Comparative Effect of Potting Media on Sprouting and Seedling Growth of Grape Cuttings

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Abstract— *A pot experiment was conducted to study the effects of potting media on sprouting and seedling growth of grape cuttings. Three grape varieties viz. Red globe, Thomson seedless and Crimson seedless were planted in four different growth media: CS-Canal silt, CSFYM-Canal silt (75%) + FYM (25%), CSB-Canal silt (25%) + Bagasse (75%) and CSBCP-Canal silt (25%) + Bagasse (50%) + Coco peat (25%). The experiment was conducted in Completely Randomized Design (CRD) along with three replications. The results revealed that almost all observed parameters were significantly influenced by the potting media. However, grape varieties and their interaction with the potting media exhibited non-significant effect for sprouting percentage and most of the seedling related attributes of growth. Minimum days to sprouting (6.78),highest sprouting percentage (84.44), maximum rooting percentage (84.44) and maximum chlorophyll content of leaves (56.23) were observed from the cuttings planted in CSBCP. However, maximum number of sprouts (5.55), number of leaves (13.77), fresh weight of leaves (2.27g), fresh weight of the roots (2.16 g), were observed from CSB. No grape seedling mortality was also observed CSB and CSBCP growth media. On the basis of varietal comparison, Thompson seedless exhibited the best results for number of leaves per cutting (11.50), fresh weight of the roots (1.64 g) and number of roots per cutting (29.17 g) as compared to rest of the grape varieties. The research establishes the potential for locals to use available materials in potting media preparation for healthier and stronger grape seedlings for subsequent improved grape plantation.*

Keywords— Chlorophyll content, growth of grapes cuttings. Potting, sprouting media.

I. INTRODUCTION

Grapes (*Vitisvinifera*) are one of the main fruits cultivated in Pakistan belonging to the family *Vitaceae*. It is commercially grown in subtropical and temperate climates. It is a vine crop and trained on wires on both sides of plant. It is a short duration crop and consumed as fresh and in dried form [1]. This fruit is consumed in a number of varied forms such as wines, juices, jelly, jam and raisins [2]. In Pakistan grapes cultivation is estimated to cover an area of 13,000 hectares and production is about 49,000 tons per year[3]. Greater percentage (70) of grape production is in Baluchistan and the remaining in northern hilly areas of NWFP and Punjab[4].

A potting or growing medium is a substrate where roots of the plants grow and extract nutrients and water from medium, helps in the production of healthy seedlings in containers and bare root production and serve as the sole source of nutrition for the plants [5-7]. So, it is utmost important to select proper potting medium that is a basic step towards successful nursery of any fruit crop. Both the biological and physico-chemical characteristics of a potting medium affect plant and root growth[8]. The proper potting medium that is free from pathogens, have good drainage, water holding capacity and proper

porosity and aeration is good to raise healthy nursery seedlings[9]. Three functions of growing media are; to support plant in soil, to hold and provide water as well as nutrient elements and to enable plant roots to get sufficient amount of oxygen [10].

It is general practice among growers to raise grape seedlings in soil which is a main cause of the pathogen infection as such seedlings are mostly affected by soil pathogens. A modern solution to such a problem is the use of potting medium. Suitable potting media are available in the market but it is difficult for the common grower especially those from developing countries to bare the high cost of the potting media [6]. The best alternative to cope with this problem is to utilize cheap and locally available sources to get good materials. A typical common example is bagasse available in large quantities from sugarcane mills at lowest rates. Other materials like press mud, rice husk, wheat straw, farm yard manure, coconut husk and so many other materials are available in local premises in the country [11]. Meanwhile, growers must know the pros and cons of the material materials being used. The raising of grape seedlings in any potting medium is preferred in containers rather than field production because of easy marketing, long planting, marketing period, easy transportation and rapid product rotation [12].

Choosing the most suitable growing media for the achievement of a successful plant production is very important in potted growth. The growth and survival of the grape seedlings in a nursery is greatly affected by the potting medium. As it is a key source of nutrition and provides root system to the budded plants. Besides, water holding capacity, better aeration, root penetration, presence of organic matter in the growing medium and so many other related factors are greatly influenced by the growing medium [13]. A good potting medium must be easy to supply, process and a cheap source [14, 15]. Many suitable commercial growing media are available for raising healthy and quality seedlings of different crops but unavailability of the potting medium in the local premises of the city makes them more expensive [16]. Import of these potting media is not affordable for a local grower from developing countries like Pakistan. So, there is a need to optimize protocol for potting mix by using cheap source of materials of local premises that are easily available in large scale for rising of healthy and quality grape seedlings. The present study was therefore focusing on comparative effects of potting media on sprouting and seedling growth of grape cuttings.

