

Effect of Potassium Nitrate Priming and Different Growing Media on Papaya Seed Germination

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ABSTRACT

The study was conducted to investigate "Effect of potassium nitrate and different growing media on papaya seed germination". For the study, the incorporated statistical design was Completely Randomized Design (CRD) with six different treatments consisting of 1% and 3% priming with potassium nitrate for 15-20 minutes and growth media comprised of compost, coco peat, and garden soil in three replications. In terms of germination and vigor significant difference was observed from 3rd week after emergence. From this study, it was obtained that the percentage of germination (90%), as well as the time taken for the seed to germinate first (6 days) was seen as excellent for T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was found to give the highest parameters in terms of length of leaves (2.35 Cm), number of leaves (5.5), root length (8 cm). The various growth parameters such as viz., number of roots (30.5), were observed highest in the T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The seedling height (16.65 cm) was found to be maximum in the T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). Therefore from this study done it may very well be said that T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) showed the best result concerning germination and different growing media had a significant influence on the growth and vigor parameters of papaya seedlings.

HIGHLIGHTS

- The experiment revealed that papaya seeds primed with three percent potassium nitrate and developed in the mixture of growth media was obtained with the best results
- Papaya (*Carica papaya* L.), a flavorsome important tropical fruit of India, falls under the family Caricaceae. Papaya plant is dioecious and fruits are climacteric in nature. It has high nutritive and medicinal value. It is mainly used as fresh fruit & unripe fruits are used for culinary purposes.

Keywords: papaya, seeds, priming, media, observation

The seed germination of papaya is affected by numerous elements, including substrate category & environmental factors (Hartman *et al.* 2001). The papaya seeds are sometimes slow in germination due to the gelatinous sarcotesta enclosing the seed (Lange 1961; Yahiro 1979). Priming with chemicals or prewashing with water helps remove the sarcotesta from papaya seeds, which facilitates germination (Lange 1961; Yahiro 1979; Perez *et al.* 1980; Okeyo and Ouma 2008). Growth media combinations also impact the germination of papaya seeds and the standard of the seedlings. A suitable growth

medium and its proper application are pivotal to supply mechanical support to the seedlings and water and minerals for the proper development of the plants (Radha *et al.* 2018). Growing medium has a direct impact on seed germination, growth, and vigor of papaya seedling. A proper growth media dispenses adequate support to the seedling,

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permits oxygen dissemination to the root zones, and allows gaseous interchange between roots and the atmosphere. The primary medium generally used is garden soil as it is low-priced and easy to acquire. Sand can be used to improve the porosity of the media. Whereas compost or organic matter is another substratum commonly used as a growing medium. It holds an excessive amount of organic matter and possesses a productive effect of the various properties of soil (Khater 2015). Coco peat has been found as another best medium, as it has the potentiality of water and air retention. Previous reports suggest that the coco peat utilized solely or along with other soil constituents is very much beneficial for fruits, vegetables, and some flowers. Hence acknowledging the effect of different soil media on papaya seedling growth, the present study was initiated to access the impact of potassium nitrate priming and multiple growth media on the development of papaya seedlings.

MATERIALS AND METHODS

The experiment entitled “effect of potassium nitrate priming and different growing media on papaya seed germination” was carried out in the Department of Horticulture, Institute of Agricultural Science, the University of Calcutta during the month of June-July (2021). The seeds (cv: Suvarna Queen) were sourced from a local store and an online seed shopping site. Plastic Pots of 9 cm × 9.5 cm × 7.5 cm were used for the sowing of papaya seeds. Experimental treatments consisted of different combinations of growing medium and seed priming with different percentages of potassium nitrate. The treatments were, T₁ - 0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil, T₂ - 1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil, T₃ - 3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil, T₄ - 0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil, T₅ - 1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil, T₆ - 3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil. The experiment was conducted in Complete Randomized Design (Gomez and Gomez 1984; Sheoran *et al.* 1998) with three replications. The pots were irrigated instantly after seed plantation and repeated each day till the final emergence. After the accomplishment of germination, the pots were irrigated once every 2 days. All the observations

like germination percentage, number of leaves per plant, length of leaves, length of roots, number of rootlets, and total length of seedling were recorded at 20, 25 & 30 days after seed sowing.

RESULTS AND DISCUSSION

Germination percentage

Seed germination parameters of papaya (*C. papaya*) as affected by growing media and KNO₃ priming are presented in Table 1.

