*Original Research Article*

Yield of guava (*Psidium guajava* L.) cv. Lal Bahadur as influenced by pruning time, boric acid and potassium silicate

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ABSTRACT

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| *An experiment entitled was carried out at Horticultural Research Farm, B. A. College of Agriculture, Anand Agricultural University during the years 2023 and 2024. The experiment was laid out in Completely Randomized Design with Factorial concept having three replications and sixteen treatment combinations of three factors. (Factor A - Pruning time: P1 : Last week of April and P2 : Last week of May), (Factor B - Levels of boric acid as foliar spray: B0 : No spray - Control, B1 : 0.4 % Boric acid, B2 : 0.8 % Boric acid and B3 : 1.2 % Boric acid) and (Factor C - Levels of potassium silicate as foliar spray: S0 : No spray - Control and S1 : 4 ml/L Potassium silicate). In different pruning time, pruning in the last week of May gave earlier flowering (38.33 days), number of days taken from flowering to fruit set (122.67 days) and fruit drop (22.91 %) along with more number of fruits set per shoot (13.38), fruit set (61.77 %), fruit retention (77.13 %), number of fruits per plant (238.07), fruit weight (110.94 g), fruit length (7.24 cm), fruit diameter (4.92 cm), fruit yield (26.49 kg/plant and 10.64 t/ha) in pooled data. In case of different levels of boric acid, foliar application of 0.8 % boric acid, twice, at flowering stage and at one month after the first spray, gave maximum number of fruits set per shoot (13.44), fruit set (66.73 %), fruit retention (79.86 %), number of fruits per plant (210.66), fruit weight (123.75 g), fruit length (7.20 cm), fruit diameter (5.13 cm), fruit yield (26.27 kg/plant and 10.51 t/ha) along with minimum number of days taken from flowering to fruit set (127.74 days) and fruit drop (20.16 %) in pooled data. For levels of potassium silicate, foliar application of 4 ml/L potassium silicate, twice, at flowering stage and at one month after first spray, gave higher number of fruit set per shoot (12.18), fruit set (60.54 %), fruit retention (76.97 %), number of fruits per plant (203.57), fruit weight (111.04 g), fruit length (7.01 cm), fruit diameter (4.94 cm), fruit yield (22.84 kg/plant and 9.81 t/ha) along with minimum number of days taken from flowering to fruit set (129.78 days) and fruit drop (23.03 %) in pooled data. From the two years of experiment, it can be concluded that pruning in last week of May enhanced the yield and its attributes. In case of levels of boric acid, foliar application of 0.8 % boric acid enhanced yield and yield attributing parameters. And for levels of potassium silicate, foliar application of 4 ml/L potassium silicate increased yield and its attributes.* |

*Keywords:* Boric acid, Guava, Potassium silicate, Pruning time, Yield.

1. INTRODUCTION

Guava (*Psidium* *guajava* L.), commonly called the “apple of the tropics” or “poor man’s apple,” belongs to the Myrtaceae family and originates from Tropical America, ranging from Mexico to Peru (Radha and Mathew, 2007). India is the leading producer, with 358 thousand hectares under cultivation and a production of 5.35 million tonnes (Anon., 2025), primarily grown in Madhya Pradesh, Uttar Pradesh, Bihar, West Bengal, Punjab, Gujarat, Maharashtra, Karnataka, and Andhra Pradesh. Released in 2020 by Anand Agricultural University, Lal Bahadur guava has a compact, spreading growth habit with dense pubescence on the leaf underside. The fruits are oval, pointed at the stalk end, with pale green to yellow skin and pinkish-red flesh. It offers high yield, rich in carotenoids, TSS, zinc, manganese, and shows reduced fruit fly infestation. Pruning is vital in guava cultivation to regulate growth, improve productivity, and enhance fruit quality. The timing of pruning affects leaf and shoot growth, which in turn influences fruit development, which ultimately leads to improvement in yield. Without pruning, trees may overgrow vegetatively, reducing fruit size, yield, and quality. Therefore, regular and timely pruning is essential for maintaining balanced growth and consistent high-quality fruit production. Boron is crucial for plant functions like flowering, fruiting, cell division, and nutrient uptake. It is immobile, builds up in leaves, and its deficiency disrupts carbohydrate metabolism. Fruit crops especially need boron during flowering and fruit set, which can be effectively provided through foliar spray of boric acid (H₃BO₃) and its application can have the potential to improve yield. Silicon enhances plant resistance to biotic and abiotic stresses by improving drought tolerance, water balance, photosynthesis, and leaf strength (Melo *et* *al*., 2003). It increases growth, yield, pollination, disease resistance (Gillman *et* *al*., 2003), and nutrient uptake. Because of these benefits, silicon is included in integrated nutrient management. Foliar application of potassium silicate (K₂SiO₃) supplies silicon along with potassium, reducing stress and improving fruit yield and quality.