II. MATERIALS AND METHODS

2.1 Materials

The experiment was carried out at the Agricultural Research Station (North) Mingora Swat, Pakistan. Cuttings of three (3) different grapes varieties; viz. Thompson seedless, crimson seedless and Red globe were used to observe the effect of various potting media on sprouting and seedling growth. The stem cuttings of the three grape varieties were obtained from 8-year-old plants of District Killa Abdullah Balochistan. Local materials (canal silt, farm yard manure, bagasse and coco peat) were obtained from local suppliers.

2.2 Methods

2.2.1 Media preparation

Each potting medium was prepared by mixing canal silt, farm yard manure (FYM), bagasse and coco peat at different percentages (proportions).Four potting mixtures (media)a. CS - canal silt (100%), b. CSFYM - canal silt (75%) + FYM (25%), c. CSB - canal silt (25%) + bagasse (75%) and d. CSBCP - canal silt (25%) + bagasse (50%) + coco peat (25%)(w/w) were prepared for the experiment[17].

2.2.2 Stem cuttings and planting

The stem cuttings were obtained from eight years old plants of the grapes varieties of 8-10 inches in length planted in polythene bags of 4 x 8 inches. While preparing the cuttings, a smooth cut in each cutting was given on distal end and

slanting cut was given at lower end just below the node. Before plantation all the cuttings were showered thoroughly with water to retain the moisture in the cutting and prevent it from drying. The cuttings were planted in potting media and in total 30 cuttings were planted per potting medium. Each replication had ten filled polythene bags and three replications of each variety were kept in the experiment. The mixture of the potting medium was filled in perforated plastic bags of half kg, leaving one-inch space at the top. One cutting was planted in each polythene bag. The cuttings were planted during spring and in a layout of Completely Randomized Design (CRD) with three replications. Data recordings were taken on the following parameters; days to sprouting, sprouting percentage treatment^{-1}, number of sprouts per cutting, mortality percentage per treatment, number of leaves per cutting, fresh weight of the leaves per cutting, rooting percentage per treatment, number of roots per cutting, fresh weight of the roots per cutting, chlorophyll content of leaf and electrolyte leakage of leaf (%). The data was taken each replication and treatment wise.

2.2.3 Growth indicator measurements

Days to sprouting were counted from the day of plantation up to the sprouting of the cuttings. Sprouting percentage of each treatment was checked on every alternative day up to 7th day of plantation and the sprouting percentage was computed per equation (1) as described by Wilson, Stoffella [18];

$$GP(\%) = \left(\sum n/_N\right) \times 100 \quad (1)$$

where GP is sprouting percentage, n is number of sprouted cuttings at each counting and N is total number of cuttings in each treatment.

Number of sprouts per cutting were observed and counted daily after plantation for up to the completion of the experiment whereas mortality percentage per treatment. Mortality percentage was observed throughout the whole experimental process and computed after all observation. Number of leaves per cutting was computed such that the number of leaves on each cutting was counted daily up to the completion of the experiment. The fresh weight of the leaves per cutting were determined by separating the leaves from each cutting and weighted in a weighing balance. Rooting percentage per treatment was observed after one week of plantation for up to one month of plantation. The rooting percentage was calculated by using following formula:

$$RP(\%) = \left(A/_B\right) \times 100 \quad (2)$$

where RP is rooting percentage, A means number of rooted cuttings while B is total number of planted cuttings.

Determining the number of roots per cutting, the roots on each plant were counted at the end of formation per treatment. For the purpose of this study, the cuttings were taken out from the polythene bags and the adhered soil was discarded then roots were counted per cutting. Furthermore, the fresh weight of roots per cutting was evaluated subsequently when the number of roots per cutting was recorded. The fresh weight of the counted number of roots of each sample was taken in a weighing balance and the data was recorded. Chlorophyll content of leaf was measured by meter (SPAD- 500 plus) in arbitrary units as relative greenness (RG).

