

**Studies on effect of intensity and time of shoot pruning on growth,
flowering, yield and quality of guava (*Psidium guajava* L.) under
Lucknow condition**

SUMMARY OF THESIS

SUBMITTED TO THE

BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY, LUCKNOW



FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY
IN
HORTICULTURE

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INDIA
2017

SUMMARY OF THESIS

The present experiment entitled, “**Studies on effect of intensity and time of shoot pruning on growth, flowering, yield and quality of guava (*Psidium guajava* L.) under Lucknow condition**” was conducted at Horticulture Research Farm, Department of Applied Plant Science (Horticulture), Bhimrao Ambedkar University, Lucknow-226025, U.P. (India) during 2014 – 2017. There were thirteen treatments laid out under Randomized Block Design with three replication. The various shoot pruning operation were performed to see the effect of shoot pruning on vegetative growth, change in flowering, fruiting, yield and improvement of fruit quality of guava cv. Lalit. The experimental findings obtained from this investigation have been summarized here:-

Effect of shoot pruning on vegetative growth of guava

On the basis of pooled value of two years data, it was seen that the treatment T₈ (Shoot pruning of 45 cm in May) produced the maximum length of new shoot (24.36 cm) at 120 days after pruning (DAP) and maximum increase in plant canopy spread (East-West) (26.85cm). However, in North-South direction, treatment T₇ (Heading back 45 cm in April) produced the maximum spreading (24.00 cm) and minimum was recorded in control (T₀) plants (without pruning).

Treatment T₇ (shoot pruning 45 cm in April) also showed the maximum increase in basal girth (0.98cm) which was recorded at 30 days interval after shoot pruning in both the years and minimum increase (0.75 cm) was recorded in T₀ control (without pruning).

Control treatment (T₀) showed delay in new shoot emergence (i.e. took maximum days to emerge new shoots) while the early shoot emergence (12.13 days) was recorded in T₅ (Heading back at 30 cm in May).

The treatment T₈ produced the maximum number of new shoots (26.58), maximum shootlet number per branch at flowering (15.87), maximum length of shoot let at flowering (9.10 cm), maximum number of leaves per shootlet (19.92), maximum basal diameter of new shootlet (1.36 cm), maximum number of flowering shoot let / branch at flowering (8.50) followed by T₇ & T₅.

However, the treatment T₁₂ (Heading back at 60 cm in June) showed the maximum age of shootlet (days after emergence) at flowering (35.58 days) and minimum (27.17 days) in T₇ (Heading back at 45 cm in April).

Effect of shoot pruning on flowering, fruiting and yield of guava

Control (without pruning) plants took the maximum days to flowering from pruning (50.83 days) while, minimum days to flowering from pruning (41.17 days) was recorded in the plants under T₂ (Heading back at 15 cm in May).

Maximum flower drop percentage (46.10 %) which was recorded under T₁₀ (Heading back at 60 cm in April) in 1st and 2nd year followed by T₅ (Heading back at 30 cm in May) (45.95 %).

However, T₂ (Heading back at 15 cm in May) recorded the highest fruit set percentage (63.26 %) and the minimum (53.24%) was recorded in T₁₀ (Heading back at 60 cm in May).

Control plants showed the highest fruit drop percentage (44.11%) and the lowest (33.80%) fruit drop was calculated in T₄ (Heading back at 30 cm in June). Thus, T₄ showed maximum fruit retention (66.20%) but, minimum was recorded in T₇ (Heading back at 45 cm in April). However, T₈ produced maximum number of mature fruit/plant (221.92).

As a result, maximum fruit yield (45.34 kg/plant, 126.04 q/ha) in both the years was recorded in T₈ treatment and minimum was recorded in control plants.

Effect of shoot pruning on fruit morphological characters of guava

It was seen that the treatment T₈ (Heading back 45 cm in May) produced the fruit with maximum length (6.32 cm), fruit diameter (6.22 cm), fruit weight (237.30 g), pulp weight (179.35 g), seed number/ fruit (332.00), seed weight/ fruit (14.11 g) and the lowest was recorded in T₀ control (without pruning) Whereas, seed number/ fruit (284.17) and seed weight/fruit (11.88 g) was minimum in T₁₀ (Heading back 60 cm in April).

Treatment T₇ (shoot pruning 45 cm in April) produced the maximum 100 seed weight (4.37 g) and minimum (4.16 g) was recorded in T₀ control (without pruning).

Effect of shoot pruning on bio- chemical qualities of guava fruits

T₈ (Heading back 45 cm in May) showed the better fruit quality in respect of maximum TSS (12.75 °Brix), Vitamin-C (233.43 mg/100 g fruit pulp), Total sugars (11.77 %), TSS: Acid ratio (25.97), Sugar: Acid ratio (23.89).

However, acidity was maximum in fruits under T₄ (Heading back 30 cm in April) and minimum acidity in T₁ (Heading back 15 cm in April)

The experiment revealed that T₅ (Heading back at 30 cm in May) produced fruits with maximum reducing sugar (8.93 %) while, T₄ (Heading back at 30 cm in April) produced maximum Non- reducing Sugar (3.77 %) and minimum was recorded in T₅ (Heading back at 30 cm in May).

Effect of shoot pruning on leaf N, P, K status of guava

It was observed that leaf nitrogen, phosphorus and potassium level did not vary significantly at one month after pruning and at the time of fruit harvesting. However, the range of nitrogen, phosphorus and potassium content in leaves varied among the treatments.

It was seen that nitrogen, phosphorus and potassium content in leaves were recorded at maximum level in treatment T₈ (shoot pruning at 45 cm in May) which reflected on higher vegetative growth as well as yield and fruit quality.

Conclusion:-

This study resulted that in general, shoot pruning regulated flowering period apart from rainy cropping by showing flower emergence at different time after pruning operation as compared to the responses in control plants which, produce more fruits mainly during rainy season. The prunings on different month have different effect on new shootlet emergence, flowering and fruit yield. Among different months of pruning shoot pruning in May was found better for regulating cropping, good flowering, fruiting and yield. The intensity of pruning in respect of length of shoot pruning also have different responses. It was found that moderate pruning i.e. 45 cm length of shoot pruning have very good responses. On the basis of overall performance the study clearly revealed that shoot pruning at 45 cm length in month of May (T₈) was found to be the best treatment among all for luxurious growth, early flowering, more annual fruit

yield and improvement of fruit quality of guava cv. Lalit grown in subtropical climate of Lucknow.