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Effect of foliar spray of NPK, Borax, $ZnSO_4$& $MgSO_4$ on Flowering–Fruiting and Yield of Strawberry (*Fragaria* × *ananassa*Duch.) cv. Winter Dawn:

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ABSTRACT

The present investigation entitled "Effect of foliar spray of NPK, Borax, $ZnSO_4$& $MgSO_4$ on Flowering – Fruiting and Yield of Strawberry (*Fragaria* × *ananassa*Duch.) cv. Winter Dawn" was carried out during the year 2022-23 and 2023-24 at Main Experimental Station, Department of Fruit Science, College of Horticulture & forestry, A.N.D.U.A&T. Narendranagar KumarganjAyodhya, Uttar Pradesh, India. The collected data were analyzed using RBD design with 9 treatmentsT1 (NPK @ 0.5%), T2 (NPK @ 1.0%), T3 (NPK @ 1.5%), T4 (NPK @1.0% +Borax @0.25%), T5 (NPK @ 1.0% +$ZnSO_4$ @ 0.25%), T6 (NPK @ 1.0% + $MgSO_4$ @ 0.25%), T7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%), T8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @ 0.25%) and T9 (control) with three replication. The results revealed that the treatment T8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @ 0.25%) outperformed the rest with minimum days taken to first flowering (48.86 and 48.92), days taken first fruiting(53.08 and 53.30), maximum flowers per plant(26.48 and 26.45), fruit per plant (18.90 and 18.88), maximum fruit weight (31.51g and 31.46g), fruit length (4.44cm and 4.38cm), fruit width (3.12cm and 3.14cm), fruit diameter (11.99cm and 11.95cm) and maximum yield(595.85g and 593.96g). The treatment T_8 is therefore recommended for the application to strawberry plant to obtain high yields.

Keywords: NPK, Borex, ZnSO4, MgSO4, Strawberry, spray.

INTRODUCTION

The strawberry (*Fragaria x ananassa*Duch.) is a short-day, herbaceous perennial plant. Its basic chromosomal number is (x=7), making it an octoploid (8x) in nature. It has

been derived from the North American species, *Fragariachiloesis* and *Fragariavirginiana* in France in the 17th century **(Hokanson and Maas, 2001)**. The strawberry belongs to the family Rosaceae is native to America. Though most of the cultivated varieties of strawberry are octoploids (2n=8x=56), yet Indian strawberry (*Fragaria* x *vesca*Duch.) is diploid (2n=28) in nature. strawberries are the most delicious and nutritious and can be grown under varied climatic conditions. It is chiefly a crop of the temperate climate but can be grown in sub-tropical climates and even at high altitudes in tropical climates. It grows up to an elevation of 3000m above MSL (mean sea level) in humid or dry regions. Strawberry is a herbaceous crop with prostrate growth habit. which behaves as an annual in sub-tropical region, and perennial in temperate region.. It is an important fruit crop whose cultivation has ample scope near the big cities and fruit preservation factories.

