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# Influence of Seed Priming through $KNO_3$ on Plant Growth and Seed Production of Coriander (*Coriandrum sativum* L.)

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**A B S T R A C T**

The present experiment was conducted during Rabi 2017-18 and 2018-19 at Research Farm, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia, West Bengal. The design of experiment was split plot with two factor analysis comprising four concentrations of $KNO_3$ [*viz.* T1-0.5% of $KNO_3$, T2-0.25% of $KNO_3$, T3-0.1% of $KNO_3$, T0-hydrated seed (control)] as first factor and three durations of soaking [*viz.* D1-12 hours of soaking, D2-16 hours of soaking, D3-20 hours of soaking] as second factor. It was revealed that seed yield (kg $ha^{-1}$) in the first and second year was highest (1061.3 kg $ha^{-1}$ and 1439.2 kg $ha^{-1}$) in T2D3 (0.25% of KNO3+20 hours of soaking) followed by T1D1 (0.5% of KNO3+12 hours of soaking). Hence, for production of higher seed yield, coriander seeds should be primed with 0.25% $KNO_3$ for 20 hours or 0.5% $KNO_3$ with 12 hours.

## Introduction

Coriander (*Coriandrum sativum* L.) is an annual herb that belongs to the family Apiaceae (Umbelliferae) with chromosome number of 2n=22. It is native to the European-Mediterranean area. It is used as spices and its seeds are used for extracting essential oil for its high linalool content (72.7%). The leaves, seeds and roots of coriander are edible; they contain abundant fibre, vitamin B, vitamin C, carotene, mineral elements and more (Bhat *et al.*, 2014). The area, production and productivity of coriander during 2017-2018 in India were 664 thousand ha, 861 thousand MT and 1.3 MT per ha respectively. In west Bengal during 2016-2017 the area, production and productivity was 11.45 thousand ha. and 14.52 thousand MT and 1.24 MT per ha respectively (Source: Spice board, India and ministry of agriculture and Govt. of India). India ranks first in terms of area and production in the world (FAO, 2016). In India it is mainly grown in Rajasthan, Gujarat,

Madhya Pradesh, Andhra Pradesh and Tamilnadu.

The seed yield in coriander is low, because it is mainly grown on marginal lands with poor soil fertility, irrigation, fertilizers, pests and the disease management. Besides this the rate of deterioration of seed quality parameters is rapid during storage resulting poor vigour and establishment of crops. The availability of quality seed of coriander is very low. Seed priming is an excellent technique which improves germination and better crop stand. Seed priming is a pre sowing treatment that involves control procedure where seeds are soaked in solutions of different concentrations to enhance seed germination and growth in stress environment. In halopriming, *viz.* $KNO_3$ the seeds are soaked in salt solutions, which help to invigorate the seed and facilitate the process of seed germination and seedling emergence evenly under adverse environmental conditions. In this context, the present study was carried out to investigate the effect of halopriming on enhancing growth and yield contributing characters of coriander.

## Materials and Methods

The present experiment was carried in the Mondouri Teaching farm, Mondouri during Rabi 2017-18 and in Jaguli Instructional Farm, Mohanpur**,** during Rabi 2018-19 of Bidhan Chandra Krishi Viswavidyalaya, Nadia, West Bengal. The experimental site of Mondouri Teaching farm is located at 9.75 m above mean sea level, 23.5º N latitude and 89°E longitude.

The Jaguli Instructional Farm farm is located at 9.73 m above mean sea level, $23.66^0$ N latitude and $88.24^0$ E longitude. The soil of the experimental site is inseptisols type having sandy loam texture with pH 6.9. The average rainfall of the experimental site is 1400 mm. Total rainfall during crop growth period was 60 mm during first year and 80 mm during second year.

The seeds of coriander variety Ranaghat local were soaked in four aqueous solution of $KNO_3$ [*viz.* T1-0.5% of $KNO_3$, T2-0.25% of $KNO_3$, T3-0.1% of $KNO_3$, T0-hydrated seed (control)] as first factor and three durations of soaking [*viz.* D1-12 hours of soaking, D2-16 hours of soaking, D3-20 hours of soaking] as second factor with three replications at 25-27ºC. After that, treated seeds had been washed with distilled water and shade dried properly to restore the previous moisture content of the seed. After proper drying, the treated seeds were sown in the field for study following characters *viz.* Days to 50% flowering, Days to maturity, Plant height (cm), number of primary branches plant$^{-1}$, number of secondary branches plant$^{-1}$, number of umbels plant$^{-1}$, number of umbellets umbel$^{-1}$, number seeds umbellets$^{-1}$, 1000 Seed weight and Seed yield (Kg ha$^{-1}$).

