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Field performance evaluation of *in-vitro* raised strawberry cv. Nabila under poly tunnel

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Abstract

The present investigation entitled "Field performance evaluation of *in-vitro* raised strawberry cv. Nabila under poly tunnel" was conducted at the "Research Farm of Centre of Excellence on Protected Cultivation and Precision Farming under protected condition, located at College of Agriculture, IGKV, Raipur (C.G.)" during the year 2018-19 and 2019-20 under experiments with 3 replications and is laid out in Randomized Block Design. The effects of different combinations of growth regulators was not significantly affected the plant height at 30-45 DAT and 120 DAT, while it was significantly affected at 0-15, 15-30, 45-60 and 90 DAT. Maximum plant height was record with MS + BAP (1.00 mg/l) + NAA (0.1 mg/l) at 0-15 DAT, MS + Kinetin (1.00 mg/l) + NAA (0.50 mg/l) at 15-30 DAT, MS + Kinetin (1.00 mg/l) + NAA (0.50 mg/l) at 45-60 DAT, MS + BAP (1.00 mg/l) + NAA (0.10 mg/l) at 90 DAT and MS + Kinetin (1.00 mg/l) + NAA (0.50 mg/l) at 120 DAT. In E-W direction maximum plant spread was recorded with MS + BAP (0.5 mg/l) + NAA (0.1 mg/l) at 15 DAT, MS + BAP (1.0 mg/l) + NAA (0.5 mg/l) at 30 DAT, MS + BAP (0.5 mg/l) + NAA (0.5 mg/l) at 45 DAT, MS + BAP (1.0 mg/l) + NAA (0.1 mg/l) at 60 DAT, MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) at 75 DAT, MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) at 90 DAT and MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) during both the years of study (2018-19 and 2019-20). In N-S direction maximum plant spread was recorded with MS + Kinetin (1.0 mg/l) + NAA (0.5 mg/l) at 15 DAT, MS + Kinetin (1.0 mg/l) + NAA (0.5 mg/l) at 30 DAT, MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) at 45 DAT, MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) at 60 DAT, MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) at 75 Days after transplanting, MS + Kinetin (1.0 mg/l) + NAA (0.1 mg/l) at 90 Days after transplanting and MS + BAP (1.0 mg/l) + NAA (0.1 mg/l) at 120 Days after transplanting during both the years of study (2018-19 and 2019-20). The work recommended that use of growth regulators along with MS medium can enhance the quality and yield performance of strawberry under *in-vitro* conditions.

Keywords: GA₃, NAA, BAP, IBA, kinetin, activated charcoal

Introduction

The botanical name of cultivated strawberry *Fragaria × ananassa* Duch. is octoploid in nature (2n=8x=56). In the 17th century it has been derived from North American species, *Fragaria chiloensis* and *Fragaria virginiana* in France. It belongs to the family Rosaceae. It is one of the important fruit crops whose cultivation is having ample scope near the fruit preservation factories as well as big cities.

In recent years, strawberry is being cultivated successfully in our country in plains of Maharashtra around Pune, Nasik and Sangali towns. It has been widely adopted as the small fruits having 98% edible portion.

Now a days Strawberry is being grown throughout Europe, in every States of the South America and United States in Canada. There is a wide range of climatic conditions within these regions and the wide adaptation capability of the strawberry plant permit it's harvesting and marketing over maximum part of the year.

Strawberry is a delicious fruit can be taken fresh as table fruit or in processed form. It is good source of vitamin C and Iron. On account of rich aroma and pectin it makes excellent ice-cream, jam and jelly. It is a very soft and a highly perishable fruit, due to which often kept in frozen condition in Western countries. Fruit shape differs depending upon the variety. It may be conical, round and long to conical, conical with constricted base and cylindrical ground. The strawberry fruit contains 89-90% moisture, 0.7-9.2 g protein, 8.4-9.2 g carbohydrate, 0.5 g fat, 59-120 mg vitamins C per 100 g of fresh weight of fruit. The fruit of strawberry is good for those people suffering from anemia biliousness and indigestion.

