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## Effect of plant growth regulators on quality of Custard apple (*Annona squamosa* L.) CV. Sindhan

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### Abstract

A trial conducted to study the influence of different plant growth regulators on quality of custard apple. Maximum TSS, reducing sugar and total sugar were found significantly highest and acidity, non-reducing sugar and ascorbic acid were noted lowest with application of 50 ppm GA<sub>3</sub>.

**Keywords:** custard apple, GA<sub>3</sub>, NAA, 2, 4-D and quality.

### Introduction

Custard apple (*Annona squamosa* L.) is an arid fruit crop and hardy in nature requires dry climate with mild winter. It can grow successfully from sea level up to 100 m above the mean sea level elevation and also drought. Custard apple flowered during the period of April to August. Due to high temperature, low atmospheric humidity, lack of irrigation water and natural stresses resulted less number of flower, poor fruit setting and low yield and degraded quality of fruit too. Among the various uses of plant growth regulators which have received wide spread acceptance and application on the field of horticulture in recent years, the use of plant growth regulating chemicals in grape, mango, mandarin have become a standard practice for increasing flowering, fruit setting, fruit size and control of post harvest losses. This paper describes the interference on plant growth regulators on yield attributing characters and fruit yield of custard apple.

There is great role of different plant growth regulators on flowering, fruit setting, number of seeds, fruit size, quality of fruit etc. The use of plant growth regulators GA<sub>3</sub>, NAA and 2, 4-D has proved effective in increasing the size of berry or fruit and improved quality in crop like grape, citrus, ber etc.

### Materials and Methods

The present investigation on the effect of plant growth regulators on fruit set and yield of custard apple cv. SINDHAN were carried out on the fourteen years old trees having uniform growth with spaced at 6 m X 6 m at fruit research station, Madhdi Baug farm, Junagadh Agricultural University, Junagadh (Gujarat) during the year 2013-14. The experiment was conducted in Randomized Block Design with three replications with total seven treatments. Custard apple trees were sprayed with different plant growth regulators viz., GA<sub>3</sub> at 25 and 50 ppm, NAA at 100 and 200 ppm and 2, 4-D at 15 and 30 ppm. The plant growth regulators were sprayed three times at five days interval during peak flowering stage (July). All the cultural operations like weeding, inter-culturing and irrigation were adapted uniformly to all experimental plants. Observations of various fruit attribute characters and fruit yield were recorded. Results thus, obtained were subjected to statistical analysis.

### Results and Discussion

Spraying of plant growth regulators like GA<sub>3</sub> 50 ppm and NAA 200 ppm had significant effect on TSS, acidity, reducing sugar, non-reducing sugar, total sugar and ascorbic acid on custard apple. It also results highest in yield and gave maximum cost benefit ratio on custard apple.

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## Effect of plant growth regulators on quality of custard apple

S. No.	Treatments	TSS ( <sup>o</sup> Brix)	Acidity (%)	Reducing sugar (%)	Non-reducing sugar (%)	Total sugar (%)	Ascorbic acid (%)
1.	GA <sub>3</sub> 25 ppm	19.55	0.20	17.56	2.89	21.45	0.60
2.	GA <sub>3</sub> 50 ppm	20.60	0.16	18.59	2.44	12.37	0.56
3.	NAA 100 ppm	19.81	0.25	17.24	2.92	20.50	0.62
4.	NAA 200 ppm	19.77	0.23	17.53	2.95	21.56	0.70
5.	2, 4-D 15 ppm	16.95	0.26	16.31	3.50	19.47	0.73
6.	2, 4-D 30 ppm	17.64	0.26	16.67	3.82	20.49	0.72
7.	Control	15.88	0.30	14.84	4.42	18.86	1.0
	S.Em. ±	0.89	0.01	0.548	0.192	0.804	0.029
	C.D. at 5%	2.75	0.03	1.68	0.59	2.47	0.09
	C.V. %	8.33	7.05	5.60	10.19	6.69	7.37

From the above study the TSS, reducing sugar and total sugar were found significantly the highest with the application of 50 ppm GA<sub>3</sub>. While, acidity, non-reducing sugar and ascorbic acid were noted the lowest with the same application in custard apple. This might be due to its action on converting complex substances into simple ones. This enhances the metabolic activities in fruits and ultimately results in increased TSS, total sugar and reducing sugar and ascorbic acid content in custard apple. Similar results were reported by Patel *et al.* (2010) [3] in custard apple. Yadav *et al.* (2001) [4] observed the GA<sub>3</sub> (50, 100 and 150 ppm) on 15 years old guava increased the total sugar content. Kumar and Singh (1993) [2] found that GA<sub>3</sub> at 30 ppm pre-harvest sprays in mango significantly improved fruit quality.

From the foregoing discussion, it can be concluded that the application of 50 ppm GA<sub>3</sub> enhanced fruit quality and fruit yield of custard apple as well as higher economic return in Gujarat conditions.

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