



# Studies of plant growth substances on the yield components of winter season guava cv. L-49 (Sardar)

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**Abstract :** The present investigation was carried out to work out the effect of plant growth regulators on the yield of winter season guava (*Psidium guajava* L.) cv. L-49 (Sardar). The study revealed that an application of NAA 40 ppm as well as NAA 20 ppm was found to be the most effective in increasing more number of fruits per tree (439.00 and 410.05, respectively). These treatments also increase the fruit weight (153.22 and 136.13 g), fruit volume (127.68 and 114.20 cc), fruit diameter (5.63 and 5.36 cm) and yield (66.39 and 59.90 kg tree<sup>-1</sup>). The number of seeds per fruit was found to be non-significant. But minimum number of seeds per fruit was observed with GA<sub>3</sub> 50 ppm (300.01).

**Key Words :** Guava, PGRs, Yield parameters

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## INTRODUCTION

The Guava (*Psidium guajava* L.) is one of the most common and important fruit crop, cultivated all over India. It is a popular fruit among people primarily because of its moderate price in market and also being a rich source of vitamin 'C.' Botanically guava belongs to the large family of Myrtaceae. Guava is very hardy in nature and as such can grow in wide range of soils even with less attention. In India, most of the guava varieties produce medium to small, inferior quality fruits having more number of seeds, which are hard and difficult to chew.

## MATERIALS AND METHODS

The present investigation entitled studies of plant growth substances on the yield components of winter season guava (*Psidium guajava* L.) cv. L-49 (Sardar)" was under taken during monsoon 2009 at the Horticultural Instructional Farm, Chimanbhai Patel College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, District Banaskantha, Gujarat. The experiment was conducted in guava

orchard-p9 planted at 6 x 6 m distance. The experiment was conducted in Randomized Block Design with nine treatments and four replications. The treatment consisted of T<sub>1</sub> (Control), T<sub>2</sub> (GA<sub>3</sub> 50 ppm), T<sub>3</sub> (GA<sub>3</sub> 100 ppm), T<sub>4</sub> (NAA 20 ppm), T<sub>5</sub> (NAA 40 ppm), T<sub>6</sub> (2,4-D 5 ppm), T<sub>7</sub> (2,4-D 10 ppm), T<sub>8</sub> (CCC 250 ppm) and T<sub>9</sub> (CCC 500 ppm).

## RESULTS AND DISCUSSION

The data (Table 1) of guava trees revealed that the harvesting of fruits started late in the guava tree sprayed with NAA at 40 ppm (78 days), which was at par with NAA at 20 ppm (75 days), GA<sub>3</sub> 100 ppm (70 days) and GA<sub>3</sub> 50 ppm (68 days). The minimum days for first harvest were observed under control (59 days). Foliar application of NAA 40 ppm to the guava trees took the maximum days (96 days) for last harvest, which was at par with NAA 20 ppm (93 days), GA<sub>3</sub> 100 ppm (91 days) and GA<sub>3</sub> 50 ppm (88 days). The minimum days for last harvest was noticed under control (78 days). The results indicated that the difference in the total number of fruits per plant was found to be significant. Significantly the highest total number of fruits per plant (439.00) was recorded in T<sub>5</sub>

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Table 1: Effect of plant growth regulators on the yield components of winter season guava cv. L-49 (Sardar)