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Material and Methods

The present investigation entitled, "Field performance evaluation of *in-vitro* raised strawberry cv. Nabila under poly tunnel" was conducted during the year 2018-19 and 2019-20 and Centre of Excellence on Protected Cultivation and Precision farming under poly tunnel, IGKV, Raipur (C.G.). The planting material was healthy runners of Strawberry plants cv. Nabila procured from Commercial Tissue Culture Laboratory Department of PMBB, College of Agriculture, IGKV, Raipur (C.G.), College of Agriculture, IGKV, Raipur (C.G.). Nabila is an important variety of strawberry, what is performing very good under agro climatic regions of Chhattisgarh plain. This variety requires low chilling hours to get fruiting. Therefore Nabila cultivar was selected for present experiment Treatment T₁ MS + IBA (0.50mg/l), T₂ MS + IBA (1.00 mg/l), T₃ MS + NAA (0.50mg/l), T₄ MS+ NAA (1.00 mg/l), T₅ MS + IBA (0.50 mg/l) + Activated Charcol (200 mg/l), T₆ M S + IBA (1.00 mg/l) + Activated Charcol (200 mg/l), T₇ MS+ NAA (0.50 mg/l) + Activated Charcol (200 mg/l), T₈ MS+ NAA (1.00 mg/l) + Activated Charcol (200 mg/l).

Plant height (cm)

The average height and spread of plant was measured at 30, 45, 60, 90 and 120 days after planting with a measuring scale from the crown level to apex of primary leaves and results were expressed in centimeters.

Results and Discussion

Plant height (cm)

For sustaining the production in higher level, growth regulators play a vital role as signal molecules and regulate the cellular processes to determine the formation of the root, stem, leaf, and flower.

A perusal of data in indicated the significant effects of other combinations of growth regulators on plant height at all the days and years of study except in 30-45 DAT (2018-19 and 2019-20), 90 DAT (2019-20) and 120 DAT (2018-19, 2019-20 and pooled) which were non-significant.

The maximum plant height was recorded as 2.84 cm during 2018-19, 2.71 cm during 2019-20 and 2.77 cm in pooled data between 0-15 DAT in treatment T₅ and minimum was registered as 2.53 cm, 2.36 cm and 2.45 cm between 0-15 DAT in Treatment T₄ during 2018-19, 2019-20 and in pooled data respectively.

During 15-30 DAT, maximum plant height was recorded as 5.54 cm, 5.29 cm and 5.41 cm in treatment T₇ and minimum plant height registered as 4.91 cm, 4.8 cm and 4.75 cm in treatment T₂ during 2018-19, 2019-20 and in pooled data respectively.

The maximum plant height was recorded 8.92 cm and 8.49 cm at 30-45 DAT in treatment T₄ and minimum was registered as 8.39 and 7.85 cm during 30-45 DAT in treatment T₅ in both the years (2018-19 & 2019-20), respectively but was non-significantly affected. In contrast, the pooled mean data of plant height at 30-45 DAT was significantly affected by different combinations of medium and growth regulators. The pooled mean data of plant height was registered maximum (8.70 cm) in treatment T₄, while minimum plant height (8.12 cm) was recorded in treatment T₅.

The maximum plant height was recorded as 13.52 and 13.06 cm at 45-60 DAT in treatment T₈ and minimum plant height registered as 11.84 and 11.13 cm at 45-60 DAT in treatment T₁, in both the years (2018-19 & 2019 20) respectively. The pooled mean data of plant height at 45-60 DAT was also

significantly affected by different combinations of medium and growth regulators. Similarly, the pooled mean data of plant height was registered maximum (13.29 cm) in treatment T₈ while minimum plant height was recorded in treatment T₁ as 11.49 cm. However, the treatment T₂, T₄ and T₅ were found to be at par with rest of the treatments.

The maximum plant height was recorded as 20.70 cm during 2018-19, 18.96 cm during 2019-20 and 19.83 cm in pooled data at 90 DAT in treatment T₅ whereas, the minimum plant height was registered as 18.26 cm, 17.05 cm and 17.60 cm at 90 DAT in treatment T₃ during 2018-19, 2019-20 and in pooled data respectively.

At 120 DAT, maximum plant height was recorded as 24.76 cm 23.18 cm and 23.92 cm in treatment T₃ and minimum plant height registered as 24.21 cm 22.39 cm and 23.2 cm in treatment T₆ during 2018-19, 2019-20 and in pooled data respectively. However, the treatment T₂ and T₅ were found to be at par with rest of the treatments. Results revealed that the application of BAP and NAA was found to be most effective for enhancing the plant height of cabbage than application of Kinetin along with NAA. Above findings are in the results of Hatwar *et al.* (2003)^[1] and Sarma *et al.* (2005)^[2].