Determining the suitable pruning time along with optimum concentration of boric acid and potassium silicate might help the growers in getting higher yield of fruits. Hence, an experiment on the effect of pruning time, boric acid and potassium silicate was carried out with the following objectives:

1. To study the effect of pruning time on yield of guava
2. To study the effect of boric acid on yield of guava
3. To study the effect of potassium silicate on yield of guava
4. To study the interaction effect of pruning time, boric acid and potassium silicate on yield of guava, if any

2. material and methods

The experiment was conducted at Horticultural Research Farm, B. A. College of Agriculture, Anand Agricultural University, Anand during the years 2023 and 2024. It is located at an altitude of 45.1 meters above mean sea level and is positioned at 22°35' North latitude and 72°56' East longitude. It has a semi-arid, subtropical climate. Summer is hot and dry. Winter is pleasant, cool and dry. Summer officially begins at the end of February and concludes around the middle of June. The monsoon is mildly humid and warm. Starts at the end of June and finishes in the middle of September. Regarding the overall amount of rainfall and its distribution, the monsoon in this area is frequently unpredictable and inconsistent with 860 mm annual rainfall. Mid-October marks the beginning of winter, which lasts until the end of February. The variety under study was Lal Bahadur and the plants were 5 years old and were planted at a spacing of 5 m x 5 m. The experiment was laid out in Completely Randomized Design with Factorial concept having three repetitions and sixteen treatment combinations of three factors. A.) Pruning time (P1: Last week of April and P2: Last week of May), B.) Levels of boric acid as foliar spray (B0: No spray - Control, B1: 0.4 % Boric acid, B2: 0.8 % Boric acid and B3: 1.2 % Boric acid) and C.) Levels of potassium silicate as foliar spray(S0: No spray - Control and S1: 4 ml/L Potassium silicate). Boric acid and potassium silicate were sprayed twice, *i. e.*, first one at the time of flowering and second one month after the first spray. All the plants were supplied with 40 kg FYM per plant and RDF of 500 : 250 : 250 g NPK per plant.

All the selected plants were almost uniform in growth and vigour and were given uniform cultural operations. Observations on number of days taken to initiation of flowering, number of days taken from flowering to first picking, number of fruits set per shoot, fruit set, fruit retention, fruit drop, number of fruits per plant, fruit length, fruit diameter, fruit weight and yield (kg/plant and t/ha) were recorded during experimentation. Statistical analysis was done by using method of analysis of variance (ANOVA) for Completely Randomized Design with Factorial concept by Gomez and Gomez (1976).

3. results and discussion

The results indicated that among different pruning times, P2 (Pruning in last week of May) resulted in lesser number of days required for initiation of flowering (31.58, 45.08 and 38.33 days), number of days taken from flowering to first picking (112.54, 132.80 and 122.67 days) and fruit drop (23.00, 22.81 and 22.91 %) along with higher number of fruits set per shoot (13.71, 11.05 and 12.38), fruit set (63.28, 60.26 and 61.77 %), fruit retention (76.99, 77.27 and 77.13 %), number of fruits per plant (237.52, 238.61 and 238.07), fruit weight (110.21, 111.67 and 110.94 g), fruit length (7.23, 7.24 and 7.24 cm), fruit diameter (4.91, 4.92 and 4.92 cm) and yield (26.25, 26.73 and 26.49 kg/plant and 10.58, 10.69 and 10.64 t/ha) during 2023, 2024 and pooled analysis. It might be due to pruning in last week of May aligns the plant growth cycle with favourable environmental factors, which promote early flower initiation. The synchronized and vigorous regrowth of shoots after pruning ensures better flowering uniformity and reduces the number of days from flowering to first picking. Also, the reduction in vegetative competition, allows the plant to direct more nutrients and assimilates toward reproductive growth, resulting in a higher number of fruits per shoot, greater fruit set percentage and improved fruit retention. By reducing excess foliage, pruning enhances light penetration and air circulation, which lowers the incidence of fruit drop and promotes healthier fruit development. Moreover, with reduced competition for nutrients and better resource allocation, the plant produces more fruits per plant with higher yield potential. The improved nutrient distribution also enhances fruit weight, fruit length and fruit diameter by promoting better cell division, expansion and sugar accumulation, ultimately improving fruit size. These findings aligns with the studies of Jadhav *et al.* (2009), Ali and Abdel-Hameed (2014), Raut (2014), Singh and Varu (2017) in guava; Dev *et al.* (2021) in ber and Mahida (2020) in phalsa.