2.2.4 Electrolyte leakage of leaf (%)

Electrolyte leakage percentage was measured by taking leaf discs of size 1cm^2 and weight of 0.5 g from randomly selected leaf samples. The leaf discs were washed well with deionised water prior to incubation in 25 ml of deionised water for 3 hours at room temperature. After incubation, the conductivity (value A) of the bathing solution was measured with the conductivity meter. The petal discs were boiled (100^{0}C) with the bathing solution for 15 min to lyse all cells. After cooling at room temperature (31.3^{0}C), the conductivity (value B) of the bathing solution was again measured. The electrolyte leakage was expressed as percent value according to the formula (**Eq. 3**)

$$Electrolyte\ leahage\ of\ leaf\ (\%) = \left({value\ A}/{value\ B}\right) \times 100 \quad (3)$$

where value A is conductivity of bathing solution at room temperature value B conductivity after boiling.

III. RESULTS AND DISCUSSION

3.1 Results

3.1.1 Days to sprouting

The number of days to sprouting of the cuttings varied significantly in response to the grape variety and potting media (**Table 1**). The interaction of the varieties and potting media was also highly significant ($p<0.05$). It took a minimum of 6 days for Thomson seedless variety to sprout in response to the potting medium CSBCP (**Table 1**). On the basis of potting media, stem cuttings took a minimum mean of 6.78 days for sprouting in similar potting medium. Meanwhile, stem cuttings planted in the CSFYM potting medium took a minimum mean of 14.89 days to sprout as compared to those planted in CS potting medium (10.89). In varietal comparison, cuttings of Thomson seedless sprouted earlier (8.75 days) as compared to Crimson seedless (9.75 days) and Red globe (11.25 days).

3.1.2 Sprouting percentage per cutting

Sprouting percentage was significantly affected by the various potting media ($p<0.05$). However, non-significant results were observed for the varieties and their interaction with the potting media. In **Table 1**, it is portrayed that the highest sprouting percentage (84.44) was observed from the stem cuttings planted in the CSBCP potting. These results are statistically similar with the results obtained from the cuttings planted in the CSB potting medium.

3.1.3 Number of sprouts per cutting

Table 1 again shows that number of sprouts per grape stem cutting ranged between 1.55 to 5.55. The maximum mean number of sprouts (5.55) per cutting were observed from the CSB potting medium where canal silt and bagasse were used at 25 and 75% respectively. These results are statistically similar with the results obtained from the cuttings where potting medium had mixture of canal silt, bagasse and coco peat at 25%, 50% and 25% respectively. On the basis of varietal means, number of sprouts ranged from 3.75 to 3.91. The number of sprouts per cutting was significantly affected by the various potting media ($P<0.05$). No significant differences were observed for number of sprouts from the interaction of varieties and potting media **Table 1**.

3.1.4 Mortality percentage per treatment

According to the results as presented in **Table 1**, the highest mortality percentage of 10% was observed from the cuttings of Red globe variety of grape planted in the potting medium containing canal silt (75%) and FYM (25%). On the basis of potting media, the highest mortality (9.24%) was observed from the same medium (CSFYM) followed by CS with 4.05% with no death of stem cuttings observed on CSB and CSBCP media. Red globe and Thompson seedless had the highest mortality percentage 8.53 and 8.26 on CSFYM potting medium respectively yet non-significant statistically with each other. Mortality percentage was significantly affected by potting media ($P<0.05$). Similarly, the interaction of both the varieties and potting media was also significant.

3.1.5 Number of leaves per cutting

The maximum number of leaves per stem cutting (17.00) was observed from the stem cuttings planted in the potting medium had mixture of canal silt (25%) and bagasse (75%). Statistically similar results were also observed from the cuttings grown in the medium contained canal silt, bagasse and coco peat at 25, 50 and 25% respectively. In comparison to the potting media, more number of leaves per cutting (13.77) was observed from the CSB potting medium as compared CS potting medium with 7.67 leaves per cutting. Thompson seedless had more number of leaves (11.50) in comparison to Red globe

(8.50) and Crimson seedless (8.33). Number of leaves per cutting was significantly affected by the grape varieties and potting media ($P<0.05$) same as the interaction between the grape varieties and potting media (**Table 1**).

3.1.6 Fresh weight of leaves (g)

From **Table 1**, a statistical significant variation was observed in the fresh weight of leaves on the basis of potting media whereas a non-significant result was obtained for the grape varieties and their interaction with the potting media. The results for fresh weight of the leaves as presented in **Table 1**depicts that fresh weight of leaves range from 0.58 to 2.27 g. The highest fresh weight of leaves (2.27 g) was observed from the stem cutting planted in the potting medium had mixture of canal silt (25%) and bagasse (75%) followed 1.79 g obtained from the cuttings planted in the potting medium contained canal silt, bagasse and coco peat at 25, 50 and 25%.

