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Study of Growth Parameters and Germination on Brinjal (*Solanum Melongena L.*) Seedlings with Different Growth Media

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ABSTRACT

Brinjal (*Solanum melongena L.*), from the family Solanaceae, is a prominently developed vegetable around the world and is well known for its nutritive and restorative qualities. There are a few deficiencies in customary relocating like low usefulness, low quality, significant expense, and once in a while ranchers deal with issues bringing brinjal seedlings up due to an ideal opportunity to antagonistic ecological conditions. This procedure can conceivably be utilized in unfriendly conditions and eventually works with the creation of vegetable seedlings on schedule with minimal expense, high usefulness, and great quality seedlings. Thus, this examination was embraced to assess the impact of various times of seedlings with development media on seed germination and creation of the solid vegetable seedling. Brinjal seedlings were considered as the relocating object to examine the development boundaries with various matured seedlings and development media. Brinjal seedlings of 15-, 25-and 30-days age were utilized for perception. The seedlings were filled in depict (24 x 12= 288 cells) with three distinctive development media viz. coir essence (R1), vermin fertilizer (R2), and coir substance + vermin manure (4:1) (R3). A totally randomized plan (CRD) with three redundancies was utilized. Information was exposed to the examination of change (ANOVA). Results uncovered critical contrasts ($p>0.05$) in seedling development boundaries among the three-developing media. The greatest development boundaries (shoot length, root length, stem distance across, and no. of leaves) were noticed at30 days matured seedlings in coir substance. The base development boundaries were seen in vermin fertilizer for that very day-old enough seedlings. The most extreme germination was discovered to be 100% with coir essence. Subsequently, the coir substance was found as the ideal development media for the development of brinjal seedlings.

Keywords: Portray, Growth Media, Age of Seedlings, Growth Parameters, and Germination Percentage.

INTRODUCTION

After China, India is the second-biggest maker of vegetables on the planet. Around 175 sorts of vegetables are filled in India, including 82 field vegetables and 41 roots (tuber and bulb) crops in India produce 13% (146.55 M t) of the world's vegetables from 14% (8.5 M ha) of the world region under vegetables. The usefulness of vegetables in India (17.3 t ha-1) is not exactly the world's normal efficiencyin 2012-2013. The greater part of the vegetables like brinjal *(Solanum melongena),* and tomato *(Solanum Lycopersicum L.*) are first planted in the nursery and later relocated physically either on the edges or on a decidedly ready seedbed (Patil, 2015). Brinjal (*Solanum melongena L.*) is a high-esteem vegetable yield that is generally devoured new or prepared and filled in pretty much every nation of the world. The increment in the space of creation and worth has expanded the monetary meaning of the harvest around the world

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(Albahoet al., 2009). The Brinjal is a yearly plant, in the Solanaceae family, regularly developing to 1050 - 3000 mm tall, with a pitifully woody stem that generally scrambles over different plants. The organic product is eatable; splendidly shaded (generally red, from the color lycopene) its breadth ranges between 10-20 mm in wild plants and developed structures. Organically, it's anything but a berry, with a subset of natural products. Besides, the brinjal natural product is of dietary significance with fundamental food esteem. In South Sudan, the brinjal is developed under downpour took care of conditions, notwithstanding, in Double Harvesting Farm trickle water system was utilized to enhance the precipitation.

Germination of the seed is a basic stage because the remainder of the vegetation is straightforwardly reliant upon the pace of its germination. Development medium is known to influence the worth of pruned fancy plants and assumes a significant part in germination rate, and numerous other physiological boundaries including plant tallness, number of leaves, spike length, number of florets per spike, spike measurement, and yield, and so on (Vendrame et al., 2005).

The best-developing media ought to have legitimate air circulation, water-holding limit, and satisfactory sustenance supply; various composts give great nourishment to plants when applied in the mix with soil-less substrates (Khobragade et al., 1997: Hartmann et al., 2011). Distinctive vegetative and regenerative development boundaries delivered best outcomes supported by various soilless media are seen in rose (Ahmad, 2004). Neelam et al., (2001) tested because of Eucalyptus comaldulensis seedlings in various soil media and tracked down the greatest plant stature (904.11mm), number of leaves per plant (31.89), and stem thickness (5.21 mm) were seen in sediment +clay media.