Treatments	Days required for first harvest	Days required for last harvest	Number of fruits per tree	Average weight of fruit (g)	Number of seeds per fruit	Fruit Volume (cc)	Diameter of fruit (cm)	Fruit yield (kg/tree)
T <sub>1</sub> : Control	59	78	298.08	102.97	357.33	100.89	4.04	44.23
T <sub>2</sub> : GA <sub>3</sub> 50 ppm	68	88	380.34	135.84	300.87	113.20	5.25	59.77
T <sub>3</sub> : GA <sub>3</sub> 100 ppm	70	91	433.12	148.27	303.60	123.56	5.43	65.24
T <sub>4</sub> : NAA 20 ppm	75	93	410.05	136.13	320.01	114.20	5.36	59.90
T <sub>5</sub> : NAA 40 ppm	78	96	439.00	153.22	305.65	127.68	5.63	66.39
T <sub>6</sub> : 2,4-D 5 ppm	60	79	305.20	103.44	342.55	101.18	4.14	44.66
T <sub>7</sub> : 2,4-D 10 ppm	64	83	325.77	107.33	349.36	102.95	4.29	47.22
T <sub>8</sub> : CCC 250 ppm	63	80	340.32	114.29	339.25	104.77	4.57	50.29
T <sub>9</sub> : CCC 500 ppm	66	85	364.90	130.32	333.35	108.60	5.21	57.34
S.E. ±	3.67	3.66	17.41	5.49	14.66	6.01	0.20	3.03
C.D. at 5 %	10.72	10.68	50.80	16.01	NS	17.54	0.57	8.84
C.V. (%)	10.98	8.52	9.50	8.72	8.94	10.85	8.01	11.01

(NAA 40 ppm), but it was at par with treatments T<sub>3</sub> (433.12) and T<sub>4</sub> (410.05). However, the minimum total number of fruits per plant (298.08) was observed in T<sub>1</sub> (control). These results are in agreement with the findings of Rajput *et al.* (1977) in guava.

The data regarding average weight of fruits revealed that was significantly influenced by different treatments. Maximum average weight of guava fruits (153.22 g) was observed in the treatment T<sub>5</sub> (NAA 40 ppm) and it was at par with treatment T<sub>3</sub> (148.27 g). While, the lowest weight of fruit (102.97 g) was recorded under treatment T<sub>1</sub> (control). These results are in agreement with the findings of Singh *et al.* (2005) in mango, Yadav (2002) in guava and Banker and Prasad (1990) in ber.

The data revealed that the number of seeds per fruit was not significantly influenced due to various plant growth regulators application on guava fruit. However, treatment T<sub>2</sub> (GA<sub>3</sub> 50 ppm) registered the lowest seeds per fruit (300.87), while maximum number of seeds were noticed under T<sub>1</sub> (Control). These results are in agreement with the findings of Koller *et al.* (2000) in citrus and Kulkarni *et al.* (1995) in custard apple.

The maximum volume of fruit (127.68 cc) was registered in the treatment T<sub>5</sub> (NAA 40 ppm), which was at par with treatment T<sub>3</sub> (123.56 cc), T<sub>4</sub> (114.20 cc) and T<sub>2</sub> (113.20 cc). The minimum volume of fruit (100.89 cc) was recorded in treatment T<sub>1</sub> (control). The same results were observed by Bhaghel *et al.* (1987) in Mango and Brahmachari *et al.* (1996) in guava.

Among the different treatments given to guava trees, the foliar application of NAA 40 ppm gave the maximum diameter of fruit (5.63 cm), which was at par with GA<sub>3</sub> 100 ppm (5.43 cm), NAA 20 ppm (5.36 cm), GA<sub>3</sub> 50 ppm (5.25 cm) and CCC 500 ppm (5.21 cm). The minimum diameter of fruit was noticed under control (4.04 cm). It can be observed that there was significant differences among the different treatments in case of yield. The highest yield per tree (66.39 kg) was recorded in T<sub>5</sub> (NAA 40 ppm) which was at par with treatment T<sub>3</sub> (GA<sub>3</sub> 100 ppm), T<sub>4</sub> (NAA 20 ppm) and T<sub>2</sub> (GA<sub>3</sub> 50 ppm). The lowest yield per tree (44.23 kg) was recorded in the control (T<sub>1</sub>). Same results were obtained by Singh and Rajput (1991) in mango and Brahmachari *et al.* (1996) in guava.

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