The role of cytokinin and NAA is well known, which promotes cell elongation and cell multiplication and thereby increasing plant height due to increases in length of internodes (Kotecha *et al.* 2016)^[3]. The application of growth regulators in balance and integrated manner along with the medium fulfill the requirement of crops, which might be responsible for better growth and development of the strawberry than that of omission.

Plant spread in (cm) (East-West & North-South)

The data summarized in indicated that the effects of different combinations of growth regulators was significantly affected the plant spread in E-W direction (E-W) and direction (N-S) at 15, 30, 45, 60, 75, 90 and 120 DAT during both the years of study (2018-19 & 2019-20).

The maximum plant spread in East-West direction was recorded as 6.27 and 5.79 cm at 15 DAT in treatment T₄, and minimum plant spread in E-W direction registered as 4.77 and 4.29 cm at 15 DAT in treatment T₁, in both the years (2018-19 & 2019-20), respectively. The pooled mean data of plant spread in E-W direction at 15 DAT was recorded significantly maximum (6.03 cm) in treatment T₄ Whereas, the maximum plant spread in North-South direction was recorded as 8.50 and 8.07 cm at 15 DAT in treatment T₇ and minimum plant spread in in N-S direction registered as 6.80 and 6.54 cm at 15 DAT in treatment T₄, in both the years (2018-19 & 2019-20), respectively. The pooled mean data of plant spread in in N-S direction at 15DAT was recorded significantly maximum (8.29 cm) in treatment T₇.

Among the eight different treatment combinations the maximum plant spread was recorded as 10.23 and 9.76 cm at 30 DAT by treatment T₆ in E-W direction and 12.20 and 11.36 cm by treatment T₇ in N-S direction in 2018-19 and 2019-20 respectively. Treatment T₂ in E-W direction and T₁ in N-S direction registered lowest plant spread of 8.33 and 7.77 cm and 10.20 and 9.73 cm 2018-19 and 2019-20 respectively. The pooled mean data of plant spread in E-W direction at 30 DAT was recorded significantly maximum (10.00 cm) in treatment T₆ in E-W direction and 11.78 cm in treatment T₇ in N-S direction Plant spread was found maximum at the treatment T₃ (12.17 cm in 2018-19, 11.63 cm in 2019-20) in E-W direction and treatment T₈ (13.93 cm in 2018-19, 12.99 cm in 2019-20) in N-S direction at 45 DAT and minimum at the

treatment T₁ (11.17 cm in 2018-19, 10.36 cm in 2019-20) in E-W direction and treatment T₂ (12.17 cm in 2018-19, 11.78 cm in 2019-20) in N-S direction at 45 DAT. The pooled mean data of plant spread in EW direction at 45 DAT was recorded significantly maximum (11.90 cm) in treatment T₃ in E-W direction and 13.46 cm in sample T₈ in N-S direction.

The maximum plant spread was recorded as 15.93 cm at 60 DAT in treatment T₅ 15.93 and 14.98 cm in 2018-19 and 2019-20 respectively in E-W direction and treatment T₈ 18.67 and 17.39 cm in 2018-19 and 2019-20 respectively in N-S direction and minimum plant spread registered as 13.47 cm in 2018-19, 12.23 cm in 2019-20 and 14.37 cm in 2018-19, 13.27 cm in 2019-20 at 60 DAT in treatment T₁ in East -West and North-South direction respectively. Pooled mean data of

plant spread in E-W direction at 60 DAT was recorded significantly maximum (15.46 cm) in treatment T₅ in E-W direction and 17.94 cm in treatment T₈ in N-S direction.

The maximum plant spread in East-West and North-south direction was recorded as 18.83 cm in 2018-19, 18.23 cm in 2019-20 and 22.50 cm in 2018-19, 21.49 cm in 2019-20. Respectively at 75 DAT in treatment T₈, and minimum plant spread registered as 17.03 cm in 2018-19, 15.77 cm in 2019-20 and 15.80 cm in 2018-19, 14.71 cm in 2019-20 in E-W and N-S directions respectively at 75 DAT in treatment T₁. The pooled mean data of plant spread in East -West and North-South direction at 75 DAT was significantly maximum (18.53 cm and 21.99 cm) in treatment T₈.