3.1.7 Rooting percentage per treatment

The results in **Table 1** reveals that. CSb and CSBCP potting media had more than 70% rooting in comparison to CS and CSFYM potting media with less than 50%. The highest mean rooting percentage (84.44) was observed from grape cuttings grown in potting media had mixture of canal silt (25%), bagasse (50%) and coco peat (25%). Grape varieties also had significant effect as well as potting media on rooting percentage which ranged from 52.50 to 55.83%. The statistical analysis depicts that the potting media had significant effect on the rooting percentage ($P<0.05$).

3.1.8 Number of roots per cutting

Table 1 depicts presents a result that shows that higher mean number of roots (50.00) were obtained in Thompson seedless grape variety which were planted in CSBCP potting medium. On the basis of mean results of the potting media, lesser number of roots (5.00) was obtained from the cuttings planted in the potting medium contained canal silt (75%) and FYM (25%) followed by 14.55 from canal silt (CS) only. On the basis of varietal comparison, Thompson seedless (29.16) and Crimson seedless (27.41) statistically had similar results as compared to Red globe (20.25). The statistical analysis reveals that number of roots per cutting was significantly affected by the varieties and potting media. Correspondingly, the interaction of both the factors viz. varieties and potting media was also highly significant.

3.1.9 Fresh weight of roots cutting -1

Fresh weight of roots per cutting was significantly affected by the grape varieties and the potting media. However, the interaction of both factors was non-significant. Results in **Table 1** depicts that the highest fresh weight of roots per cuttings (2.16) was observed from the cuttings planted in CSB potting medium having mixture of canal silt (25%) and bagasse (75%). Thompson seedless produced more fresh weight of roots (2.57 g) in response to CSB potting medium. On the basis of varietal comparison, Thompson seedless produced relatively higher fresh weight of roots per cuttings (1.64 g) as compared to Crimson seedless (1.61 g) and Red globe (1.17 g).

3.1.10 Chlorophyll content of leaves

More chlorophyll content of leaves (56.23 % greenness) was observed from the cuttings planted in the potting medium that had mixture of canal silt (25%), bagasse (50%) and coco peat (25%) followed by CSB with (52.50% greenness. On the hand, based on the interaction between potting media and varieties, the leaves of Crimson seedless grape variety had more (57.60%greenness) in response to the CSBCP (**Table 1**). The same variety had also lesser chlorophyll content of leaves from the cuttings planted in the potting medium that had 25% canal silt and 25% FYM. The chlorophyll content of leaves was significantly affected by the potting media as well as its interaction with the varieties ($P<0.05$).

3.1.11 Electrolyte leakage of leaves (%)

On the basis of potting media, mean electrolyte leakage of leaf was in the range of 28.44 and 30.22%. In varietal comparison, it ranged between 28.50 and 30.41%; Crimson seedless with the highest followed by Thomson seedless (29.67%) and Red globe the least 28.50. There was no significant difference in the electrolyte leakage of leaf on the basis of varieties unlike potting media (**Table 1**).

TABLE 1

EFFECTS OF POTTING MEDIA AND GRAPE VARIETY ON GROWTH INDICES OF GRAPE CUTTINGS.