Table 1: Effect of KNO₃ priming and growing media on Germination percentage of papaya seeds

Treatments	20 days	25 days	30 days
T ₁	70	80	80
T ₂	80	85	80
T ₃	80	100	100
T ₄	80	85	85
T ₅	90	100	100
T ₆	90	100	100
CD	—	5.192	3.672
Sem±	—	1.667	1.179

The treatments have directly impacted the germination of seeds. On 20th day the highest germination was noticed in T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) followed by T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) & T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The lowest germination percentage was found in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) showed greater germination when compared to the other treatments (Table 1). Data taken on 25th day have showed increased germination percentage in each treatment. Papaya seeds treated with treatment T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) have showed 100% germination on 25th day whereas T₂ (1% KNO₃ + 60% Coco peat + 20% Compost +

20% Garden soil), and T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) showed similar result. T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was found to show the same percentage as 20th day. The final reading was taken on 30th day. The recorded data have showed that there were no significant differences in the germination percentage between the data taken on 25th and 30th day.

Number of leaves

Table 2 gives us the result for the number of leaves of papaya seedlings. On 20th day the maximum number of leaves were found in T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil), T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The minimum number of leaves was found in T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). Number of leaves were slightly higher in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) than T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil).

Table 2: Effect of KNO₃ priming and growing media on number of leaves of papaya seedlings

Treatments	20 days	25 days	30 days
T ₁	2.5	4.0	5.5
T ₂	2.0	4.0	5.0
T ₃	3.0	3.5	5.0
T ₄	3.0	4.0	5.0
T ₅	3.0	3.5	5.0
T ₆	3.0	3.5	5.0
CD	0.367	N/A	N/A
Sem±	0.118	0.204	0.118

The data was recollected on 25th day and significance difference was found in number of leaves per treatments. The treatments with maximum number of leaves were, T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & the treatments with slightly lower in number of leaves were T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25%

Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The data recorded on 30th day have showed increase in number of leaves in every treatment. T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was highest in term of number of leaves and rest five treatments were having same numbers of leaves.

Length of leaves

Highest leaf length (Table 3) was seen for T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and the minimum length was observed on T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). On 20th day, T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) was slightly different from each other in terms of length of leaves.

Table 3: Effect of KNO₃ priming and growing media on length of leaves papaya seedlings

Treatments	20 days	25 days	30 days
T ₁	1.45	2.05	2.35
T ₂	1.40	1.90	2.25
T ₃	1.50	1.90	2.20
T ₄	1.40	1.70	2.15
T ₅	1.30	2.00	2.05
T ₆	1.45	1.90	2.30
CD	0.052	0.132	0.073
Sem±	0.017	0.042	0.024

The data collected on 25th day have revealed that the length of leaf was increased significantly. The maximum length of leaf was seen in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), followed by T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) was slightly shorter than T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The minimum length of leaf was observed in T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) on



25th day. The data taken on 30th day have showed significant differences in the length of leaves. The longest leaf length was observed in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) followed by T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) were different from each other by 0.05 centimetres. The shortest leaf was seen in T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil).

Length of root

Data presented in the Table 4, revealed that the length of roots which were significantly influenced by use of various growing media. The longest root on 20th day was observed in T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil), followed by T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) had slightly shorter roots than T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). The shortest root was observed in T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & the second shortest root was seen in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). Data recorded on 25th day showed that T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) & T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) had longest root among all. The shortest roots were observed in T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) were different from each other by 0.10 cm. On 30th day the recorded data have showed notable differences in the treatments. Maximum length of root was observed in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) were same in length of roots and the roots were second longest after T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). The minimum length of root was seen in T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) have showed almost same growth in length of roots and the roots were slightly longer than T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil).

25% Garden soil) were same in length of roots and the roots were second longest after T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). The minimum length of root was seen in T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) have showed almost same growth in length of roots and the roots were slightly longer than T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil).