Table: 1 Effect of pruning time, boric acid and potassium silicate on number of days taken to initiation of flowering, number of days taken from flowering to first picking, number of fruits set per shoot in guava cv. Lal Bahadur

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treatments** | **Number of days taken to initiation of flowering** | | | **Number of days taken from flowering to first picking** | | | **Number of fruits set per shoot** | | |
| **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** |
| **Factor A: Pruning time (P)** | | | | | | | | | |
| P1 | 47.54 | 53.00 | 50.27 | 130.75 | 150.68 | 140.72 | 12.67 | 10.03 | 11.35 |
| P2 | 31.58 | 45.08 | 38.33 | 112.54 | 132.80 | 122.67 | 13.71 | 11.05 | 12.38 |
| S. Em.± | 0.49 | 0.64 | 0.40 | 1.21 | 1.14 | 0.83 | 0.18 | 0.14 | 0.11 |
| C. D. at 5 % | 1.42 | 1.85 | 1.14 | 3.48 | 3.29 | 2.35 | 0.51 | 0.39 | 0.32 |
| **Factor B: Levels of boric acid as foliar spray (B)** | | | | | | | | | |
| B0 | 39.83 | 48.50 | 44.17 | 126.27 | 146.92 | 136.59 | 12.27 | 9.46 | 10.86 |
| B1 | 39.83 | 48.08 | 43.96 | 123.04 | 143.52 | 133.28 | 12.83 | 10.20 | 11.51 |
| B2 | 39.00 | 50.50 | 44.75 | 117.81 | 137.66 | 127.74 | 14.65 | 12.23 | 13.44 |
| B3 | 39.58 | 49.08 | 44.33 | 119.46 | 138.85 | 129.16 | 13.02 | 10.26 | 11.64 |
| S. Em.± | 0.69 | 0.91 | 0.57 | 1.71 | 1.61 | 1.17 | 0.25 | 0.19 | 0.16 |
| C. D. at 5 % | NS | NS | NS | 4.92 | 4.65 | 3.32 | 0.72 | 0.55 | 0.45 |
| **Factor C: Levels of potassium silicate as foliar spray (S)** | | | | | | | | | |
| S0 | 39.54 | 49.33 | 44.44 | 123.39 | 143.80 | 133.59 | 12.83 | 10.26 | 11.55 |
| S1 | 39.58 | 48.75 | 44.17 | 119.89 | 139.67 | 129.78 | 13.55 | 10.81 | 12.18 |
| S. Em.± | 0.49 | 0.64 | 0.40 | 1.21 | 1.14 | 0.83 | 0.18 | 0.14 | 0.11 |
| C. D. at 5 % | NS | NS | NS | 3.48 | 3.28 | 2.35 | 0.51 | 0.39 | 0.32 |
| Year | - | - | S | - | - | S | - | - | S |
| Significant interactions | - | - | P x Y | - | - | - | - | - | - |
| C. V. % | 6.10 | 6.41 | 6.33 | 4.86 | 3.95 | 4.37 | 6.59 | 6.32 | 6.53 |