Sowing was done on 05.12.2017 and 19.11.2018 in plot size of 2.5 m x 1.5 m at a spacing of 30 cm row to row and fertilizer dose of N:$P_2O_5$:$K_2O$ @ 60:40:30 kg/ha. The thinning of overcrowded plants was done at 10 days after sowing maintaining 10 cm plant to plant distance. All recommended cultural practices were followed for coriander seed production.

Statistical analysis of the data, recorded on various parameters during the course of investigation was subjected to the Analysis of Variance as per Split Plot Design using the OPSTAT computer programming. The Critical Difference (C.D.) at 5% level of significance was worked out for comparing various treatment means, whenever the F value in ANOVA was found to be significant. The Standard Error of Means [SEm (±)] was also calculated for better conclusion of different interaction effect.

## Results and Discussion

### Effect of seed priming on growth parameters of Coriander

The effect of priming treatments with different durations was studied and the results have been presented on Table 1. In both the years the treatments, duration of treatments, interaction among the treatments and duration of treatments had non significant effect on days to 50% flowering and days to maturity. However mean value over years revealed that T2 (0.25% $KNO_3$) recorded lowest days to 50% flowering and days to maturity (60.7 and 116.7 days respectively). Among duration of treatments D1 (12 hours of soaking) is desirable because it recorded lowest mean value for days to 50% flowering and days to maturity (60.9 and 116.9 days respectively). Among the interaction effects T2D1 recorded lowest mean value for days to 50% flowering and days to maturity (62.1 and 116.1 days respectively) and T1D3 recorded highest mean value for days to 50% flowering and days to maturity (62.2 and 112.2 days respectively). Early germination and early growth of primed seed may be the reason for early 50% flowering and days to maturity. The results was in conformity with Murungu and Madanzi (2010), where hydro primed wheat seeds showed reduced days to 50% flowering by 16% over control due to less time required for further imbibitions for the seed to germinate. Negewo (2016) and Musa, A.G., *et al.,* (2001), also had similar observations where chickpea primed seeds with 0.5% $KH_2PO_4$ took significantly lesser days to 50% flowering by 2.5 days compared to unprimed seed and soaking seeds for 8 h in water in chickpea harvested 3 to 7 days earlier than unprimed one.

Higher plant height is an important character for more number of primary and secondary branches. Maximum plant height was observed in T1 (0.5% of $KNO_3$) in both first year (59.3 cm) and second year (64.0 cm) followed by T2 (0.25% $KNO_3$). The duration of different treatments showed significant variation with D3 (20 hours of soaking) having maximum plant height) in both first year (59.77 cm) and second year (56.9 cm). There was non-significant difference with respect to interaction between the treatments x duration of treatments, but mean value was maximum (66.34 cm) in T1D3. Hamidi *et al.,* (2013) observed that halo-priming had more positive effect on germination where priming enhanced plant height and leaf area. In present investigation there was a significant difference between treatments in plant height, which might be due to increased oxidative enzyme activity of the components leading to improved germination and seedling growth that proportionate the increase in plant height. The result was in conformity with the Jamshidian and Talat (2017), where coriander primed seeds showed increase in plant height by increasing distance of nodes. Plants rose from primed seeds, enhanced water and nutrients intake, resulting increased plant height.

Higher number primary and secondary branches per plant are most desirable in case of coriander seed production. During both the years, the primary and secondary branches were significantly influenced by treatments as well as duration of treatments. The interaction effects were also significant. Mean value due to treatments for both the characters was highest in T1 (0.5% of $KNO_3$) 7.3 and 16.0 respectively. Among the duration of treatments D2 (16 hours of soaking) recorded maximum value for the characters (6.9 and 16.4 respectively) and among the interactions highest mean value was recorded in T1D2 (7.6 and 17.4 respectively) for the characters number primary and secondary branches per plant. Similar findings were reported in halo primed dill (Khoshvaghti *et al.,* 2013) and

chickpea (Manigopa *et al.*, 2007), where there was considerable increase in lateral branches (primary and /or secondary) per plant.

