

EFFECT OF PLANT GROWTH REGULATOR ON GROWTH, YIELD AND FRUIT QUALITY OF STRAWBERRY (*FRAGARIA ANANASSA*) C.V "SWEET CHARLIE" UNDER VERTICAL SYSTEM

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(Received 24 May, 2023; Accepted 25 July, 2023)

Key words : Plant growth regulator, *Fragaria ananassa*, Fruit quality

Abstract– A trail was conducted on a vertical frame, Department of Horticulture, Naini Agriculture Institute, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (U.P.) during 2022 to study "effect of plant growth regulator on the growth, yield and fruit quality of strawberry (*Fragaria x ananassa*) cv "sweet Charlie under vertical system" results revealed that brassinosteroid@ 100ppm improved vegetative growth, days to first flowering, days to first bud development, yield and fruit quality of strawberry cv. Sweet Charlie.

INTRODUCTION

The modern cultivated strawberry (*Fragaria x ananassa* Duch) is a hybrid between two largely dioecious octaploid species, *Fragaria chiloensis* and *Fragaria virginiana*. *Fragaria* species belongs to the family Rosaceae, with basic chromosome number of $x=7$, however the cultivated strawberry (*Fragaria x ananassa*), is an octaploid having chromosome number of $2n=56$. In addition to *Fragaria x ananassa* the genus *fragaria* includes at least 17 other species including diploid, tetraploid, octaploids and hexaploids.

Nutritionally strawberry is a low calories carbohydrates fruit but rich source of vitamin A (60 IU/100g of edible portion), vitamin C (30-120 mg/100g of edible portion) and fiber and also high pectin (0.55%) available in the form of calcium pectate. Water is a major constituent (90%) of strawberry fruit. The strawberry fruit contains 5% of total sugar and 0.90 to 1.85% acid the prominent being malic acid, citric acid and succinic acid, with traces of quinic, glyceric, glycolic and oxalic acetic acid. In strawberries ellagic acid is a naturally occurring plant phenol, it has been found to inhibit cancer disease. It also can control asthma by the regular consumption of the fruit. Strawberry was introduced by national bureau of plant genetic resources, regional research station, Shimla

(Himachal Pradesh) and Kashmir valley but with the introduction of Floridian cultivar like Chandler, Douglas fern etc. its cultivation also spread to tropical and subtropical zone. It is now being grown in Shimla, Solan, Bilaspur, Kangra, Kullu, Palampur, (Himachal Pradesh), Anantnag, Shrinagar, (J&K) Dehradun, Saharanpur, (Uttarakhand), Muzaffarnagar, Meerut, Gaziabad, (U.P) Ludhiana, Jalandhar, Patiala, (Panjab), Pune, Mahabaleshwar (Maharashtra) in small-scale. Presently strawberry is cultivated through hp out the India in an area of 0.6 thousand hectares producing 4.3 thousand metric tones for local consumption for export.

MATERIALS AND METHODS

The details of the various materials used and methods adopted in carrying out the experiment are presented below –

Treatment combination

Treatment No.	Treatment Details
T0	Control (water spray)
T1	GA3@10 PPM
T2	GA3@25 PPM
T3	GA3@50 PPM
T4	NAA@10 PPM
T5	NAA@25 PPM
T6	NAA@50 PPM

area (cm²) (37.61) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The minimum leaf area (cm²) (21.87) was observed in treatment Control (Water spray).

Effect of different plant growth regulator on days to first flowering of strawberry (*Fragaria x ananassa*) cv "Sweet Charlie under vertical system

Among the growth regulator, the minimum days to first flowering (52.31) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50 ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The maximum days to first flowering (69.64) was observed in treatment Control (Water spray).

Effect of different plant growth regulator on days to first bud development of strawberry (*Fragaria x ananassa*)cv "Sweet Charlie under vertical system

Among the growth regulator, the minimum days to first bud development (66.52) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The maximum days to first bud development (78.78) was observed in treatment Control (Water spray).

Effect of different plant growth regulator on number flower per plant of strawberry (*Fragaria x ananassa*)cv "Sweet Charlie under vertical system.

At 90 DAT, Among the growth regulator, the maximum number flower per plant (4.87) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The minimum number

Effect of different plant growth regulator on number fruit per plant of strawberry (*Fragaria x ananassa*) cv "Sweet Charlie under vertical system

At 95 DAT, Among the growth regulator, the maximum number fruit per plant (3.59) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The minimum number fruit per plant (1.08) was observed in treatment Control (Water spray).

Effect of different plant growth regulator on fruit weight (g) of strawberry (*Fragaria x ananassa*)cv "Sweet Charlie under vertical system

Among the growth regulator, the maximum fruit weight (g) (16.60) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The minimum fruit weight (g) (12.59) was observed in treatment

Effect of different plant growth regulator on fruit diameter (cm) of strawberry (*Fragaria x ananassa*) cv "Sweet Charlie under vertical system

Among the growth regulator, the maximum fruit diameter (cm) (1.54) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50 ppm, NAA @50 ppm and GA3 @ 10ppm and was superior to all the other treatments. The minimum fruit diameter (cm) (1.07) was observed in treatment Control (Water spray).

Effect of different plant growth regulator on fruit yield per plant (g) of strawberry (*Fragaria x ananassa*) cv "Sweet Charlie under vertical system

Among the growth regulator, the maximum fruit yield per plant (g) (412.95) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50 ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The minimum fruit yield per plant (g) (166.46) was observed in treatment Control (Water spray).

Effect of different plant growth regulator on fruit yield (10m² frame /kg) of strawberry (*Fragaria x ananassa*) cv "Sweet Charlie under vertical system

Among the growth regulator, the maximum fruit yield (10 m²frame /kg) (11.15) was found in treatment Brassinosteroid @100 ppm followed by GA3 @ 50ppm, NAA @50 ppm and GA3 @ 10ppm and were superior to all the other treatments. The minimum fruit yield (10m²frame /kg) (4.49) was observed in treatment Control (Water spray).

SUMMARY AND CONCLUSION

From the above findings it is concluded that the treatment T₈ brassinosteroid 100 ppm was found the best in terms of growth yield among the different treatment combination of strawberry.

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