Among different levels of boric acid, B2 (0.8 % boric acid) resulted in minimum number of days taken from flowering to first picking (117.81, 137.66 and 127.74 days) and fruit drop (20.12, 20.20 and 20.16 %) along with maximum number of fruits set per shoot (14.65, 12.23 and 13.44), fruit set (66.54, 66.91 and 66.73 %), fruit retention (79.88, 79.84 and 79.86 %), number of fruits per plant (209.47, 211.86 and 210.66), fruit weight (123.08, 124.42 and 123.75 g), fruit length (7.19, 7.21 and 7.20 cm), fruit diameter (5.12, 5.13 and 5.13 cm) and yield (25.98, 26.55 and 26.27 kg/plant and 10.39, 10.62 and 10.51 t/ha) during 2023, 2024 and pooled analysis. It might be because the application of boric acid enhances various growth and yield parameters by improving the physiological and reproductive efficiency of the plants. Boron plays a vital role in cell division, pollen viability and fertilization. It promotes early initiation of flowering by enhancing hormonal activity and accelerating bud differentiation. Improved pollen germination and pollen tube elongation result in better fertilization, reducing the number of days from flowering to first picking. Boron also strengthens cell wall integrity and promotes efficient nutrient translocation, leading to a higher number of fruits per shoot and an increased fruit set percentage. By enhancing fruit retention and reducing fruit drop, boric acid ensures more fruits remain on the plant until maturity. The improved nutrient uptake and translocation support the development of more fruits per plant and contribute to a higher overall yield. Additionally, boron facilitates better sugar metabolism and water accumulation, leading to larger fruit size with higher fruit weight, fruit length and fruit diameter. The findings aligns with the studies of with Bhatia *et al.* (2001) and Goswami *et al.* (2012) in guava; Dutta (2004) and Jarande *et al.* (2019) in mango and Shalan (2013) in pear.

Table: 2 Effect of pruning time, boric acid and potassium silicate on fruit set, fruit retention and fruit drop of guava cv. Lal Bahadur

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treatments** | **Fruit set (%)** | | | **Fruit retention (%)** | | | **Fruit drop (%)** | | |
| **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** |
| **Factor A: Pruning time (P)** | | | | | | | | | |
| P1 | 57.21 | 56.39 | 56.79 | 73.68 | 73.81 | 73.75 | 26.24 | 26.21 | 26.22 |
| P2 | 63.28 | 60.26 | 61.77 | 76.99 | 77.27 | 77.13 | 23.00 | 22.81 | 22.91 |
| S. Em.± | 0.63 | 0.81 | 0.51 | 0.88 | 0.73 | 0.57 | 0.39 | 0.33 | 0.25 |
| C. D. at 5 % | 1.82 | 2.34 | 1.45 | 2.53 | 2.09 | 1.61 | 1.12 | 0.94 | 0.72 |
| **Factor B: Levels of boric acid as foliar spray (B)** | | | | | | | | | |
| B0 | 55.94 | 51.32 | 53.63 | 68.33 | 69.42 | 68.87 | 31.50 | 30.58 | 31.04 |
| B1 | 59.93 | 58.47 | 59.20 | 74.67 | 74.55 | 74.61 | 25.33 | 25.45 | 25.39 |
| B2 | 66.54 | 66.91 | 66.73 | 79.88 | 79.84 | 79.86 | 20.12 | 20.20 | 20.16 |
| B3 | 58.56 | 56.59 | 57.57 | 78.48 | 78.36 | 78.42 | 21.53 | 21.81 | 21.67 |
| S. Em.± | 0.89 | 1.15 | 0.73 | 1.24 | 1.03 | 0.81 | 0.55 | 0.46 | 0.36 |
| C. D. at 5 % | 2.57 | 3.31 | 2.05 | 3.58 | 2.96 | 2.28 | 1.59 | 1.33 | 1.02 |
| **Factor C: Levels of potassium silicate as foliar spray (S)** | | | | | | | | | |
| S0 | 59.06 | 56.99 | 58.03 | 74.03 | 73.79 | 73.91 | 25.89 | 26.31 | 26.09 |
| S1 | 61.43 | 59.65 | 60.54 | 76.65 | 77.29 | 76.97 | 23.35 | 22.71 | 23.03 |
| S. Em.± | 0.63 | 0.81 | 0.51 | 0.88 | 0.73 | 0.57 | 0.39 | 0.33 | 0.25 |
| C. D. at 5 % | 1.82 | 2.34 | 1.45 | 2.53 | 2.09 | 1.61 | 1.12 | 0.94 | 0.72 |
| Year | - | - | S | - | - | NS | - | - | - |
| Significant interactions | - | - | - | - | - | - | - | - | P x B |
| C. V. % | 5.13 | 6.82 | 6.01 | 5.72 | 4.70 | 5.23 | 7.75 | 6.53 | 7.17 |

