

Effect of preharvest application of plant growth regulators on post-harvest quality of organically grown guava (*Psidium guajava* L.) fruits

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ABSTRACT

Guava plants of cultivar Sardar were treated with four concentrations of GA₃ (30,60,90,120 ppm), CCC (300,600,900,1200 ppm) and NAA (20,40,60, 80ppm) along with a control. The fruits were kept in perforated poly bags and stored at room temperature. GA₃ treated fruits stored at ambient temperature expressed relatively slower senescence as compared to control. The fruit size and specific gravity reduced with the advancements of storage. All the other quality parameters viz. TSS, acidity and total sugars were found to be changed with the storage period. There was an increase in the T.S.S. while a decrease in the acidity as compared with these parameters recorded on the day of storage. Maximum fruit size and specific gravity and the lowest acidity was recorded with 90ppm GA₃ as compared to control. Foliar spray of 60 ppm NAA induced maximum T.S.S. content. It is evident that the foliar application of plant growth regulators brought about a favourable effect on the post harvest life of guava fruits and maintained various physico-chemical attributes at the desired level of consumers acceptance till 6th day of storages and foliar sprays of 90 ppm GA₃ applied 30 days prior to harvest was adjudged as the best treatment.

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Guava is widely grown in Indian tropics and subtropics. It is a very common fruit popular among the rich and the poor alike due to its moderate price, nourishing value, excellent flavour and delicious taste. The fruit is rich in vitamin 'C'. Uttar Pradesh, the largest grower produces best quality of fruits. But the fruits are blemished being highly delicate in nature besides the biochemical post harvest changes soften it leading to spoilage. However, the storage life of fresh fruits can be effectively increased and spoilage can be reduced. In recent years, plant growth regulators like auxins, gibberellins and growth retardants like cycocel are being used for improving the fruit quality, delaying deterioration in storage and increasing the shelf life (Rao, 2001 and Tondon *et al.*,1989).

MATERIALS AND METHODS

The experiment was carried out during the year 2006-07 on 10 years old Sardar guava plants uniform in size and vigour maintained at C.S. Azad University of Agriculture and Technology, Kanpur with the following technical details. There were 13 treatments in all viz. four concentrations each of GA₃ (30, 60, 90 and 120 ppm), CCC (300, 600, 900 and 1200 ppm) and NAA (20, 40, 60 and 80 ppm) along with a control replicated thrice under a Randomized Block Design. GA₃ and CCC were sprayed 30 days before harvest while NAA 15 days before harvest. The unit of plot was single plant. Well rotten

FYM @ 75 kg per plant was given in the last week of June and it was thoroughly mixed. The fruits were kept in perforated poly bags and stored at room temperature for a period of six days in the month of December (Temperature range 13-15°C and humidity 65.5%). Physical observations were recorded by routine method and chemical estimations were done as per A.O.A.C. (1990).

RESULTS AND DISCUSSION

Fruits harvested from guava trees treated with different concentrations of GA₃, CCC and NAA were stored at ambient condition for a period of 6 days. The fruits produced under different treatments after the expiry of storage showed significant variation in their size (Table 1). Irrespective of concentrations all the growth regulators retained significantly larger size of the fruits during storage as compared to control. Treatment with GA₃ at 90 ppm expressed significantly maximum of 6.32 and 6.79 cm length and diameter, respectively followed by its 120 ppm concentration showing 6.20 and 6.70 cm corresponding values against 4.92 and 5.85 cm of control. Amongst the three growth regulators, GA₃ proved relatively more effective in inducing better fruit growth and retaining it during storage followed by NAA sprays. GA₃ is known to activate polar transport, promote cell elongation and induce flowering and fruiting. The gibberellins affect both by cell division as well as cell elongation. Thus, it might