## Effect of seed priming on yield contributing parameters of Coriander

The number of umbels in a plant is an important yield contributing character though there was no direct relationship with the seed quality. A perusal of Table 2 revealed that there were significant differences among treatments, duration of treatments and interactions between treatments and duration of treatments in both the years. Among treatments T2 (0.25% of $KNO_3$) recorded maximum mean value of umbel plant$^{-1}$ (21.4) followed by T1 (0.5% of $KNO_3$) with 20.5. D3 (20 hours of soaking) had highest significant effect 21.1 and 22.8 umbels plant$^{-1}$ in first and second year respectively. The results was in conformity with the work of Jamshidian and Talat (2017) where hormonal priming seed with $GA_3$ pre-treated plants showed a significant increase of umbels and compound leaves in coriander than control. Among interactions between treatments and duration of treatments in both the years T2D3 recorded maximum number of umbels plant$^{-1}$ (23.9). The results pertaining to number of umbellets umbel$^{-1}$, number of seed in an umbellet, 1000 seed weight (g) were statistically non significant in both the years. But, mean value over years revealed that T2 (0.25% of KNO3) recorded maximum number of umbellets umbel$^{-1}$ (4.4) and number of seed per umbellet (4.6). Whereas, T1 (0.5% of $KNO_3$) recorded maximum 1000 seed weight (10.61g) followed by T2 (10.33 g). Among duration of treatments, D3 (20 hours of soaking) recorded maximum number of umbellets umbel$^{-1}$ (4.3), number of seed per umbellet (4.7) and 1000 seed weight (10.62g). Among the interactions, T2D3 recorded maximum value for the above characters (5.0, 4.9 and 10.83g).

Seed yield is a quantitative character in seed production which is influenced by the partitioning ability of the photosynthates in a particular plant. During both the years the seed yield per hectare was significantly influenced by treatments as well as duration of treatments. During first year T2 (0.25% of $KNO_3$) recorded maximum seed yield per hectare (998.1kg) and T0 (control) recorded minimum seed yield per hectare (924.8kg). In case of duration of treatments D3 (20 hours of soaking) recorded maximum seed yield per hectare (971.5kg) and D2 (16 hours of soaking) recorded minimum seed yield per hectare (936.0kg). During second year T2 (0.25% of $KNO_3$) recorded maximum seed yield per hectare (1281.4kg) and T3 (0.1% of $KNO_3$) recorded minimum seed yield per hectare (973.9kg). In case of duration of treatments D3 (20 hours of soaking) recorded maximum seed yield per hectare (1186.3kg) and D2 (16 hours of soaking) recorded minimum seed yield per hectare (995.7kg). In case of mean effect of two years, among the treatments T2 (0.25% of $KNO_3$) recorded the maximum seed yield per hectare (1139.4 kg) and among the duration of treatments D3 recorded maximum seed yield per hectare (1078.9 kg). Among the interactions between treatments and duration of treatments T2D3 recorded highest seed yield per hectare in both the years (1061.3 and 1439.2 kg ha$^{-1}$). The higher yield in T2D3 (0.25% of $KNO_3$+20 hours of soaking) and T1D1 (0.5% of $KNO_3$+12 hours of soaking) was due to more number of umbels plant$^{-1}$, number of umbellets umbel$^{-1}$, 1000 seed weight and as well as number of primary and secondary branches per plant. The results are in conformity with the work reported by Tiwari, T.N. *et al.*, (2014) in pigeon pea with sand priming of pigeon pea seeds with 0.3 to 0.4% $KNO_3$ significantly improved grain yield in all varieties evaluated over unprimed control.