Table 1: Effect of various treatments on Plant spread (E-W) at 15, 30 and 45 DAT of strawberry cv. Nabila

| S. No. | Treatment | Plant Spread (EW) after 15 DAT | | | Plant Spread (EW) after 30 DAT | | | Plant Spread (EW) after 45 DAT | | |
|--------|----------------|--------------------------------|---------|--------|--------------------------------|---------|--------|--------------------------------|----------|---------|
| | | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled |
| 1 | T ₁ | 4.77e | 4.29e | 4.53e | 8.37d | 8.12cd | 8.24de | 11.17c | 10.36d | 10.76d |
| 2 | T ₂ | 5.1de | 4.75d | 4.93d | 8.33d | 7.77d | 8.05e | 11.27c | 10.75bcd | 11.01cd |
| 3 | T ₃ | 5.47cd | 5.3bc | 5.38c | 9.73abc | 9.4a | 9.57b | 12.17a | 11.63a | 11.9a |
| 4 | T ₄ | 6.27a | 5.79a | 6.03a | 9.6bc | 8.64b | 9.12c | 12.17a | 11.33abc | 11.75a |
| 5 | T ₅ | 5.8abc | 5.5ab | 5.65bc | 8.63d | 8.31bc | 8.47d | 11.6abc | 10.76bcd | 11.18cd |
| 6 | T ₆ | 5.73bc | 5.44b | 5.59bc | 10.23a | 9.76a | 10a | 11.33bc | 10.56cd | 10.95cd |
| 7 | T ₇ | 5.63c | 5.14c | 5.39c | 9.37c | 8.78b | 9.07c | 11.7abc | 10.81bcd | 11.26bc |
| 8 | T ₈ | 6.13ab | 5.52ab | 5.83ab | 10ab | 9.4a | 9.7ab | 11.97ab | 11.49ab | 11.73ab |
| | Gen. Mean | 5.61 | 5.22 | 5.41 | 9.28 | 8.77 | 9.03 | 11.67 | 10.96 | 11.32 |
| | C.V. | 4.88 | 3.16 | 4.32 | 3.86 | 3.21 | 3.6 | 3.4 | 4.07 | 3.61 |
| | F Prob. | 0 | 0 | 0 | 0 | 0 | 0 | 0.04 | 0.03 | 0 |
| | S.E.M. | 0.16 | 0.1 | 0.1 | 0.21 | 0.16 | 0.13 | 0.23 | 0.26 | 0.17 |
| | C.D. 5% | 0.48 | 0.29 | 0.28 | 0.63 | 0.49 | 0.38 | 0.69 | 0.78 | 0.48 |
| | C.D. 1% | 0.67 | 0.4 | 0.37 | 0.87 | 0.69 | 0.52 | 0.96 | 1.09 | 0.65 |

Table 2: Effect of various treatments on Plant spread (E-W) at 60 and 75 DAT of strawberry cv. Nabila

| S. N. | Treatment | Plant Spread (EW) after 60 DAT | | | Plant Spread (EW) after 75 DAT | | |
|-------|----------------|--------------------------------|---------|---------|--------------------------------|---------|---------|
| | | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled |
| 1 | T ₁ | 13.47c | 12.23c | 12.85e | 17.03d | 15.77d | 16.57c |
| 2 | T ₂ | 14.7b | 14.26ab | 14.48cd | 17.37cd | 16.16cd | 16.60c |
| 3 | T ₃ | 15.33ab | 14.18ab | 14.76bc | 18.3abc | 17.04bc | 17.67b |
| 4 | T ₄ | 15.57a | 14.63a | 15.1ab | 18.27abc | 17.5ab | 17.88ab |
| 5 | T ₅ | 15.93a | 14.98a | 15.46a | 18.7ab | 18.06a | 18.38a |
| 6 | T ₆ | 14.7b | 13.64b | 14.17d | 17.6bcd | 15.98d | 16.79c |
| 7 | T ₇ | 15.67a | 14.59a | 15.13ab | 18.4abc | 17.7ab | 18.05ab |
| 8 | T ₈ | 15.3ab | 14.24ab | 14.77bc | 18.83a | 18.23a | 18.53a |
| | Gen. Mean | 15.08 | 14.09 | 14.59 | 18.06 | 17.06 | 17.56 |
| | C.V. | 2.93 | 3.66 | 3.31 | 3.59 | 3.41 | 3.4 |
| | F Prob. | 0 | 0 | 0 | 0.04 | 0 | 0 |
| | S.E.M. | 0.26 | 0.3 | 0.2 | 0.37 | 0.34 | 0.24 |
| | C.D. 5% | 0.77 | 0.9 | 0.57 | 1.14 | 1.02 | 0.7 |
| | C.D. 1% | 1.07 | 1.25 | 0.77 | 1.58 | 1.42 | 0.95 |