Bright red colour strawberry fruits are popularfor their distinctive delicious nature, juicy texture and aroma **(Ulrich, 2007)**.Strawberries as rich source of fibres, vitamins (A, B9 and C), minerals (potassium andmagnesium) and antioxidants (phenolic acids, flavonoids and ellagitannins) are among themost widespread consumed fruits worldwide **(FAO, 2017)** mostly as fresh, frozen, orprocessed products (jams, juices, syrup, ice cream, *etc*.). Daily consumption of strawberry cancheck certain types of cancer, obesity, cardiovascular diseases, diabetes, etc. **(Olsson *et al.*,2004; Wang and Lewers, 2007; Tulipani*et al.*, 2009**; **He and Giusti, 2010; Giampieri*et al.*,2012)**. In spite of great potential of strawberry crop, in the past, very little efforts have beenmade for its improvement to achieve sustainable and economical production. In the present experiment in macro-nutrient, NPK and micro-nutrient, ZnSo4 Boron and MgSo4were selected. Fruit yield and quality are determined by several factors that are directly related to the plant's ability to absorb nutrients. To prevent over- or under-fertilization, the plants' nutrient supply should be adjusted. Micronutrients, in addition to NPK, have a significant impact on fruit production and yield parameters. Micronutrients involves in cellular and metabolic process. For plants to thrive, yield, and have higher quality, micronutrients are nearly as crucial as macronutrients. Micronutrients were not necessary in the past because the soil naturally provided these trace elements. However, these nutrients are present but unavailable to plants because of extensive agriculture, rising salinity/alkalinity, and changes in soil pH in the majority of soils. Nitrogen, Phosphorus and Potassium are the major and essential nutrients for plant growth and development. Nitrogen is an essential component of amino acids, proteins, nucleic acids porphyries, purines and pyrimidine nucleotides, Lavin nucleotides, and enzymes. Co-enzyme and alkaloids. Energy transfer involves phosphorus. Photosynthesis, starch and sugar conversion, nutrient transport throughout the plant, and genetic trait inheritance from one generation to the next. Potassium plays a major role in transporting water and nutrients throughout the plant in the xylem. It increases root growth and improves drought tolerance. Potassium is responsible for the activation and synthesis of protein-forming nitrate reductase enzyme (**Rattan and Goswami, 2009**).

MATERIALS AND METHODS

The present experiment was conducted at the Main Experimental Station, Department of fruit science, and lab work in PG Lab, Department of Fruit Science, College of Horticulture & Forestry, Acharya Narendra Deva University of Agriculture & Technology, Kumarganj. Ayodhya (U.P.) during year 2022-23 and 2023-24. The experiment was laid out in randomized block design with 9 treatment, namely: T1(NPK @ 0.5%), T2 (NPK @ 1.0%), T3 (NPK @ 1.5%), T4 (NPK @1.0% +Borax @0.25%), T5 (NPK @ 1.0% +$ZnSO_4$ @ 0.25%), T6 (NPK @ 1.0% + $MgSO_4$ @ 0.25%), T7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%), T8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @ 0.25%) and

T9 (control). The data was collected on flowering, fruiting and yield parameters like Days taken to first flowering, Total number flowers per plant, Days taken to first fruit set, Total number of fruits per plant, Fruit weight (g), Fruit length (cm), Fruit width (cm), Fruit diameter (cm), Average yield per plant (g). The data noted from each replication of each treatment from the experiment were analysed by SAAS 9.1 statistical software.

RESULT AND DISCUSSION

Days taken to first flowering

The data in**Table:1** During 2022-23, the minimum days (48.86) taken to first floweringwas noted upon foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25% + $MgSO_4$ @0.25%) which was followed by the T_7 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%) 49.08 and T_3 (NPK @ 1.5%) 50.86. However, the maximum days (60.71) taken to first flowering was observed in the T_9 (control).

Similar trends was also observed in 2023-24 that minimum days (48.92) taken to first flowering was noted upon foliar application of treatment T_8 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @0.25%) which was followed by the T_7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 48.98 and T_3 (NPK @1.5%) 50.52. However, the maximum days (61.0) taken to first flowering was observed in the T_9 (control).

Pooled data also represents the minimum days (48.88) taken to first flowering was noted upon foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @ 0.25%) which was followed by the T_7 (NPK @ 0.5% + Borax @ 0.25%+$ZnSO_4$ @ 0.25%) 49.03 and T_3 (NPK @ 1.5%) 50.69. However, the maximum days (60.85) taken to first flowering was observed in the T_9 (control). These results were accordance to the **Jegadeeswari *et al.*, (2020)** in Grape, **Babu&Tripathi (2022)** in Guava and **Kazemi (2014)** in strawberry.

Days taken to first fruiting

A perusal of the data **Table:1**. During 2022-23, the minimum days (53.08) taken to first fruiting was noted upon foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$@0.25%+ $MgSO_4$ @ 0.25%) which was followed by the T_7 (NPK @0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 54.0 and T_3 (NPK @1.5%) 55.62. However, the maximum days (68.01) taken to first fruiting was observed in the T_9 (control).

