

**Effect of different levels of pruning and chemical substances
on growth, yield and quality attributes of guava
(*Psidium guajava* L.).**

Thesis

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**Supervisor
Dr.M.L.Meena
(Assistant Professor)**

**Submitted By
Deepa Lal
ENROLMENT No. 298/13**

**Department of Applied Plant Science (Horticulture)
School for Biosciences and Biotechnology**

**BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY
(A CENTRAL UNIVERSITY)**

Vidya Vihar, Rae Bareli Road, Lucknow-226 025 (U.P.), INDIA

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SUMMARY AND CONCLUSION

The present investigation on “**Effect of different levels of pruning and chemical substances on growth, yield and quality attributes of guava (*Psidium guajava* L.)**” was carried out during 2014 - 15 and 2015-16 at Department of Applied Plant Science (Horticulture), Babasaheb Bhimrao Ambedkar University, Vidya-Vihar, Rae Bareli Road, Lucknow – 226 025. The experiment was laid out in randomized block design with three replications and thirteen treatments. The studies were concentrated on plant growth, yield, quality and cost : benefit ratio. The salient features of the findings of the investigation are summarized below:

- The maximum increase in plant height (13.04 cm) was recorded in plants treated with Pruning 75% (T_{12}), which was significantly superior to the rest treatments except T_{11} (12.24 cm) which is at par with each other.
- The maximum increase in trunk girth was found from the plants treated with pruning @75% (T_{12}) whereas, minimum increase in trunk girth (1.57 cm) was found with untreated plants (T_0). Other different level of pruning and chemical substances produced maximum increase in trunk girth

ranging between (2.96 to 1.71 cm), which is higher than control but statistically non-significant.

- The maximum increase in shoot length (23.45 cm) was found with the treatment T_{12} and this is significantly higher with rest of the treatments. The minimum increase in shoot length (5.00 cm) was found in control plants.
- The highest shoot girth (18.24 mm) was registered maximum with plants treated with pruning 75% (T_{12}), respectively as compared to the control treatment.
- The maximum days taken to first flowering (43.83) was recorded in plants treated with Pruning 50% (T_{11}) which was significantly superior to the rest of the varieties except T_{12} (41.67) and T_{10} (41.33) with Pruning 75 % and 25 % which is at par with each other, whereas minimum days taken to first flowering (31.63) was found with control plants.
- The maximum number of flowers/tree (796.50) was registered maximum with plants treated with pruning 50 % (T_{11}) however minimum number of flowers/tree (699.50) was found with control plants (T_0).
- The maximum days taken to full bloom (30.88) with pruning 75 % was found with the treatment (T_{12}) which was significantly superior to the rest of the treatments.

- The maximum duration of flowering days (41.17) with pruning 75 % was found with the treatment (T₁₂) which was significantly superior to the rest of the treatments except T₁₁ (40.17) and T₁₀ (38.67) with Pruning 50 % and 25 % which is at par with each other and this is significantly higher with rest of the treatments. The minimum Duration of flowering days (30.33) was found in control plants.
- The plants which were treated with pruning 50% produced considerably more weight of fruits *i.e.* 170.30 g closely followed by KNO₃ 4.5 % (165.63 g), while fruits with minimum weight were found in untreated control plant (133.84g). Other different level of pruning and chemical substances produced maximum fruit weight ranging between (162.78gm to 133.84gm), which is higher than control.
- The maximum width of fruit T₁₁ (6.49 cm) was recorded in 50% pruning treated plants. Which was significantly superior to the rest of the varieties except T₉ (6.34cm) and T₆ (6.05cm) with KNO₃ 4.5 % and Ca (NO₃)₂ 2.0% which is at par with each other and this is significantly higher with rest of the treatments., whereas the minimum width were recorded under control (4.93cm).
- The maximum length in fruit was found from the plants treated with pruning @50% (T₁₁) whereas, minimum fruit length (5.50 cm) was found with untreated plants (T₀).

- The Maximum fruit volume (156.80cc) was registered maximum with plants treated with pruning 50% (T₁₁) which were statistically similar with pruning 75% (T₁₂) and KNO₃ 3.0 % (T₈) However minimum increase in fruit volume (132.42 cc) was found with control plants (T₀).
- The Maximum fruit volume (156.80cc) was registered maximum with plants treated with pruning 50% (T₁₁) which were statistically similar with pruning 75% (T₁₂) and KNO₃ 3.0 % (T₈) which shows higher volume (153.80 cc) and (153.33cc) respectively. However minimum increase in fruit volume (132.42 cc) was found with control plants (T₀).
- The higher TSS (10.60⁰ Brix) contents were recorded in the fruits treated with KNO₃ 4.5 % followed by KNO₃ 3% (10.30⁰ Brix) and KNO₃ 1.50% treated plants (10.23⁰ Brix), whereas it was minimum under control (8.60⁰ Brix).
- The minimum percentage of titratable acidity (0.2 %) was found in the fruits produced from the plants treated with KNO₃ @ 3.0 %, which is at par with spray of KNO₃ @ 4.5 % and their acidity was recorded 0.21%., the maximum contents (0.44%) were recorded in fruits produced from untreated control plants.
- The mximum Vitamin C (236.96 mg/100g pulp) was found with the treatment T₉ (KNO₃ applied @ 4.5 %.) and this is significantly higher with rest of the treatments, While, KNO₃ @ 3.0 % recorded ascorbic acid

content 235.60 mg/100g pulp with T₈. The minimum increase in Vitamin C was found in control plants.

- The highest increase in pectin (0.76) was recorded with Ca (NO₃)₂ @ 2.0% followed by spray of Ca (NO₃)₂ @ 1.50%. whereas, minimum increase in pectin was found with untreated plants (T₀).
- The maximum total sugars were recorded with treatment T₉ followed by T₁₂ and T₁₀, respectively as compared to control .
- The maximum reducing sugar (4.65 %) content was with KNO₃ @ 4.5 % and after that pruning 75% gave highest reducing sugar content. this is significantly higher with rest of the treatments whereas, the minimum increase in reducing sugar was found in (3.58 %) control.
- The maximum non -reducing sugar (4.53 %) was observed with the application of KNO₃ @ 4.5% closely followed by pruning 75% while fruits with minimum non -reducing sugar found in untreated control plant.
- The maximum cost : benefit ratio was recorded under the treatment T₁₂ followed by T₁₁ and minimum with control.

Conclusion

The results obtained from present investigations, it can be safely concluded that plants treated with pruning intensity 75% had a significant effect on net increase in plant canopy architecture, flowering and yield (fruit length, fruit width, fruit weight, number of fruits, fruit yield kg/tree) and it's also improved fruit TSS (%), ascorbic acid (mg/100gm), reducing and total sugars (%) than the fruit produced by control. It can be safely concluded that plants treated with KNO_3 4.5% and $\text{Ca}(\text{NO}_3)_2$ 1.5% significantly improved the quality characters like TSS, total sugars, reducing sugar, non – reducing sugar, ascorbic acid and acidity while the pectin show good response with $\text{Ca}(\text{NO}_3)_2$ @ 2.0% followed by spray of $\text{Ca}(\text{NO}_3)_2$ @ 1.50 %. These observations concluded that for getting substantial higher yield of quality fruits, the plant of guava should be pruned and sprayed with KNO_3 4.5% and calcium nitrate (2.0 %) may not achieve highest yield and net returns but also improved quality of guava.