Table 3: Effect of various treatments on Plant spread (E-W) at 90 and 120 DAT of strawberry cv. Nabila

| S. No. | Treatment | Plant Spread (EW) after 90 DAT | | | Plant Spread (EW) after 120 DAT | | |
|--------|----------------|--------------------------------|---------|---------|---------------------------------|---------|--------|
| | | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled |
| 1 | T ₁ | 19.47e | 18.8d | 19.14f | 21.73f | 20.49e | 21.11g |
| 2 | T ₂ | 20.17de | 19.2d | 19.68ef | 24.17e | 23.15d | 23.66f |
| 3 | T ₃ | 20.93cd | 19.68cd | 20.31de | 26.03e | 24.24cd | 25.14e |
| 4 | T ₄ | 21.33cd | 20.65bc | 20.99cd | 28d | 25.2c | 26.6d |
| 5 | T ₅ | 21.67c | 20.76bc | 21.21c | 29.77cd | 27.8b | 28.78c |
| 6 | T ₆ | 21.93bc | 21.14b | 21.54c | 31.17bc | 29.73a | 30.45b |
| 7 | T ₇ | 23.13ab | 21.95ab | 22.54b | 32.4b | 30.07a | 31.23b |
| 8 | T ₈ | 24.27a | 22.62a | 23.44a | 34.53a | 31.08a | 32.81a |
| | Gen. Mean | 21.61 | 20.6 | 21.11 | 28.47 | 26.47 | 27.47 |
| | C.V. | 3.47 | 3.62 | 3.5 | 3.85 | 3.02 | 3.39 |

| | | | | | | | |
|--|---------|------|------|------|------|------|------|
| | F Prob. | 0 | 0 | 0 | 0 | 0 | 0 |
| | S.E.M. | 0.43 | 0.43 | 0.3 | 0.63 | 0.46 | 0.38 |
| | C.D. 5% | 1.31 | 1.31 | 0.87 | 1.92 | 1.4 | 1.1 |
| | C.D. 1% | 1.82 | 1.81 | 1.17 | 2.66 | 1.94 | 1.48 |

Table 4: Effect of various treatments on Plant spread (N-S) at 15, 30 and 45 DAT of strawberry cv. Nabila

| S. No. | Treatment | Plant Spread (NS) after 15 DAT | | | Plant Spread (NS) after 30 DAT | | | Plant Spread (NS) after 45 DAT | | |
|--------|----------------|--------------------------------|---------|--------|--------------------------------|----------|---------|--------------------------------|----------|---------|
| | | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled |
| 1 | T ₁ | 7.27bc | 6.77cd | 7.02d | 10.2e | 9.73d | 9.97f | 12.6bc | 11.88cd | 12.24c |
| 2 | T ₂ | 7.17bc | 6.84cd | 7d | 10.5de | 9.9d | 10.2ef | 12.17c | 11.78d | 11.97c |
| 3 | T ₃ | 6.97c | 6.49d | 6.73d | 11.07cd | 10.14cd | 10.6de | 13.2ab | 12.75ab | 12.98b |
| 4 | T ₄ | 6.8c | 6.54d | 6.67d | 11.27bc | 10.42bcd | 10.84cd | 13.37ab | 12.89ab | 13.13ab |
| 5 | T ₅ | 8.13a | 7.67ab | 7.9b | 11.97a | 11.36a | 11.66ab | 13.77a | 13.33a | 13.55a |
| 6 | T ₆ | 7.6b | 7.24bc | 7.42c | 11.73ab | 11.15ab | 11.44ab | 13.8a | 12.48bcd | 13.14ab |
| 7 | T ₇ | 8.5a | 8.07a | 8.29a | 12.2a | 11.36a | 11.78a | 13.57a | 12.63abc | 13.1ab |
| 8 | T ₈ | 8.23a | 7.82a | 8.03ab | 11.73ab | 10.75abc | 11.24bc | 13.93a | 12.99ab | 13.46ab |
| | Gen. Mean | 7.58 | 7.18 | 7.38 | 11.33 | 10.6 | 10.97 | 13.3 | 12.59 | 12.94 |
| | C.V. | 3.56 | 4.44 | 4.08 | 3.2 | 4.21 | 3.67 | 3.51 | 3.43 | 3.38 |
| | F Prob. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0 |
| | S.E.M. | 0.16 | 0.18 | 0.12 | 0.21 | 0.26 | 0.16 | 0.27 | 0.25 | 0.18 |
| | C.D. 5% | 0.47 | 0.56 | 0.36 | 0.64 | 0.78 | 0.47 | 0.82 | 0.76 | 0.52 |
| | C.D. 1% | 0.66 | 0.78 | 0.48 | 0.88 | 1.09 | 0.64 | 1.14 | 1.05 | 0.7 |