Similar trends was also observed in 2023-24 that minimum days (53.30) taken to first fruiting was noted upon foliar application of treatment T_8 (NPK @0.5% + Borax @0.25% + ZnSO4 @ 0.25% + $MgSO_4$ @0.25%) which was followed by the T_7 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%) 53.70 and T_3 (NPK @1.5%) 55.20. However, the maximum days (68.12) taken to first fruiting was observed in the T_9 (control).

Pooled data also represents the minimum days (53.19) taken to first fruiting was noted upon foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + ZnSO4 @0.25%+ $MgSO_4$ @ 0.25%) which was followed by the T_7 (NPK @0.5% + Borax @0.25% + $ZnSO_4$ @ 0.25%) 53.85 and T_3 (NPK @ 1.5%) 55.41. However, the maximum days (68.06) taken to first fruiting was observed in the T_9 (control). Present findings are supported by the **Rahaman*et al.* (2016)** in strawberry, and **Kumar and Shukla, (2010)** in strawberry.

Total number of flower per plant

A perusal of the data **Table:1**. During 2022-23, the maximum number of flower (26.48) per plant) was noted upon foliar application of treatment T_8 (NPK @0.5% + Borax @0.25% + ZnSO4 @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @0.25%+ZnSO4 @0.25%) 26.28, T4 (NPK @1% +Borax @ 0.25%) 25.47 and T_3 (NPK @1.5%) 25.31. However, the minimum number of flower (22.88) per plant was observed in the T_9 (control).

Similar trends was also observed in 2023-24 that maximum number of flower (26.45) per plant was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @

0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25%+$ZnSO_4$ @0.25%) 26.44, T_4 (NPK @1% +Borax @0.25%) 25.35 and T_3 (NPK @1.5%) 25.34. However, the minimum number of flower (22.85) per plant was observed in the T_9 (control).

Pooled data also represents the maximum number of flower (26.46) per plant was noted upon foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + ZnSO4. @ 0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25%+$ZnSO_4$ @ 0.25%) 26.36, T4 (NPK @ 1% +Borax @ 0.25%) 25.41 and T3 (NPK @1.5%) 25.32. However, the minimum number of flower (22.86) per plant was observed in the T_9 (control).

Total number of fruit per plant

A perusal of the data **Table:1** During 2022-23, the maximum number of fruit (18.90) per plant was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%) 18.67, T_4 (NPK @1% +Borax @ 0.25%) 18.09, T_5 (NPK @1.0% + $ZnSO_4$ @0.25%) 17.48 and T_3 (NPK @ 1.5%) 17.32. However, the minimum number of fruit (13.75) per plant was observed in the T_9 (control).

Similar trends was also observed in 2023-24 that maximum number of fruit (18.88) per plant was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%) 18.70, T_4 (NPK @ 1% +Borax @ 0.25%) 17.90, T_5 (NPK @ 1.0% + $ZnSO_4$ @ 0.25%) 17.39 and T_3 (NPK @ 1.5%) 17.37. However, the minimum number of fruit (13.60) per plant was observed in the T_9 (control).

Pooled data also represents the maximum number of fruit (18.89) per plant was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%) 18.69 and T_4 (NPK @1% +Borax @0.25%) 17.99. However, the minimum number of fruit (13.67) per plant was observed in the T_9 (control).

Average Fruit weight

A perusal of the data **Table:2** During 2022-23, the maximum fruit weight (31.51g) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 31.23g, T_3 (NPK @1.5%) 31.18g and T_4 (NPK @1% +Borax @0.25%) 30.01g. However, the minimum fruit weight (22.09g) was observed in the T_9 (control).