Mohammad et al., 2014, assessed the seed germination and seedling development of brinjal as influenced by various natural composts. Contrasted with a conventional poly house, seedlings that are raised utilizing depict sprout early and are overwhelming. There is acceptable root improvement in the seedling. Low death paces of the seed are seen that are planted in depict. Depicts are by and by utilized for becoming the vast majority of the vegetables and a wide range of blossoms. The attachments are loaded up with a durable medium and are in the long run relocated into other developing frameworks. Just one plant is raised per cell. The depict developed transfer has been augmented to give a steady stock of great seedlings and improved relocating proficiency (Jeong, 1992).

There are a few inadequacies in customary relocating like low usefulness, low quality, significant expense, and some of the time ranchers deal with issues bringing tomato seedlings up on schedule because of unfavorable natural conditions. This procedure can conceivably be utilized in antagonistic conditions and at last works with the creation of vegetable seedlings on schedule with minimal expense, high efficiency, and great quality seedlings. Henceforth, this investigation was attempted to assess the impact of various development media on seed germination and the creation of solid brinjal seedlings.

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MATERIALS AND METHODS

The representation of Study Site

All plants utilized in the trials were filled in plug-type depict in the nursery. Brinjal seedlings were considered as the relocating object to contemplate the actual properties of vegetable seedlings and to decide the reasonable development media. The examination was led in a 100% net shade house at the SKN Agricultural University, Jobner. The University is situated between scope 26.9660° N and longitude 75.3775° E.

Nursery Growing Materials

Customarily, the ranchers work on relocating 25 to 30 days old attachment seedling. Consequently, three degrees of 15-, 25-and 30-days old seedlings were arranged (Mohammad et al., 2014). Developing media have three principal capacities: 1) give air circulation and water, 2) take into account most extreme root development, and 3) actually support the plant. Developing media ought to have enormous particles with satisfactory pore spaces between the particles (Bilderback et al., 2005). Proper molecule size determination or mix is basic for light and cushy (very much circulated air through) medium that advances quick seed germination, solid root development, and sufficient water escape. Numerous analysts led concentrates on various development media. Mohammad et al., 2014 considered three distinctive development media such astrichocompost, vermin fertilizer, and kitchen squander manure. Muhammad et al., 2016 explored different avenues regarding peat, manure, and customary rehearsing media in a 1:1:1 proportion for brinjal seedlings.

The describes are available in the market in different sizes and shapes.The cells are in round, square, and shortened reversed pyramid shapes. The plate contains 128, 200, or 288 cells in which the course of action of cells is 8 x 16, 10 x 20, and 12 x 24. The most mainstream one being utilized in India has 14 x 7 or 17 x 13 cells. In this investigation, the seedlings were filled in (24 x 12) depict with three diverse development media such viz. coir essence (R1), vermicompost (R2), and coir substance + vermicompost (4: 1) (R3).

Depict Vegetable Seedlings Preparation

The all-around disintegrated coir substance and vermicompost were utilized as media for raising the brinjal seedlings. The media has filled a portion of every cell in the plate. A solitary seed was kept in every cell of the depict and the plate was totally loaded up with media. The plate seedlings are become under controlled conditions and have obvious essentialness and the plant remains after transplantation. It is contemplated that every one of the crucial contributions to the developing seedling is delivered correctly in a managed path to permit them to procure these properties. In light of the damp substance of media, watering to the seedlings was done in the nights for the ensuing 15 days utilizing rose jars. Following 5 to 7 days, the seed grew with two leaves, utilization of water was expanded progressively relying upon the dampness level in the plate. All the while, the germination percent of seedlings with various development media was determined utilizing the accompanying recipe (Atifet al., 2016).