Growth index	Grape varieties	Potting media (M)				Mean
		CS	CSFYM	CSB	CSBCP	
Days to sprouting (days)	Red globe	12.67 ^{a}	16.00 ^{a}	8.33 ^{de}	8.00 ^{ef}	11.25^{A}
	Thompson seedless	10.33 ^{c}	12.00 ^{b}	6.67 ^{fg}	6.00 ^{g}	8.75^{C}
	Crimson seedless	9.67 ^{cd}	16.67 a	6.33 ^{g}	6.33 ^{g}	9.75^{B}
	Mean	10.89 ^{B}	14.89 ^{A}	7.11 ^{C}	6.78 ^{C}	
Sprouting percentage treatment $^{-1}$ (%)	Red globe	46.66^{a}	16.66^{a}	70.00^{bc}	76.66^{bc}	52.50 ^{C}
	Thompson seedless	40.00^{ab}	23.33^{ab}	90.00 ^{a}	83.33 ^{b}	59.17^{A}
	Crimson seedless	40.00^{ab}	16.67^{a}	73.33^{b}	93.33^{a}	55.83^{B}
	Mean	42.22 ^{B}	18.89 ^{C}	77.78 ^{A}	84.44 ^{A}	
№ of sprouts cutting $^{-1}$	Red globe	3.33^{a}	1.66^{b}	6.00 ^{a}	4.66^{bc}	3.91^{A}
	Thompson seedless	3.00 ^{b}c	1.66 ^{b}	5.00^{bc}	5.33^{a}	3.75^{A}
	Crimson seedless	3.33 ^{a}	1.33 ^{a}	5.66^{ab}	5.00 ^{ab}	3.83^{A}
	Mean	3.22 ^{B}	1.55 ^{C}	5.55 ^{A}	5.00 ^{A}	
Mortality percentage (%)	Red globe	3.933 ^{C}	10.94 ^{A}	0.00 ^{D}	0.00 ^{D}	3.72 ^{A}
	Thompson seedless	5.13 ^{C}	8.26 ^{B}	0.00 ^{D}	0.00 ^{D}	3.35^{AB}
	Crimson seedless	3.10 ^{C}	8.53 ^{B}	0.00 ^{D}	0.00 ^{D}	2.91 ^{B}
	Mean	4.05 ^{B}	9.24 ^{A}	0.00 ^{C}	0.00 ^{C}	
№ of leaves cutting -1	Red globe	8.33 ^{ef}	4.33 ^{fg}	10.66 ^{bcd}	10.66 ^{bcd}	8.50 ^{B}
	Thompson seedless	8.67 ^{cde}	3.33 ^{fg}	17.00 ^{a}	17.00 ^{a}	11.50^{A}
	Crimson seedless	6.00 ^{ef}	1.66 ^{g}	13.66 ^{ab}	12.00 ^{bc}	8.33 ^{B}
	Mean	7.67 ^{B}	3.11 ^{C}	13.77 ^{A}	13.22 ^{A}	
Fresh weight of leaves (g)	Red globe	0.76 ^{bc}	0.51 ^{bc}	2.48 ^{a}	2.08 ^{a}	1.46^{A}
	Thompson seedless	0.81^{ab}	0.55 ^{ab}	2.20 ^{bc}	1.50^{bc}	1.26^{A}
	Crimson seedless	0.93 ^{a}	0.69^{a}	2.14 ^{ab}	1.79^{ab}	1.39^{A}
	Mean	0.83 ^{C}	0.58 ^{C}	2.27 ^{A}	1.79 ^{B}	
Rooting percentage (%)	Red globe	46.66^{a}	16.66^{b}	70.00^{c}	76.66^{c}	52.50 ^{C}
	Thompson seedless	40.00^{b}	23.33^{a}	90.00^{a}	83.33^{b}	59.16^{A}
	Crimson seedless	40.00^{b}	16.66^{b}	73.33^{b}	93.33^{a}	55.83^{B}
	Mean	42.22 ^{B}	18.88 ^{C}	77.77 ^{A}	84.44 ^{A}	
№ of roots $^{-1}$	Red globe	14.66 ^{d}	4.00 ^{e}	26.33 ^{c}	36.00 ^{b}	20.25^{B}
	Thompson seedless	14.00 ^{d}	3.66 ^{e}	49.00 ^{a}	50.00 ^{a}	29.16^{A}
	Crimson seedless	15.00 ^{d}	7.33 ^{de}	49.00 ^{a}	38.33 ^{b}	27.41^{A}
	Mean	14.55 ^{B}	5.00 ^{C}	41.44 ^{A}	41.44 ^{A}	
Fresh weight of roots cutting -1	Red globe	0.81 ^{ef}	0.45 ^{f}	1.62 ^{cd}	1.82 ^{bcd}	1.17^{B}
	Thompson seedless	1.56 ^{cd}	0.33 ^{f}	2.57 ^{a}	2.14 ^{abc}	1.64^{A}
	Crimson seedless	1.30 ^{de}	0.43 ^{f}	2.29 ^{ab}	2.44 ^{ab}	1.61^{A}
	Mean	1.21^{b}	0.40 ^{f}	2.16^{a}	2.13^{a}	
Chlorophyll content of leaves (%)	Red globe	35.96^{c}	34.00^{a}	49.72^{c}	54.84^{c}	43.63^{A}
	Thompson seedless	38.30^{a}	34.00^{a}	54.88^{a}	56.25^{b}	45.85^{A}
	Crimson seedless	36.73^{b}	33.11^{b}	52.90^{b}	57.60^{a}	45.08^{A}
	Mean	37.00^{C}	33.70^{C}	52.50^{B}	56.23^{A}	
Electrolyte leakage (%)	Red globe	29.33^{b}	28.67^{c}	28.33^{c}	27.67^{c}	28.50 ^{A}
	Thompson seedless	30.67^{a}	31.00^{a}	30.00^{b}	27.00^{b}	29.67^{A}
	Crimson seedless	28.67^{c}	30.00^{b}	32.33^{a}	30.67^{a}	30.41^{A}
	Mean	29.56^{b}c	29.89^{b}	30.22^{a}	28.44^{c}	