Table 4: Effect of KnO₃ priming and growing media on length of root papaya seedlings

Treatments	20 days	25 days	30 days
T ₁	3.85	7.00	8.00
T ₂	4.10	7.00	7.50
T ₃	4.25	6.60	7.45
T ₄	3.60	6.85	7.55
T ₅	4.30	7.00	7.80
T ₆	4.15	6.75	7.80
CD	0.122	0.137	N/A
Sem±	0.039	0.044	0.182

Number of roots

Data presented in Table 5 shows the number of roots. Higher number of roots were observed in treatment T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) & T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) on 20th day. Minimum number of roots were seen in T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). However, higher number of roots were for T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) & T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) on 25th day, followed by T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The lower number of roots was observed in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) had somewhat higher number of roots than T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). Data taken on 30th day

have revealed that T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) had maximum number of roots. T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was moderately lower in terms of number of roots than T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) and T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) have showed similar number of roots and the number of roots were somewhat lower than T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). The lowest number of roots was observed in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil).

Table 5: Effect of KNO₃ priming and growing media on number of roots papaya seedlings

Treatments	20 days	25 days	30 days
T ₁	12.0	19.5	24.0
T ₂	9.5	22.5	29.0
T ₃	12.0	20.0	30.0
T ₄	9.5	22.0	30.5
T ₅	12.0	22.5	30.5
T ₆	9.5	22.0	29.0
CD	1.218	1.422	1.872
Sem±	0.391	0.456	0.061

Total length of seedlings

The Table 6 shows a very high significant difference in total length of seedlings. On 20th day the maximum plant length was observed in T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) followed by T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The minimum seedling length was seen in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) have showed indistinguishable results with same length of seedlings. T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was observed to have a bit higher length of seedlings than T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). Data recollected on 25th day have revealed that the

treatment with maximum length of seedlings was T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), have showed increased length of seedling after T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). However, the minimum length of seedling was observed in T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) were observed to have same length of seedling and the length was moderately higher than T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). The data recorded on 30th day have found to show remarkable increase in total length of seedling on each treatment. T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) was noted to have maximum increase in seedling length followed by T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). Whereas T₄ (0% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) was observed to have moderately lower seedling length than T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). The minimum length of seedling was found in T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). However, T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) and T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) had longer seedlings than T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) but shorter than rest of the treatments.

Table 6: Effect of KNO₃ priming and growing media on total length of papaya seedlings

Treatments	20 days	25 days	30 days
T ₁	10.25	14.70	16.50
T ₂	10.50	14.05	15.65
T ₃	10.70	14.25	15.80
T ₄	10.90	14.00	16.30
T ₅	10.85	14.50	15.95
T ₆	10.70	14.05	16.65
CD	0.260	0.474	0.358
Sem±	0.083	0.152	0.115

Seed priming with 1% and 3% KNO₃ and Coco peat and compost have been found to be the best medium. It was seen from the experiment that



priming papaya seeds with potassium nitrate helped out in various seedling parameters of the crop. The maximum germination percentage was observed on 30th day in T₃ (3% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). This agrees with the previous finding of Thirupathi and Mullaimaran (2020), concerning the treatment of papaya seeds. The different growth media used also gave the highest values in terms of a number of leaves. The highest number of leaves were found in T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil), which was slightly higher than the rest of the treatments. This was very much in accordance with earlier works of Barche *et al.* (2008), where different cultivars of papaya seeds were treated to note their response. With respect to length of leaves T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) have showed greater result, followed by T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil). This was at par with the earlier reports of Rana *et al.* (2020). The length and number of roots also increased in the treatments at due time.

CONCLUSION

The presented data showed that potassium nitrate priming and combination of garden soil, coco peat and compost can be very much incorporated for the growth of seedlings of papaya. From the study the result can be drawn that the seed treatment and growing media tremendously helped with the various attributes of the papaya seedlings. From the experiment it was obtained that T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) were distinguishably superior & T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was inferior in term of germination percentage. With regard to number of leaves T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) showed highest length of leaves while in contrary T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) was observed to have shortest leaf. With regard to length of roots T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) again was revealed to have highest length of root while T₃ (3% KNO₃ + 60% Coco peat

+ 20% Compost + 20% Garden soil) was significantly subordinate. T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) was observed to have highest number of roots whereas T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) had lesser number of roots than other treatments. Overall highest seedling length was noticed in T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & shortest seedling was observed in T₂ (1% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil). Thus, from the study it can be concluded that with regard to germination T₅ (1% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) & T₆ (3% KNO₃ + 50% Coco peat + 25% Compost + 25% Garden soil) were found to be best & with respect to seedling vigour T₁ (0% KNO₃ + 60% Coco peat + 20% Compost + 20% Garden soil) was found to be superior among all.

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