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Development Parameters

Following 15 days, the development boundaries viz., various leaves, shoot length (mm), root length (mm), and stem distance across (mm) were estimated. The seedlings were taken out physically from the depict cells, and the shoot and root length of the seedlings was recorded with a steel rule with a minimal check of 0.5 mm. The stem breadth was estimated utilizing an advanced vernier caliper with a minimal check of 0.02 mm. The estimations were taken for 15-, 25-and 30-day old brinjal seedlings.

Exploratory Design

The primary motivation behind this trial configuration was to decide the impact of affecting factors on development qualities and germination percent with various development media. The examination was spread out in a totally randomized plan (CRD) with three medicines rehashed multiple times. Information was exposed to Analysis of Variance (ANOVA) utilizing logical programming (2003). Where a critical F-test was utilized and implies examination tests completed utilizing Least Significant Difference (LSD) at $p \leq 0.05$. The outcomes were required to improve the factors to accomplish the most extreme germination of fitting seedlings with proper development media.

Brinjal seeds SS-106 assortment [Sankranti seeds Pt. Ltd., India], were planted one in each attachment/cell into 288 cells of plate [Vegetation Net Marketing Pt. Ltd., India] loaded up with the diverse development media. The seedling rise was resolved on every one of the 288 cells of a plate. From that point, development and improvement boundaries were estimated utilizing (25) haphazardly labeled seedlings from every reiteration all through the investigation.

RESULTS AND DISCUSSIONS

Germination Percentage with Different Growth Media

Developing media impacts seed germination, succeeding rise, and development of seedlings in a nursery (Baiyeri and Mbah, 2006) on the grounds that it's anything but a repository of dampness and plant supplements (Grower, 1987). What's more, it impacts the presentation of seedlings before they are relocated in the field (Adediran, 2005). In this investigation, the seedling germination rate was determined following four days of planting in depict with various developing media. The determined germination rates are displayed in Table 1. The most extreme germination was discovered to be 99% with coir essence. The base germination was seen at 87% with vermin fertilizer and Coir substance + Vermicompost, R3 as seen at 92%.

Table 1: Germination % on Different Growth Media

S. No	DevelopmentRadio	Germination (%)
1	Coir pith, R1	87
2	Vermi compost, R2	99
3	Coir pith + Vermi compost, R3	92

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Impact of Growth Media on Shoot Length

The shoot length of seedlings at three distinct ages with various development mediums was noticed. The time of seedlings like 20 (P1), 25 (P2), and 30 (P3) days and development media, for example, coir essence (R1), vermicompost (R2), and coir substance + vermin fertilizer (4:1) (R3) have impacted the shoot length of tomato seedlings. At all times of seedlings, the most noteworthy shoot length was seen in the development mode of coir essence. The greatest shoot length (88.5 mm) was recorded in coir substance with 30 days matured seedlings. The base shoot length (80.8 mm) was verified in vermicompost with 30 days agedsaplings. The treatment blend of various periods of seedlings and development media was huge at a 5 % level (Table 2).

Table 2:Examination of Variance on Shoot Length

Cause	DF	Quantity of Square	F Value	CD (0.05)	Standard Error of a Difference	PROB
Total	24	825.83	146.96			
Treatment	10	822.13	475.05			0.016 *
Age (A)	2	747.67	1725.5	0.44	0.24	0.001 **
Medium (M)	2	46.3	106.85	0.44	0.24	0.001 **
A x M	4	28.08	32.43	0.8	0.38	0.002 **

CV = 0.24 %

A comparative outcome was accounted for by Abad et al., (2002) and Awang et al., (2009) chipping away at seedlings developing with coir essence and excrements. Coir substance was a decent development media with satisfactory pH, electrical conductivity, and another synthetic ascribes. It has prudent oxygen dissemination and offers help to the quick development of the seedlings because of the accessibility of better nourishment with water in the root zone of seedlings when contrast and vermicompost.