**Table.1** Effect of seed priming through $kno_3$ on growth parameters of coriander

| Treatments | Days to 50% flowering | | | Days to maturity | | | Plant height (cm) | | | Number of primary branches plant$^{-1}$ | | | Number of secondary branches plant$^{-1}$ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Treatments (T)** | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean |
| **T1** | 59.5 | 63.3 | 61.4 | 121.6 | 113.3 | 117.4 | 59.3 | 64.0 | 61.7 | 7.1 | 7.4 | 7.3 | 15.2 | 16.9 | 16.0 |
| **T2** | 58.6 | 62.8 | 60.7 | 120.7 | 112.8 | 116.7 | 53.6 | 52.5 | 53.0 | 6.9 | 6.4 | 6.7 | 15.0 | 16.5 | 15.7 |
| **T3** | 59.3 | 62.7 | 61.0 | 121.3 | 112.7 | 117.0 | 55.2 | 47.7 | 51.5 | 7.1 | 5.6 | 6.4 | 13.2 | 14.8 | 14.0 |
| **T0** | 60.3 | 62.7 | 61.5 | 122.2 | 112.7 | 117.4 | 49.7 | 51.6 | 50.7 | 6.3 | 6.8 | 6.4 | 11.5 | 12.9 | 12.2 |
| **SEm (±)** | 0.6 | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 1.3 | 2.1 | 1.7 | 0.1 | 0.2 | 0.1 | 0.4 | 0.5 | 0.4 |
| **C.D (5%)** | NS | NS | NS | NS | NS | NS | 4.5 | 7.3 | 5.9 | 0.4 | 0.6 | 0.5 | 1.3 | 1.7 | 1.5 |
| **Duration of treatments (D)** | | | | | | | | | | | | | | | |
| **D1** | 59.1 | 62.7 | 60.9 | 121.1 | 112.7 | 116.9 | 51.9 | 52.3 | 52.1 | 6.6 | 6.5 | 6.5 | 13.4 | 14.8 | 14.1 |
| **D2** | 59.4 | 63.7 | 61.6 | 121.4 | 113.0 | 117.2 | 51.8 | 52.8 | 52.3 | 7.1 | 6.8 | 6.9 | 15.0 | 17.8 | 16.4 |
| **D3** | 59.8 | 63.0 | 61.4 | 121.7 | 113.0 | 117.3 | 59.8 | 56.9 | 58.3 | 6.7 | 6.4 | 6.5 | 12.8 | 13.2 | 13.0 |
| **SEm (±)** | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 1.5 | 1.0 | 1.2 | 0.1 | 0.1 | 0.1 | 0.3 | 0.4 | 0.4 |
| **C.D (5%)** | NS | NS | NS | NS | NS | NS | 4.6 | 2.9 | 3.7 | 0.2 | 0.3 | 0.2 | 1.0 | 1.3 | 1.1 |
| **Interactions (TXD)** | | | | | | | | | | | | | | | |
| **T1X D1** | 58.7 | 63.0 | 60.8 | 120.7 | 113.0 | 116.8 | 57.63 | 60.43 | 59.03 | 7.0 | 7.2 | 7.1 | 15.8 | 16.4 | 16.1 |
| **T1X D2** | 59.3 | 63.3 | 61.3 | 121.3 | 113.3 | 117.3 | 55.93 | 63.23 | 59.58 | 7.1 | 8.1 | 7.6 | 14.9 | 20.8 | 17.8 |
| **T1X D3** | 60.7 | 63.7 | 62.2 | 122.7 | 113.7 | 118.2 | 64.36 | 68.33 | 66.34 | 7.2 | 6.9 | 7.0 | 14.8 | 13.4 | 14.1 |
| **T2XD1** | 58.3 | 62.0 | 60.1 | 120.3 | 112.0 | 116.1 | 54.10 | 49.90 | 52.00 | 6.6 | 6.3 | 6.4 | 13.9 | 15.5 | 14.7 |
| **T2X D2** | 58.6 | 63.3 | 60.9 | 120.7 | 113.3 | 117.0 | 46.60 | 52.90 | 49.75 | 7.2 | 6.6 | 6.9 | 15.7 | 17.3 | 16.5 |
| **T2X D3** | 59.0 | 63.3 | 61.1 | 121.0 | 113.3 | 117.1 | 60.20 | 54.57 | 57.38 | 6.8 | 6.5 | 6.6 | 15.6 | 16.7 | 16.1 |
| **T3X D1** | 59.3 | 63.0 | 61.1 | 121.3 | 113.0 | 117.1 | 49.00 | 47.47 | 48.23 | 7.0 | 5.7 | 6.3 | 13.6 | 15.6 | 14.6 |
| **T3X D2** | 59.3 | 62.7 | 61.0 | 121.3 | 112.7 | 122.0 | 55.87 | 45.83 | 50.85 | 7.7 | 5.6 | 6.6 | 14.7 | 16.8 | 15.7 |
| **T3X D3** | 59.3 | 62.7 | 61.0 | 121.3 | 112.7 | 117.0 | 60.70 | 49.90 | 55.3 | 6.4 | 5.5 | 5.9 | 11.3 | 12.1 | 11.7 |
| **T0X D1** | 60.3 | 63.0 | 61.6 | 122.3 | 113.0 | 117.6 | 46.66 | 51.27 | 48.96 | 5.9 | 6.8 | 6.3 | 10.6 | 11.9 | 11.2 |
| **T0X D2** | 60.3 | 62.6 | 61.4 | 122.3 | 112.7 | 117.5 | 48.60 | 49.06 | 48.83 | 6.3 | 6.9 | 6.6 | 14.5 | 16.2 | 15.3 |
| **T0X D3** | 60.3 | 62.7 | 61.5 | 122.0 | 112.7 | 117.3 | 53.83 | 54.60 | 54.21 | 6.6 | 6.6 | 6.6 | 9.4 | 10.7 | 10.0 |
| **SEm (±)** | 1.0 | 0.7 | 0.9 | 0.9 | 0.7 | 0.8 | 2.2 | 3.6 | 2.9 | 0.2 | 0.3 | 0.3 | 0.6 | 0.8 | 0.7 |
| **C.D (5%)** | NS | NS | NS | NS | NS | NS | NS | NS | NS | 0.4 | 0.6 | 0.5 | 2.0 | 2.7 | 2.4 |