Table: 3 Effect of pruning time, boric acid and potassium silicate on number of fruits per plant, fruit weight and yield of guava cv. Lal Bahadur

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treatments** | **Number of fruits per plant** | | | **Fruit weight (g)** | | | **Yield (kg/plant)** | | |
| **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** |
| **Factor A: Pruning time (P)** | | | | | | | | | |
| P1 | 157.57 | 161.47 | 159.52 | 105.29 | 105.71 | 105.50 | 16.80 | 17.29 | 17.46 |
| P2 | 237.52 | 238.61 | 238.07 | 110.21 | 111.67 | 110.94 | 26.25 | 26.73 | 26.49 |
| S. Em.± | 2.51 | 2.11 | 1.64 | 1.28 | 1.25 | 0.89 | 0.33 | 0.35 | 0.24 |
| C. D. at 5 % | 7.24 | 6.08 | 4.63 | 3.69 | 3.61 | 2.53 | 0.96 | 1.00 | 0.68 |
| **Factor B: Levels of boric acid as foliar spray (B)** | | | | | | | | | |
| B0 | 183.12 | 184.31 | 183.71 | 87.75 | 88.42 | 88.08 | 16.12 | 16.31 | 16.22 |
| B1 | 193.89 | 199.77 | 196.84 | 102.50 | 103.67 | 103.08 | 19.99 | 20.84 | 20.41 |
| B2 | 209.47 | 211.86 | 210.66 | 123.08 | 124.42 | 123.75 | 25.98 | 26.55 | 26.27 |
| B3 | 203.68 | 204.24 | 203.96 | 117.67 | 118.25 | 117.96 | 24.01 | 24.33 | 24.17 |
| S. Em.± | 3.55 | 2.99 | 2.32 | 1.81 | 1.77 | 1.27 | 0.47 | 0.49 | 0.34 |
| C. D. at 5 % | 10.23 | 8.59 | 6.55 | 5.22 | 5.09 | 3.58 | 1.35 | 1.42 | 0.96 |
| **Factor C: Levels of potassium silicate as foliar spray (S)** | | | | | | | | | |
| S0 | 193.42 | 194.62 | 194.01 | 104.96 | 105.83 | 105.39 | 20.54 | 20.86 | 20.69 |
| S1 | 201.66 | 205.47 | 203.57 | 110.54 | 111.54 | 111.04 | 22.51 | 23.16 | 22.84 |
| S. Em.± | 2.51 | 2.11 | 1.64 | 1.28 | 1.25 | 0.89 | 0.33 | 0.35 | 0.24 |
| C. D. at 5 % | 7.24 | 6.08 | 4.63 | 3.69 | 3.61 | 2.53 | 0.96 | 1.00 | 0.68 |
| Year | - | - | NS | - | - | NS | - | - | NS |
| Significant interactions | - | - | P x B,  P x S | - | - | - | - | - | - |
| C. V. % | 6.23 | 5.17 | 5.72 | 5.82 | 5.64 | 5.73 | 7.57 | 7.75 | 7.66 |