The joined utilization of coir essence and vermicompost in the treatment showed a critical impact on seedlings' development boundaries, because of the synergistic blend of the two elements in improving the states of being of the media and dietary variables (Sahni et al., 2008). This result was compared to the finding of Campos Mota et al., (2009) and Abirami et al., (2010) who recommended that since coir dust is low in supplements when blended in with vermin fertilizer, gives a superior development medium to plant foundation.Regardless, the air-filled porosity (AFP), viably available water (EAW), and air course radio remained non at the suggested level which thus limits the root development and brought down the water-holding limit. In this way, the media coir essence alone was more reasonable than vermin fertilizer with coir substance as a result of the better actual properties and improved supplement level.

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Impact of Growth Media on Root Length

The root length was one of the affected development boundaries with various times of seedlings and development media. 30 days matured seedling has the most noteworthy root length of 37.9 mm was recorded in coir essence, though the base root length (34 mm) was seen with vermin fertilizer. The medicines were (p = 5%) essentially unique in relation to one another (Table 3). This is because of the variety of accessible supplements in the chose development media.

Table 3: Examination of Variance on Root Length

Cause	DF	Quantity of Square	F Value	CD (0.05)	Standard Error of a Difference	PROB
Total	24	140.24	37.82			
Treatment	10	137.65	120.68			0.040 *
Age (A)	2	30.99	108.66	0.36	0.18	0.001 **
Medium (M)	2	102.44	359.25	0.36	0.18	0.001 **
A x M	4	4.22	7.4	0.63	0.2	0.037 *

CV = 0.72 %

In this way, routine (1982) detailed that vermin fertilizer gives sufficient supplements and upgrades both actual properties and water holding ability towardsemergingsaplings. In any case, it holds an excess of water which influences air circulation inside the development media, hence influencing the oxygen dissemination to the roots which presumably happened in this examination.

Impact of Growth Media on Stem Diameter

The stem width was additionally impacted by the time of seedlings and development media. The ANOVA on stem thickness is displayed in Table 4. It was very high in 30 days old seedlings (P3) with development media of Coir essence (R1) having the greatest thickness of 1.77 mm. The dishonorablebranchdepth (1.08 mm) was found around the same time as a seedling (P3) with development media (R1). The association treatment was likewise huge at a 5 percent level. The cooperations were likewise critical clarifying that the reaction was not uniform in all media as impacted by the age. Comparable outcomes were accounted for by Singh et al., 2007. As the plant stature was expanded naturally the stem thickness was likewise expanded, anyway is shown (Table 4) to be measurably critical.

Table 4: Examination of Variance on Stem Diameter

Cause	DF	Quantity of Square	F value	CD (0.05)	Standard Error of a difference	PROB
Total	24	1.72	20.93			
Treatment	10	1.68	65.82			0.032 *
Age (A)	2	0.46	71.76	0.054	0.025	0.003**
Medium (M)	2	1.08	171.87	0.054	0.025	0.001**

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A x M	4	0.11	9.84	0.095	0.045	0.023 *