Similar trends was also observed in 2023-24 that maximum fruit weight (31.46g) was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @ 0.25%+$ZnSO_4$ @0.25%) 31.38g, T_3 (NPK @1.5%) 31.29g and T_4 (NPK @1% +Borax @0.25%) 29.88g. However, the minimum fruit weight (21.89g) was observed in the T9 (control).

Pooled data also represents the maximum fruit weight (31.48g) was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25%+ $ZnSO_4$ @ 0.25%) 31.30g and T_3 (NPK @1.5%) 31.23g. However, the minimum fruit weight (21.99g) was observed in the T_9 (control).Similar findings reported by**Salman *et al.*, 2022** in strawberry

Fruit length (cm)

A perusal of the data **Table:2** During 2022-23, the maximum fruit length (4.44cm) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @0.25%+$ZnSO_4$ @0.25%) 4.36cm and T3 (NPK @1.5%) 4.20cm. However, the minimum fruit length (3.29cm) was observed in the T_9 (control).

Similarly, during the year 2023-24, maximum fruit length (4.39cm) was observed with the foliar application of treatment T_7 (NPK @ 0.5% + Borax @0.25% + ZnSO4 @0.25%) which was statistically at par with T_8 (NPK @ 0.5% + Borax @0.25% + ZnSO4 @0.25%+ $MgSO_4$ @0.25%) 4.38cm and T_3 (NPK @1.5%) 4.25cm. However, the minimum fruit length (3.23cm) was observed in the T_9 (control).

Pooled data also represents the maximum fruit length (4.41cm) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @0.25%+$ZnSO_4$ @0.25%) 4.37cm and T_3 (NPK @1.5%) 4.22cm. However, the minimum fruit length (3.26cm) was observed in the T_9 (control).

Fruit Width (cm)

A perusal of the data **Table No. 2** During 2022-23, the maximum fruit width (3.12cm) was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25% + $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%) 3.00cm. However, the minimum fruit width (1.39cm) was observed in the T_9 (control).

Similarly, during the year 2023-24, the maximum fruit width (3.14cm) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 3.03cm. However, the minimum fruit width (2.36 cm) was observed in the T_9 (control).

Pooled data also represents the maximum fruit width (3.13cm) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @0.25% + $ZnSO_4$ @0.25%+ MgSO4 @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @0.25%) 3.01cm. However, the minimum fruit width (2.37cm) was observed in the T_9 (control).

Fruit Diameter (cm)

A perusal of the data **Table No. 2** During 2022-23, the maximum fruit diameter (11.99cm) was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 11.23cm. However, the minimum fruit diameter (4.46cm) was observed in the T_9 (control).

Similarly during the year 2023-24, maximum fruit diameter (11.95cm) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25% + $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%) 11.25cm. However, the minimum fruit diameter (4.44cm) was observed in the T_9 (control).

Pooled data also represents the maximum fruit diameter (11.97cm) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 11.23cm. However, the minimum fruit diameter (4.45cm) was observed in the T_9 (control).

Average yield (g)

A perusal of the data **Table No.2** During 2022-23, the maximum fruit yield (595.85g) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @0.25% + $ZnSO_4$ @0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @0.5% + Borax @0.25%+$ZnSO_4$ @ 0.25%) 583.37g. However, the minimum fruit yield (303.87g) was observed in the T_9 (control).

Similar trends was also observed in 2023-24 that maximum fruit yield (593.965g) was observed with the foliar application of treatment T_8 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25%+$ZnSO_4$ @0.25%) 588.68g. However, the minimum fruit yield (297.70g) was observed in the T_9 (control).

Pooled data also represents the maximum fruit yield (594.91g) was observed with the foliar application of treatment T_8 (NPK @0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%+ $MgSO_4$ @ 0.25%) which was statistically at par with T_7 (NPK @ 0.5% + Borax @ 0.25% + $ZnSO_4$ @ 0.25%) 586.03g. However, the minimum fruit yield (300.78g) was observed in the T_9 (control). Present findings are supported by the **Goswami*et. al*.,(2015)** in strawberry, **Babu and Tripathi (2022)** in Aonla.