Among different levels of potassium silicate, S1 (4 ml/L potassium silicate) resulted in lesser number of days taken from flowering to first picking (119.89, 139.67 and 129.78 days) and fruit drop (23.35, 22.71 and 23.03 %) along with higher number of fruits set per shoot (13.55, 10.81 and 12.18), fruit set (61.43, 59.65 and 60.54 %), fruit retention (76.65, 77.29 and 76.97 %), number of fruits per plant (201.66, 205.47 and 203.57), fruit weight (110.54, 111.54 and 111.04 g), fruit length (6.99, 7.04 and 7.01 cm), fruit diameter (4.92, 4.96 and 4.94 cm) and yield (22.51, 23.16 and 22.84 kg/plant and 9.09, 9.26 and 9.18 t/ha) during 2023, 2024 and pooled analysis. The application of potassium silicate significantly enhances plant growth, productivity and fruit quality by improving physiological resilience and optimizing metabolic processes. Potassium, a vital macronutrient, plays a key role in enzyme activation, nutrient translocation, and osmotic regulation, which stimulates early flowering by accelerating bud differentiation and promoting floral organogenesis. Enhanced nutrient availability and increased stress tolerance shorten the interval between flowering and the first harvest by expediting fruit development and ripening. Potassium silicate reinforces cell wall structure, augments photosynthetic efficiency, and mitigates oxidative stress, resulting in improved pollen viability, a higher fruit set percentage and greater fruit retention. By reducing the impact of biotic and abiotic stressors, it minimizes fruit drop, ensuring a larger number of fruits reach maturity. Furthermore, improved nutrient uptake and water-use efficiency foster the development of more fruits per plant, thereby increasing overall yield. The combined action of potassium and silicon also promotes cell expansion, sugar metabolism and dry matter accumulation, leading to larger fruits with superior fruit weight, fruit length and fruit diameter. These findings aligns with the studies of Ahmed *et al.* (2013), Gawad (2017), Lokesh *et al.* (2020) and Aal (2022) in mango; Lalithya *et al.* (2014) in sapota and Mangali *et al.* (2021) and Mounika *et al.* (2021) in citrus.

Table: 4 Effect of pruning time, boric acid and potassium silicate on yield, fruit length and fruit diameter of guava cv. Lal Bahadur

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treatments** | **Yield (t/ha)** | | | **Fruit length (cm)** | | | **Fruit diameter (cm)** | | |
| **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** | **2023** | **2024** | **Pooled** |
| **Factor A: Pruning time (P)** | | | | | | | | | |
| P1 | 6.72 | 6.91 | 6.81 | 6.53 | 6.58 | 6.55 | 4.78 | 4.77 | 4.77 |
| P2 | 10.58 | 10.69 | 10.64 | 7.23 | 7.24 | 7.24 | 4.91 | 4.92 | 4.92 |
| S. Em.± | 0.13 | 0.14 | 0.09 | 0.06 | 0.07 | 0.05 | 0.05 | 0.06 | 0.04 |
| C. D. at 5 % | 0.39 | 0.40 | 0.27 | 0.18 | 0.21 | 0.14 | 0.14 | 0.16 | 0.11 |
| **Factor B: Levels of boric acid as foliar spray (B)** | | | | | | | | | |
| B0 | 6.45 | 6.53 | 6.49 | 6.56 | 6.61 | 6.58 | 4.41 | 4.42 | 4.42 |
| B1 | 7.99 | 8.34 | 8.16 | 6.82 | 6.84 | 6.83 | 4.75 | 4.76 | 4.76 |
| B2 | 10.39 | 10.62 | 10.51 | 7.19 | 7.21 | 7.20 | 5.12 | 5.13 | 5.13 |
| B3 | 9.77 | 9.71 | 9.74 | 6.97 | 6.96 | 6.96 | 5.07 | 5.07 | 5.07 |
| S. Em.± | 0.19 | 0.19 | 0.14 | 0.09 | 0.10 | 0.07 | 0.07 | 0.08 | 0.05 |
| C. D. at 5 % | 0.54 | 0.57 | 0.39 | 0.26 | 0.29 | 0.19 | 0.19 | 0.23 | 0.15 |
| **Factor C: Levels of potassium silicate as foliar spray (S)** | | | | | | | | | |
| S0 | 8.21 | 8.33 | 8.27 | 6.78 | 6.77 | 6.78 | 4.75 | 4.73 | 4.74 |
| S1 | 9.09 | 9.26 | 9.18 | 6.99 | 7.04 | 7.01 | 4.92 | 4.96 | 4.94 |
| S. Em.± | 0.13 | 0.14 | 0.09 | 0.06 | 0.07 | 0.05 | 0.05 | 0.05 | 0.04 |
| C. D. at 5 % | 0.39 | 0.40 | 0.27 | 0.18 | 0.21 | 0.14 | 0.14 | 0.16 | 0.10 |
| Year | - | - | NS | - | - | NS | - | - | NS |
| Significant interactions | - | - | - | - | - | - | - | - | - |
| C. V. % | 7.57 | 7.75 | 7.66 | 4.54 | 5.22 | 4.89 | 4.97 | 5.77 | 5.39 |

Significantly minimum days required for initiation of flowering was recorded in last week of May pruning (P2) in 2023, *i. e.,* 31.58 days, due to high temperature and low relative humidity was observed during May and June month of the year 2024, hence, flower initiation was delayed.