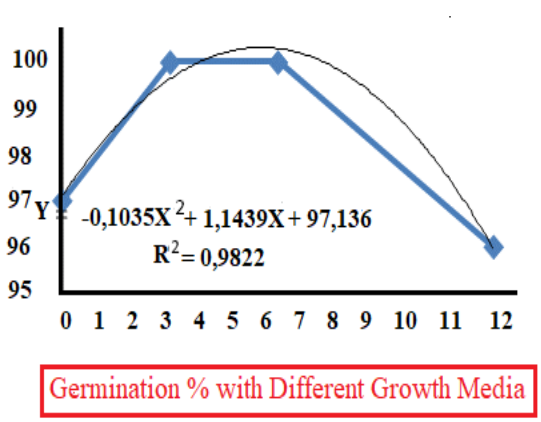
CV = 4.97 %

Impact of Growth Media on Number of Leaves

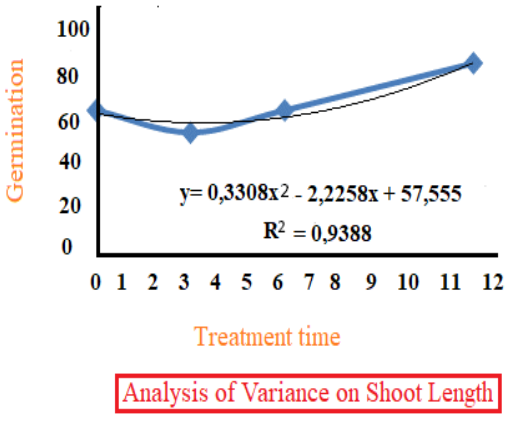
The number of leaves was discovered to be high in 30 days old seedlings (P3) filled in the media of coir substance (R1) and the base number of leaves were found in vermin fertilizer around the same time of seedlings. Time of seedlings created medium, and related elements were moreover basic at a 5 percent level.These outcomes were upheld by the discoveries of Raiz et al., (2008) who checked the most extreme number of leaves in leaf fertilizer blend. The conceivable explanation was the dietary commitment of the treatment that delivered the greatest number of leaves. The consequence of influenced development boundaries on various times of seedlings and development media are displayed in Table 5.

Table 5: The Result Related to Growth Parameters with Different Aged Seedlings and Growth Media

S. No.	Treatments	Shoot Length (mm)	Root Length (mm)	Stem Diameter (mm)	No. of Leaves
1	P1R1	73.7	34.5	1.21	4
2	P1R2	72	31.2	0.90	2
3	P1R3	74.6	32.6	1.02	3
4	P2R1	81.0	35.6	1.44	2
5	P2R2	77.8	32.7	1.05	3
6	P2R3	88	33.7	1.15	2
7	P3R1	88.2	36.8	1.70	3
8	P3R2	81.8	38	1.07	4
9	P3R3	88.5	32.2	1.26	1
10	Mean	78.4	32.4	1.23	4



Germination % with Different Growth Media



Analysis of Variance on Shoot Length

(1)

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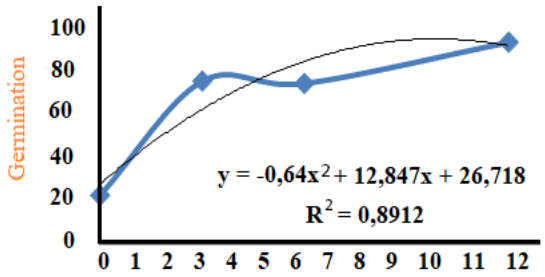
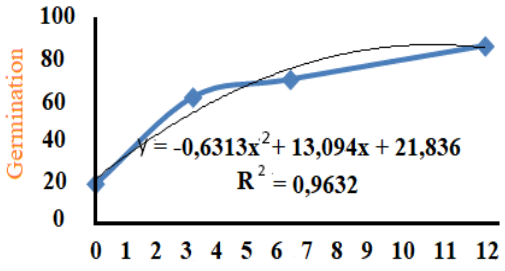


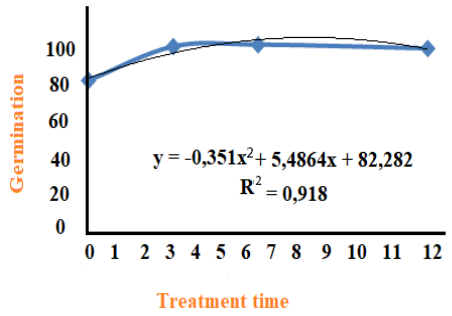
Analysis of Variance on Root Length

(2)



Analysis of Variance on Stem Diameter

(3)