CS: Canal silt, CSFYM: Canal silt (75%) + Farm Yard Manure (25%), CSB: Canal silt (25%) + Bagasse (75%), CSBCP: Canal silt (25%) + Bagasse (50%) + Coco peat (25%). Values are means of three determinations. Means with the same letters (superscript) are not significantly (p>0.05) different.

3.2 Discussion

Four different potting mixtures were used by adding canal silt, FYM, bagasse and coco peat at different percentages [17]. A number of studies have been conducted on the use of growing media for raising better seedlings of different fruit crops. A wide range/variety of materials are used and mixed in different ratios for obtaining an appropriate medium including peat, perlite, sawdust, sand, silt, rice hulls, coconut husk, leaf manure, tree barks, sugarcane waste, spent, sewage sludge which could yield good results as observed in the current study. The results of the current study agrees partially with other studies because of variation in materials[11-13, 19-21].Meanwhile, Mhango, Akinnifesi [12]used soil, sand, peat and spent in different combinations and found sand and peat as appropriate medium in the ratio of 1:1 for better growth of citrus seedlings. Again, Bhagat, Thakur [15] reported that the suitable medium for Uapacakirkiana contained 75% forest soil and 25% sawdust for taller seedlings having larger root collar diameter. The best quality seedlings of Crimean Juniper were obtained by [22]on the media containing forest soil (70%) + humus (15%) and pumice or creek (15%). In the case of grape variety, very rare works have been reported on the effect of potting media on growth [23]. The present study determined that sprouting and seedling growth of grape varieties are greatly affected by the potting media. The potting media composed of canal silt (25%) + bagasse (75%)dented as CSB for the purposes of the current study and canal silt (25%) + bagasse (50%) and coco peat (25%) denoted as CSBCP produced better results for sprouting and proper growth of the grape seedlings. This observation may be due to the presence of coco peat and bagasse in the potting media as this finding corresponds literature [11, 16]. They reported that due to the presence of peat, initiation of roots and rooting percentage was increased. Also, Tariq, Qureshi [19]reported minimum mortality of 8% in plants planted in peat and sand medium in the ratio of 1:1 as compared to maximum (58%) in soil + sand + FYM (1:1:1). They also reported that sand and peat in the ratio of 1:1 the potting media produced for better growth of rough lemon. Our current results also showed that media containing coco peat and bagasse produce better growth in grape cuttings. Misra [24] reported that coco peat and vermi compost improved seed germination of rough lemon. Likewise, Aklibasinda, Tunc [25] reported that sand+ soil+ FYM medium fashioned the best results for maximum length of sprouts and number of leaves per cutting scotch pine. Furthermore, Rani, Akash Sharma [26] also reported more number of leaves per plants in the peat based potting medium for guava propagation.

IV. CONCLUSION

Choice of proper potting media play a critical role in growth and development of plant. Bagasse and canal silt are important sprouting media for grape cultivation as it has positive effect on physiology of grape vines moreover they are cheap and easily available to local growers. The main perspective of this research was to explore the effect of different potting media on sprouting and seedling growth of grape cuttings and to compare and establish the most appropriate potting medium on the basis of the best growth responses. The research therefore concludes based on the results that combination of canal silt (25%) and bagasse (75%) (CSB potting medium) as well as CSBCP [canal silt (25%) + bagasse (50%) and coco peat (25%) potting medium] had produced best results for sprouting and growth of grape seedlings. Media with varied components mixed together improved both germination and then growth compared to sole canal silt medium used in grape nursery. The research establishes the potential for locals to use available materials in potting media preparation for healthier and stronger grape seedlings for subsequent improved grape plantation. This will also help in reduction in production cost as less expenditure will be incurred in terms foreign potting media.

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