Table No. 1: Effect of foliar spray of NPK, Borax, $ZnSO_4$& $MgSO_4$ on Flowering and fruiting of Strawberry:

Treatments	Days taken to first flowering			Days taken to first fruiting			Total number of flower per plant			Total number of fruit per plant		
	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled
T_1NPK@0.5%	58.71^{a}	59.94^{a}	59.32^{ab}	64.73^{b}	64.91^{ab}	64.83^{bc}	23.65^{de}	23.44^{cd}	23.54^{de}	15.25^{cd}	15.01^{de}	15.12^{d}
T_2 NPK@1%	58.43^{a}	58.60^{a}	58.71^{b}	65.79^{ab}	65.98^{ab}	65.88^{ab}	24.16^{cd}	23.95^{cd}	24.05^{cd}	16.48^{bc}	16.20^{cd}	16.34^{c}
T_3 NPK@1.5%	50.86^{c}	50.52^{c}	50.69^{d}	55.62^{e}	55.20^{e}	55.41^{e}	25.31^{abc}	25.34^{abc}	25.32^{b}	17.32^{ab}	17.37^{abc}	17.35^{bc}
T_4 NPK@1% +Borex@0.25%	55.20^{b}	55.48^{b}	55.33^{c}	58.90^{cd}	59.24^{cd}	59.07^{d}	25.47^{ab}	25.35^{ab}	25.41^{b}	18.09^{ab}	17.90^{ab}	17.99^{ab}
T_5 NPK@1% +Znso4@0.25%	54.28^{b}	54.48^{b}	54.38^{c}	59.90d	60.22^{cd}	60.06^{d}	25.03^{bc}	24.59^{bc}	24.81^{bc}	17.48^{ab}	17.39^{abc}	17.43^{bc}
T_6 NPK@1% + $Mgso_4$@0.25%	58.85^{a}	59.00^{a}	58.93^{b}	63.16^{bc}	63.48^{bc}	63.32^{c}	24.92^{bc}	24.61^{bc}	24.76^{bc}	16.62^{bc}	16.38^{bcd}	16.50^{c}
T_7 NPK@0.5% + Borex@0.25%+$Znso_4$@0.25%	49.08^{c}	48.98^{c}	49.03^{d}	54.00^{e}	53.70^{e}	53.85^{e}	26.28^{a}	26.44^{a}	26.36^{a}	18.67^{a}	18.70^{a}	18.69^{a}
T_8 NPK@0.5% + Borex@0.25% + $Znso_4$@0.25%+ $Mgso_4$@0.25%	48.86^{c}	48.92^{c}	48.88^{d}	53.08^{e}	53.30^{e}	53.19^{e}	26.48^{a}	26.45^{a}	26.46^{a}	18.90^{a}	18.88^{a}	18.89^{a}
T_9 Control	60.71^{a}	61.00^{a}	60.85^{a}	68.01^{a}	68.12^{a}	68.06^{a}	22.88^{e}	22.85^{d}	22.86^{e}	13.75^{d}	13.60^{e}	13.67^{e}
MEAN	54.99	55.21	55.10	60.35	60.46	60.41	24.91	24.73	24.84	16.95	16.82	16.89
LSD(0.05%)	3.17	2.90	1.89	3.26	3.54	2.39	1.23	1.61	0.96	1.72	1.54	1.14

Table No. 2: Effect of foliar spray of NPK, Borax, $ZnSO_4$& $MgSO_4$ on Yield of Strawberry:

Treatments	Average fruit weight(g)			Fruit length(cm)			Fruit width(cm)			Fruit diameter(cm)			Average yield(g)		
	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled	2022-23	2023-24	Pooled	2022-23	2023-24	P
T_1 NPK@0.5%	27.13^{d}	26.71^{d}	26.92^{e}	3.31^{b}	3.23^{b}	3.27^{b}	2.55^{c}	2.49^{bc}	2.52^{d}	8.04^{c}	8.00^{c}	8.02^{f}	413.73^{e}	400.91^{e}	40
T_2 NPK@1%	28.31^{cd}	28.06^{cd}	28.18^{de}	3.38^{b}	3.32^{b}	3.35^{b}	2.57^{c}	2.55^{b}	2.57^{cd}	8.30^{c}	8.27^{bc}	8.28^{ef}	466.54^{d}	454.57^{d}	46
T_3 NPK@1.5%	31.18^{a}	31.29^{a}	31.23^{a}	4.20^{a}	4.25^{a}	4.22^{a}	2.97^{b}	2.99^{a}	2.98^{b}	9.35^{b}	9.36^{b}	9.36^{c}	540.03^{b}	543.82^{b}	54
T_4 NPK@1% +Borex@0.25%	30.01^{ab}	29.88^{ab}	29.94^{bc}	3.48^{b}	3.43^{b}	3.45^{b}	2.67^{c}	2.66^{b}	2.66^{c}	8.71^{bc}	8.68^{bc}	8.69^{ed}	542.88^{b}	534.85^{b}	53
T_5 NPK@1% +Znso4@0.25%	29.04^{bc}	28.78^{bc}	28.91^{cd}	3.42^{b}	3.35^{b}	3.38^{b}	2.60^{c}	2.59^{b}	2.60^{cd}	8.52^{bc}	8.48^{bc}	8.50^{def}	507.79^{c}	500.48^{c}	50
T_6 NPK@1% + $Mgso_4$@0.25%	28.03^{cd}	27.84^{cd}	27.93^{de}	3.51^{b}	3.46^{b}	3.48^{b}	2.65^{c}	2.63^{b}	2.64^{cb}	8.83^{bc}	8.80^{bc}	8.81^{d}	465.85^{d}	456.01^{d}	46
T_7 NPK@0.5% + Borex@0.25%+$Znso_4$@0.25%	31.23^{a}	31.38^{a}	31.30^{ab}	4.36^{a}	4.39^{a}	4.37^{a}	3.00^{ab}	3.03^{a}	3.01^{ab}	11.23^{a}	11.25^{a}	11.23^{b}	583.37^{a}	588.68^{a}	58
T_8 NPK@0.5% + Borex@0.25% + $Znso_4$@0.25%+ $Mgso_4$@0.25%	31.51^{a}	31.46^{a}	31.48^{a}	4.44^{a}	4.38^{a}	4.41^{a}	3.12^{a}	3.14^{a}	3.13^{a}	11.99^{a}	11.95^{a}	11.97^{a}	595.85^{a}	593.96^{a}	59
T_9 Control	22.09^{e}	21.89^{e}	21.99^{f}	3.29^{b}	3.23^{b}	3.26^{b}	2.39^{d}	2.36^{c}	2.37^{e}	4.46^{d}	4.44^{d}	4.45^{g}	303.87^{f}	297.70^{f}	30
MEAN	28.72	28.58	28.65	3.71	3.67	3.69	2.72	2.71	2.72	8.82	8.80	8.81	491.10	485.66	48
LSD(0.05%)	1.66	1.81	1.35	0.52	0.60	0.35	0.14	0.17	0.12	0.90	1.18	0.49	29.25	29.40	20

CONCLUSION

From the on-going summery of the present investigation, it can be inferred that flowering, fruiting and yield parameters *viz.*Days taken to first flowering, Total number flowers per plant, Days taken to first fruit set, Total number of fruits per plant, Fruit weight (g), Fruit length (cm), Fruit width (cm), Fruit diameter (cm), Average yield per plant (g). It can concluded that all the treatments shows good effects on early flowering and fruiting, increased fruit size, weight and yield as compared to the control but T_8 NPK@0.5% + Borex@0.25% + $Znso_4$@0.25%+ $Mgso_4$@0.25% was more pronounced among all the treatments and can be used in early flowering and fruiting, increased fruit size, weight and yield.

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