Growth Parameters with Different Agaed Seedlings and Growth Media

CONCLUSION

Among the three diverse development media, the coir substance was a decent development media with worthy pH, electrical conductivity, and another compound ascribes. It has idealistic oxygen dispersion and offers help to the quick development of the seedlings because of the accessibility of better nourishment with water in the root zone of seedlings. The consolidated use of coir substance and vermicompost in the treatment showed a huge impact on seedlings' development boundaries because of the synergistic mix of the two elements in improving the states of being of the media and dietary variables (Sahni et al., 2008). Be that as it may, the air-filled porosity (AFP), effectively accessible water (EAW), and air circulation media were not at the suggested level, which thusly limits the root development and brought down the water-holding limit. Accordingly, the media coir substance alone was more appropriate than vermicompost with coir essence because of the better actual properties and upgraded supplement close. Pre-prescriptions with the greatest vital security of effects on seed germination diverging from physiological (time) extent of the leisureliness of brinjal seed have been usual up.The most reduced security was seen in (C). The seed of this line was exceptionally torpid following extraction (germination 19.6%), and it didn't arrive at its full germination even a year some other time when it was 89.4%. Results uncovered huge contrasts ($p>0.05$) in seedling development

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boundaries among the three-developing media. The greatest development boundaries, for example, shoot length, root length, stem breadth, and no. of leaves (88.4 mm, 38.8 mm, 1.27 mm, and 4) were seen at 30 days ripenedsaplings with coir essence media. The base development boundaries (82.8 mm, 32 mm, 1.07 mm, and 3 individually) were seen with vermicompost for that very day of matured seedlings. The greatest germination was discovered to be 100% with coir substance and the base was 87 per penny in vermin manure. Subsequently, a coir substance was found as appropriate development media for the development of brinjal seedlings.

REFERENCE

1. Abad M, P. Noguera, R. Puchades, A. Maquieira and V. Noguera. 2002. Physico-substance and chemical properties of some coconut clean for use as a peat substitute for containerized elaborate plants.Bio-asset Technology.82(3), 241-245.

2. Abirami K, J. Rema, P.A. Mathew, V. Srinivasan and S. Hamza. 2010. Impact of various engendering media on seed germination, seedling development, and energy of nutmeg (MyristicafragransHoutt.). J. Drug. Plants Res. 4:2054-2058.

3. Adediran J.A. 2005. Development of tomato and lettuce seedlings in soilless media. Diary of Vegetable Science. 11(1):5-15.

4. Ahmad M, M.F Khan, A. Hamid and A. Hussain.2004. Impact of urea, DAP, and FYM on development and blooming of (Dahlia variabilis). Int. J. Agric. Biol. 6:393-395.

5. Albaho, M., N. Bhat, H. Abo-Rezq and B. Thomas. 2009. Impact of three unique substrates on development and yield of two cultivars of Capsicum annuum. Eur. J. of Sci. Res., 28(2): 227-233.

6. Atif, M. J., G. Jellani, M. H. A. Malik, N. Saleem, H. Ullah, M. Z.Khanand S. Ikram. 2016. Distinctive Growth Media Effect the Germination and Growth of Tomato Seedlings. Science, Technology, and Development. 35(3), 123-127.

7. Awang Y, A.S Shaharom, R.B Mohamad, A. Selamat. 2009. Synthetic and physical characteristics of cocopeat-put together media blends and their impacts with respect to the development and advancement ofCelosiacristata. American Journal of Agricultural and Biological Sciences.4(1), 63-71.

8. Baiyeri K.P and B.N Mbah. 2006. Impacts of soilless and soil-put together nursery media with respect to seedling rise, development, and reaction to a water pressure of African breadfruit (Treculia Africana Decne). African Journal of Biotechnology.5(15):1405-1410.

9. Bilderback T.E, S.L Warren, J.S Owen Jr, and J.P Albano. 2005. Solid substrates need physicals as well. Hort. Innovation. 15(4), 747-751.

10. Campos Mota L, U. Van Meeteren and C. Blok. 2009. Correlation of actual properties of vermicompost from paper factory muck and green manure alternative for peat-based preparing media. ActaHortic. 819:227-234.

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 6, 2021, Pages. 15426 - 15436
Received 25 April 2021; Accepted 08 May 2021.

11. Producer S.T. 1987. Relations between mineral supplement accessibility and fine root biomass in two Costa Rican tropical wet backwoods. Speculation Biotropica. 19 (2):171-175.

