

**Effect of plant growth regulators and mulches
on growth, yield and quality of strawberry
(*Fragaria x ananassa* Duch.) cv. Chandler**

SUMMARY OF THESIS

**Submitted to Babasaheb Bhimrao Ambedkar University
(A Central University)**

Lucknow



For the Degree of

**Doctor of Philosophy
In
HORTICULTURE**

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2022

SUMMARY

The current investigation, entitled “**Effect of plant growth regulators and mulches on growth, yield and quality of strawberry (*Fragaria x ananassa* Duch.) cv. Chandler**” was carried out at Horticulture Research Farm, Department of Horticulture, Babasaheb Bhimrao Ambedkar University, Lucknow, (U.P.) during the winter season of 2018-19 and 2019-20 respectively. The experimental consisted of 17 treatments with 3 replication of variety chandler in Randomized Block Design. The silent features of the experiment are summarized below:-

1. The maximum plant height was noticed by the application of GA₃ 75ppm + Black polyethylene i.e. T₃ which was at par with T₂ i.e. GA₃ 50ppm + Black polyethylene. The minimum plant height was observed in control T₁ i.e. no plant growth regulators and no mulching.
2. The maximum number of leaves was studied in the application of GA₃ 75ppm + Black polyethylene i.e. T₃ which was at par with T₂ i.e. GA₃ 50ppm + Black polyethylene. The minimum number of leaves was assessed in control T₁ i.e. no plant growth regulators and no mulching.
3. The superior leaf length was observed in the treatment T₃ i.e. of GA₃ 75ppm + Black polyethylene T₂ i.e. GA₃ 50ppm + Black polyethylene whereas, minimum leaf length in T₁ (Control) i.e. no plant growth regulators and no mulching.
4. In terms of length of petiole was highest in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene as par with treatment T₂ GA₃ 50ppm + Black polyethylene but lowest observation found in treatment T₁ (Control) i.e. no plant growth regulators and no mulching.
5. In, the highest length of petiole-bearing leaves was reported in the Treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by treatment T₂ i.e. GA₃ 50ppm + Black polyethylene but minimum length of length found in treatment T₁ (Control) i.e. no plant growth regulators and no mulching.
6. In North-South direction the maximum spreading was observed in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene at par with treatment T₂ i.e. GA₃ 50ppm +

Black polyethylene, minimum spreading in T₁ (Control) i.e.no plant growth regulators and no mulching.

7. In case of East-West direction the highest spreading of plant examined in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene at par with treatment T₂ i.e. GA₃ 50ppm + Black polyethylene, and minimum spreading in T₁ (Control) i.e.no plant growth regulators and no mulching.
8. Treatment T₃ (GA₃ 75ppm + Black polyethylene) had the highest plant fresh weight, followed by treatment T₂ (GA₃ 50ppm + Black polyethylene). In the (Control) group, the minimum fresh weight of the plant was recorded, i.e. no plant growth regulators or mulching.
8. The superior plant dry weight was observed in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene at par with treatment T₂ i.e. GA₃ 50ppm + Black polyethylene whereas, minimum plant dry weight in T₁ (Control) i.e. no plant growth regulators and no mulching.
9. The minimum days taken to first flower in T₁₀ i.e.(NAA 20ppm +Black polyethylene) at par with T₁₁ i.e. .(NAA 40ppm +Black polyethylene)but maximum days recorded in T₁ (Control) i.e. . No plant growth regulators and no mulching.
10. Number of flowers was maximum in T₃ i.e. GA₃ 75ppm + Black polyethylene at par T₂ i.e. GA₃ 50ppm + Black polyethylene and minimum number of flowers was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
12. Days taken to 50% flowering was minimum assess in treatment T₁₀ i.e. (NAA 20ppm +Black polyethylene) at par with T₁₁ i.e. .(NAA 40ppm +Black polyethylene).Maximum days taken to flowering was observed in T₁ (Control).
13. The shortest time it took for the fruit to develop was noted in treatment T₁₀i.e. (NAA 20ppm +Black polyethylene) at par with T₁₁ i.e. (NAA 40ppm +Black polyethylene). Maximum days taken to fruit set were observed in T₁ (Control).
14. Days taken to 50% fruit set was minimum in treatment T₁₀ i.e. (NAA 20ppm +Black polyethylene) at par with T₁₁ i.e. (NAA 40ppm +Black polyethylene).Maximum days taken to fruit set was observed in T₁ (Control).

15. Number of fruits was maximum in T₃ i.e. GA₃ 75ppm + Black polyethylene at par T₂ i.e. GA₃ 50ppm + Black polyethylene and minimum number of fruits was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
16. In case of days taken to first harvesting minimum days was assess in treatment T₁₀ i.e. (NAA 20ppm +Black polyethylene) followed by T₁₁ i.e. .(NAA 40ppm +Black polyethylene). A maximum day taken to first harvesting was observed in T₁ (Control).
17. The highest number of fruits were picked in T₃ (GA₃ 75ppm + Black polyethylene) compared to T₂ (GA₃ 50ppm + Black polyethylene) and the lowest number of fruits were picked in T₁ (Control) (no plant growth regulators and no mulching).
18. The highest length of fruits was assess in the treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e. GA₃ 50ppm + Black polyethylene and minimum length of fruits was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
19. The width of fruit was maximum in T₃ i.e. GA₃ 75ppm + Black polyethylene at par with T₂ i.e.GA₃ 50ppm + Black polyethylene and minimum fruit width was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
20. The maximum fruit volume observed in T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e.GA₃ 50ppm + Black polyethylene and minimum fruit volume was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
21. Fruit weight par berry was superior in the treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e.GA₃ 50ppm + Black polyethylene and minimum Fruit weight was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
22. The maximum fruit weight per plantassess in the treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e.GA₃ 50ppm + Black polyethylene and minimum fruit weight per plant was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
23. In case of dry weight of fruit the highest dry weight was recorded in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e.GA₃ 50ppm + Black

- polyethylene and minimum dry weight of fruit was observed in T₁ (Control) i.e. no plant growth regulators and no mulching.
24. Total, Reducing and Non-reducing sugar was maximum in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e. GA₃ 50ppm + Black polyethylene. In view of minimum values of sugars was noticed in T₁ (Control) i.e. no plant growth and no mulching.
 25. The highest T.S.S. reading was observed in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e. GA₃ 50ppm + Black polyethylene. In view of minimum reading was noticed in T₁ (Control) i.e. no plant growth and no mulching.
 26. The maximum value of specific gravity was observed in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene followed by T₂ i.e. GA₃ 50ppm + Black polyethylene. In view of minimum specific gravity was noticed in T₁ (Control) i.e. no plant growth and no mulching.
 27. The acidity was recorded minimum in treatment T₃ i.e. GA₃ 75ppm + Black polyethylene, maximum acidity was found in treatment T₁ (Control) i.e. no plant growth and no mulching.

CONCLUSION

Based on the results of the study, the application of T₃ (GA₃ 75ppm + Black polyethylene) performed better in terms of growth, yield, and quality of strawberry cv. Chandler found greater performance followed by T₁₀ (NAA 20ppm + Black polyethylene) except for days taken to first flower, days taken to 50% flowering, days taken to initial fruit set, days taken to 50% fruit set and days taken to first harvesting. As a result, the usage of plant growth regulators and mulches may be recommended for increased crop yield and overall strawberry improvement.

Therefore the treatment T₃ i.e. GA₃ 75ppm + Black polyethylene may be recommended for higher yield and as well as higher return in strawberry variety Chandler under Lucknow condition.