoot dry weight/mass ratio) were significantly affected. This study revealed that optimum ratio of compost and forest soil in growing media and relatively big container/pot size have favorable good quality of seedling growth for all studied tree species for all growth parameters. This is may be due to nutrient variation in the growing media which is farther needs investigation on growing media nutrients contents.

Abbreviations

FS	Forest Soil
Co	Compost
SS	Sand Soil
LS	Local Soil
GM	Growing Media
PS	Pot Size
Ht	Height
RCD	Root Collar Diameter
Wks	Weeks
WksAs	Weeks After Sowing
X	Interaction Effect

Author Contributions

Hirpa Abebe: Conceptualization, Formal Analysis, Investigation, Supervision, Writing – original draft, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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