T1: (0.5% of $KNO_3$), T2: (0.25% of $KNO_3$), T3: (0.1% of $KNO_3$), T0: hydrated seed (control); D1: (12Hrs of soaking, D2: (16Hrs of soaking), D3: (20Hrs of soaking)
NS: Non significant

**Table.2** Effects of seed priming through $KNO_3$ on yield contributing parameters of coriander

| Treatments | Number of umbels plant$^{-1}$ | | | Number of umbellets umbel$^{-1}$ | | | Number of seeds umbellet-1 | | | 1000 seed weight (g) | | | Seed yield ( kg ha$^{-1}$) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Treatments (T)** | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean | 1st year | 2nd year | Mean |
| **T1** | 19.7 | 21.3 | 20.5 | 4.4 | 4.3 | 4.3 | 4.7 | 4.6 | 4.6 | 10.00 | 11.22 | 10.61 | 949.0 | 1,077.8 | 1013.4 |
| **T2** | 20.8 | 22.1 | 21.4 | 4.5 | 4.3 | 4.4 | 4.6 | 4.7 | 4.6 | 9.56 | 11.11 | 10.33 | 998.2 | 1,281.4 | 1139.4 |
| **T3** | 18.3 | 19.8 | 19.0 | 4.1 | 4.1 | 4.1 | 4.6 | 4.5 | 4.5 | 9.33 | 10.78 | 10.05 | 938.1 | 984.4 | 961.2 |
| **T0** | 17.1 | 17.8 | 17.4 | 4.1 | 4.2 | 4.1 | 4.2 | 4.5 | 4.3 | 9.44 | 10.77 | 10.10 | 924.8 | 1,057.5 | 991.1 |
| **SEm (±)** | 0.53 | 0.44 | 0.48 | 0.21 | 0.09 | 0.15 | 0.13 | 0.10 | 0.11 | 0.30 | 0.33 | 0.31 | 7.6 | 28.0 | 17.8 |
| **C.D (5%)** | 1.87 | 1.58 | 1.72 | NS | NS | NS | NS | NS | NS | NS | NS | NS | 27.0 | 98.8 | 62.9 |
| **Duration of treatments (D)** | | | | | | | | | | | | | | | |
| **D1** | 19.2 | 21.2 | 20.2 | 4.2 | 4.2 | 4.2 | 4.6 | 4.4 | 4.5 | 9.50 | 10.75 | 10.12 | 950.0 | 1119.0 | 1034.5 |
| **D2** | 16.6 | 16.7 | 16.6 | 4.2 | 4.2 | 4.2 | 4.4 | 4.5 | 4.4 | 9.50 | 10.67 | 10.08 | 936.0 | 995.7 | 965.8 |
| **D3** | 21.1 | 22.8 | 21.9 | 4.4 | 4.3 | 4.3 | 4.7 | 4.8 | 4.7 | 9.75 | 11.50 | 10.62 | 971.6 | 1186.3 | 1078.9 |
| **SEm (±)** | 0.40 | 0.32 | 0.36 | 0.15 | 0.11 | 0.13 | 0.15 | 0.11 | 0.13 | 0.29 | 0.34 | 0.31 | 8.9 | 20.3 | 14.6 |
| **C.D (5%)** | 1.22 | 0.97 | 1.09 | NS | NS | NS | NS | NS | NS | NS | NS | NS | 26.9 | 61.5 | 44.2 |
| **Interactions (TXD)** | | | | | | | | | | | | | | | |
| **T1X D1** | 22.0 | 23.7 | 22.85 | 4.6 | 4.7 | 4.6 | 4.9 | 4.7 | 4.8 | 10.67 | 11.00 | 10.83 | 978.7 | 1215.5 | 1097.1 |