12. Hartmann H.T, D.E. Kester, F.T. Davies and R.T. Geneve.2011. Hartmann and Kester's Plant spread: standards and practices (eighth Edition). Prentice-Hall, Boston, USA. Pp 825.

13. Jeong, B.R. 1992. The utilization of plug transfers in Korea. Division of Plant Resource and the climate, College of Agriculture, Gyeongsang National University, Chinju, Korea. PP. 1 - 9

14. Khobragade R.I, M.M.Damke and B.J. Jadhao (1997). Impact of planting time and dividing on development, blossoming, and bulb creation of tuberose (cv. Single). ActaHorticulturae. 21:4447.

15. Lia. X, Y. Cai, and Y Wang. 2015. Investigation on physical and mechanical properties of tomato seedling pot for programmed vegetable transplanter. J of Zhejiang Uni.41(5): 616-622.

16. Mohammad K.A, A.R Mohammad, M.D. Habibur Rahman and M.D. Jahiruddin. 2014. Impacts of natural composts on the seed germination and seedling force of tomato. Continuing of fourth ISOFAR logical meeting. 'Building natural extensions', at the natural world congress. 13-15 Oct., Istanbul, Turkey.

17. Muhammad JawaadAtif, Ghulam Jellani, Muhammad Humair Ahmed Malik, Noor Saleem, HidayatUllah, Muhammad Zameer Khan and SamiaIkram. 2016. Distinctive Growth Media Effect the Germination and Growth of Tomato Seedlings.Science, Technology and Development 35 (3): 123-127.

18. Neelam an and M Ishtiaq (2001). The reaction of Eucalyptus camaldulensis seedlings to various soil media. Sarhad Journal of Agriculture.17(1): 75-79.

19. Patil, S.Amruta, Sushil S. Davane, and Sagar V. Malunjkar. 2015. Plan, Development and Testing of Hand-Held Vegetable Transplanter. Int. J of Advanced Res. 3(1): 247-253.

20. Peter B. S. Gama, Lubajo Bosco Wani, Philip Wani Marcelo-d'Ragga and Beatrice C. Misaka. 2015. Impact of Soil Media on Growth of Tomato Seedlings under nursery (Greenhouse) Conditions. Worldwide Journal of Agricultural Research and Review: ISSN-2360-7971. 3(10). 432-439.

21. Qadir S.A, Shahzadi H.N 1969. Seed germination of normally developed trees, bushes and some wild grass. Pakistan Journal Forestry. 19:195-220.

22. Raiz A, M. Arshad, A. Younis, A. Raza, and M. Hameed. 2008. Impact of various developing media on the development and blooming of Zinnia elegant cv. Bluepoint. Pakistan Journal Botany.40:1579-1585.

23. Sahni S, B.K. Sharma, D.P. Singh, H.P. Singh, and K.P. Singh. 2008. Vermicompost improves execution of plant development advancing rhizobacteria in Cicer arietinum rhizosphere against sclerotiumrolfsii. Yield Prot. 27:369-376.

Annals of R.S.C.B., ISSN:1583-6258, Vol. 25, Issue 6, 2021, Pages. 15426 - 15436
Received 25 April 2021; Accepted 08 May 2021.

24. Singh, B., H.L. Yadav, M. Kumar., and N.P.S. Sirohi. 2007. Impact of plastic attachment plate cell size and shape on nature of soilless media developed tomato seedling. ActaHorticulturae. 742: 57 – 60.

25. Soegiman 1982. The nature and properties of soil. Bucman and Brady. BhataraKaryaAksara. Jakarta. 788 hal.

26. Sterrett, S.B., 2001. Fertilizer as Horticultural Substrates for Vegetable Transplant Production. In: Compost Utilization in Horticultural Cropping Systems, Stella, P.J. also, B.A. Kahn (Eds.). Lewis Publication, Boca Raton, FL, pp: 227-240.

27. Vendrame A.W, I. Maguire, and K.K. Moore. 2005. Development of chose bedding plants as affected by various-by-various fertilizer rates. Florida State Hort.Soc. 18:368-371.