Table 5: Effect of various treatments on Plant spread (N-S) at 60 and 75 DAT of strawberry cv. Nabila

| S. No. | Treatments | Plant Spread (NS) after 60 DAT | | | Plant Spread (NS) after 75 DAT | | |
|--------|----------------|--------------------------------|---------|--------|--------------------------------|---------|--------|
| | | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled |
| 1 | T ₁ | 14.37d | 13.27e | 13.82e | 15.8f | 14.71f | 15.25e |
| 2 | T ₂ | 15.13cd | 14.47d | 14.8d | 17.57e | 16.3e | 16.93d |
| 3 | T ₃ | 15.13cd | 14.47d | 14.8d | 18.03e | 16.45e | 17.24d |
| 4 | T ₄ | 16.23bc | 15.11cd | 15.67c | 18.8de | 17.9d | 18.35c |
| 5 | T ₅ | 17.07b | 16.09bc | 16.58b | 19.67cd | 18.31cd | 18.99c |
| 6 | T ₆ | 18.5a | 17.02ab | 17.85a | 20.63bc | 19.85b | 20.24b |
| 7 | T ₇ | 18.63a | 17.14ab | 17.89a | 20.93b | 19.17bc | 20.05b |
| 8 | T ₈ | 18.67a | 17.39a | 17.94a | 22.5a | 21.49a | 21.99a |
| | Gen. Mean | 16.72 | 15.62 | 16.17 | 19.24 | 18.02 | 18.63 |
| | C.V. | 4.63 | 3.94 | 4.22 | 3.75 | 3.66 | 3.62 |
| | F Prob. | 0 | 0 | 0 | 0 | 0 | 0 |
| | S.E.M. | 0.45 | 0.36 | 0.28 | 0.42 | 0.38 | 0.28 |
| | C.D. 5% | 1.36 | 1.08 | 0.8 | 1.27 | 1.15 | 0.79 |
| | C.D. 1% | 1.88 | 1.5 | 1.08 | 1.76 | 1.6 | 1.07 |

Table 6: Effect of various treatments on Plant spread (N-S) at 90 and 120 DAT of strawberry cv. Nabila

| S. No. | Treatments | Plant Spread (NS) after 90 DAT | | | Plant Spread (NS) after 120 DAT | | |
|--------|----------------|--------------------------------|---------|--------|---------------------------------|---------|---------|
| | | 2018-19 | 2019-20 | Pooled | 2018-19 | 2019-20 | Pooled |
| 1 | T ₁ | 19.07f | 17.54f | 18.3f | 23.3e | 21.69f | 22.5g |
| 2 | T ₂ | 20.43e | 18.8e | 19.62e | 24.5e | 23.72e | 24.11f |
| 3 | T ₃ | 21de | 19.57de | 20.29e | 26.73d | 25.72d | 26.23e |
| 4 | T ₄ | 21.93d | 20.35d | 21.14d | 31.27b | 29.27ab | 30.27bc |
| 5 | T ₅ | 24.1c | 22.94c | 23.52c | 33.03a | 30.85a | 31.94a |
| 6 | T ₆ | 24.67c | 23.68bc | 24.17c | 28.6c | 26.54cd | 27.57d |
| 7 | T ₇ | 26.03b | 24.47ab | 25.25b | 31.9ab | 30.08a | 30.99ab |
| 8 | T ₈ | 27.53a | 25.47a | 26.5a | 31.2b | 28.08bc | 29.64c |
| | Gen. Mean | 23.1 | 21.6 | 22.35 | 28.82 | 26.99 | 27.91 |
| | C.V. | 3.13 | 3.14 | 3.13 | 3.07 | 3.68 | 3.26 |
| | F Prob. | 0 | 0 | 0 | 0 | 0 | 0 |
| | S.E.M. | 0.42 | 0.39 | 0.29 | 0.51 | 0.57 | 0.37 |
| | C.D. 5% | 1.26 | 1.19 | 0.82 | 1.55 | 1.74 | 1.07 |
| | C.D. 1% | 1.76 | 1.65 | 1.11 | 2.15 | 2.42 | 1.44 |

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