| **T1X D2** | 15.2 | 17.8 | 16.5 | 4.1 | 4.2 | 4.1 | 4.8 | 4.5 | 4.6 | 9.33 | 9.67 | 9.50 | 915.5 | 916.3 | 915.9 |
| **T1X D3** | 21.9 | 22.5 | 22.2 | 4.4 | 4.2 | 4.3 | 4.4 | 4.7 | 4.5 | 10.0 | 13.00 | 11.5 | 952.7 | 1101.7 | 1027.2 |
| **T2XD1** | 20.7 | 22.1 | 21.4 | 4.6 | 4.3 | 4.4 | 4.8 | 4.7 | 4.2 | 9.00 | 10.67 | 9.83 | 964.9 | 1184.6 | 1074.7 |
| **T2X D2** | 19.2 | 19.1 | 19.1 | 4.2 | 4.3 | 4.2 | 4.2 | 4.3 | 4.2 | 9.67 | 11.00 | 10.33 | 968.3 | 1220.6 | 1094.4 |
| **T2X D3** | 22.6 | 25.2 | 23.9 | 4.6 | 4.4 | 5.0 | 5.0 | 4.9 | 4.9 | 10.00 | 11.67 | 10.83 | 1061.3 | 1439.2 | 1250.2 |
| **T3X D1** | 19.5 | 22.3 | 20.9 | 3.8 | 3.8 | 3.8 | 4.6 | 4.0 | 4.3 | 9.00 | 10.67 | 9.83 | 955.7 | 1035.0 | 995.3 |
| **T3X D2** | 15.6 | 15.1 | 15.3 | 4.2 | 4.2 | 4.2 | 4.5 | 4.7 | 4.6 | 9.67 | 11.00 | 10.33 | 920.7 | 826.0 | 873.3 |
| **T3X D3** | 19.9 | 22.1 | 21.0 | 4.4 | 4.2 | 4.3 | 4.8 | 4.7 | 4.7 | 9.33 | 10.67 | 10.00 | 938.0 | 1091.5 | 1014.7 |
| **T0X D1** | 14.7 | 16.9 | 15.8 | 4.0 | 4.0 | 4.0 | 4.2 | 4.2 | 4.2 | 9.33 | 10.67 | 10.00 | 900.7 | 1040.0 | 970.3 |
| **T0X D2** | 16.5 | 14.8 | 15.6 | 4.4 | 4.3 | 4.3 | 4.0 | 4.5 | 4.2 | 9.33 | 11.00 | 10.15 | 939.7 | 1020.2 | 979.9 |
| **T0X D3** | 20.0 | 21.7 | 20.8 | 4.1 | 4.3 | 4.2 | 4.4 | 4.7 | 4.5 | 9.67 | 10.67 | 10.17 | 934.2 | 1113.0 | 1023.6 |
| **SEm (±)** | 0.91 | 0.77 | 0.84 | 0.36 | 0.6 | 0.48 | 0.22 | 0.18 | 0.2 | 0.52 | 0.58 | 0.55 | 13.2 | 48.5 | 30.8 |
| **C.D (5%)** | 2.61 | 2.08 | 2.34 | NS | NS | NS | NS | NS | NS | NS | NS | NS | 55.9 | 13.58 | 34.7 |

T1: (0.5% of $KNO_3$), T2: (0.25% of $KNO_3$), T3: ( 0.1% of $KNO_3$), T0: hydrated seed (control); D1: (12Hrs of soaking, D2: (16Hrs of soaking), D3: (20Hrs of soaking)

NS: Non significant

It can be concluded that T2D3 (0.25% of $KNO_3$+20 hours of soaking) and T1D1 (0.5% of $KNO_3$+12 hours of soaking) can enhance seed yield of coriander. It is clear that higher concentration of $KNO_3$ (0.5%) require less time of soaking (12 hours) and lower concentration of $KNO_3$ (0.25%) needs more time of soaking (20 hours) for production of high seed yield.

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