Table: 5. Interaction effect pruning time and year on initiation of flowering in guava cv. Lal Bahadur

|  |  |  |
| --- | --- | --- |
| **Initiation of flowering (days) (Pooled)** | | |
| **Pruning time (P)** | **Year** | |
| **2023** | **2024** |
| **P1** | 47.54 | 53.00 |
| **P2** | 31.58 | 45.08 |
| **S. Em.±** | 0.52 | |
| **C. D. (P=0.05)** | 1.62 | |

Minimum fruit drop was recorded with pruning in last week of May with 0.8 % boric acid foliar spray (P2B2), *i. e.,* 18.96 % in pooled analysis, which was at par with P2B3. It might be due to better allocation of assimilates due to pruning at appropriate time and strengthening of cell wall by boron, which increased fruit retention and reduced fruit drop.

Table: 6. Interaction effect pruning time and boric acid on fruit drop in guava cv. Lal Bahadur

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Fruit drop (%) (Pooled)** | | | | |
| **Pruning time (P)** | **Levels of boric acid as foliar spray (B)** | | | |
| **B0** | **B1** | **B2** | **B3** |
| **P1** | 33.87 | 26.47 | 21.36 | 23.19 |
| **P2** | 28.22 | 24.31 | 18.96 | 20.15 |
| **S. Em.±** | 0.51 | | | |
| **C. D. (P=0.05)** | 1.44 | | | |

Maximum number of fruits per plant was recorded with pruning in last week of May with 0.8 % boric acid foliar spray (P2B2) in pooled analysis, *i. e.,* 243.84, which was at par with P2B1 and P2B3. It might be due to better allocation of assimilates due to pruning at appropriate time and better translocation of carbohydrates and nutrients by boron, which increased number of fruits per plant.

Table: 7. Interaction effect pruning time and boric acid on number of fruits per plant in guava cv. Lal Bahadur

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number of fruits per plant (Pooled)** | | | | |
| **Pruning time (P)** | **Levels of boric acid as foliar spray (B)** | | | |
| **B0** | **B1** | **B2** | **B3** |
| **P1** | 136.77 | 157.44 | 177.48 | 166.39 |
| **P2** | 230.66 | 236.23 | 243.84 | 241.54 |
| **S. Em.±** | 3.28 | | | |
| **C. D. (P=0.05)** | 9.27 | | | |

Maximum number of fruits per plant was recorded in last week of May pruning and 4 ml/L potassium silicate (P2S1) spray, *i. e.,* 239.86 in pooled analysis, which was at par with P2S0. It might be due to better allocation of assimilates due to pruning at appropriate time and imparting resistance against environmental stresses by potassium silicate, which reduced fruit drop and increased number of fruits per plant.

Table: 8. Interaction effect pruning time and potassium silicate on number of fruits per plant in guava cv. Lal Bahadur

|  |  |  |
| --- | --- | --- |
| **Number of fruits per plant (pooled)** | | |
| **Pruning time (P)** | **Levels of potassium silicate as foliar spray (S)** | |
| **S0** | **S1** |
| **P1** | 151.77 | 167.27 |
| **P2** | 236.27 | 239.86 |
| **S. Em.±** | 2.32 | |
| **C. D. (P=0.05)** | 6.55 | |

4. Conclusion

From the two years of field experiment, it can be concluded that pruning in last week of May resulted in early flowering and harvest, higher yield and yield attributing parameters. Foliar application of 0.8 % boric acid, at flowering stage and at one month after the first spray, resulted in early harvest, maximum yield and yield attributing parameters. And foliar application of 4 ml/L potassium silicate, at flowering stage and at one month after the first spray, resulted in early harvest, higher yield and yield attributing parameters.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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