

# Effect of Plant Growth Regulators on Quality Traits of Spine Gourd (*Momordica cochinchinensis* Roxb)

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## ABSTRACT

An experiment was conducted to study the effect of growth regulators on quality traits of spine gourd. The effect of growth regulators on various fruit qualities viz., total sugar, TSS, reducing sugar, non reducing sugar, ascorbic acid, riboflavin, moisture and number of seeds though found to be non significant, yet growth regulators brought about marginal improvement in the qualities of fruits.

Among the cucurbitaceous vegetables, spine gourd (*Momordica cochinchinensis* Roxb) has immense popularity for their delicious and high nutritive value. In modern agriculture, the quality of different fruits and vegetables are improved by applying plant growth regulators. The profound effect of growth substances to improve the quality of many cucurbitaceous vegetables have been reported by several workers. But owing to the confinement of spine gourd in North Eastern Region of India only, no any work has been done on this crop in other parts of India to study the effect of plant growth regulators on quality traits. Keeping this end in view, an experiment was planned to study the influence of few plant growth regulators on quality traits of spine gourd under agro ecological conditions of Assam.

## MATERIAL AND METHODS

The experiment was conducted at the orchard of Department of Horticulture, Assam Agricultural University, during the Kharif season in a randomised block design with five treatments viz. I : Control (Co), T2: GA10 ppm, (G10), T3: Thiourea (2% + G10)-TG T4: Ethrel-150 ppm (E150) and T5: Ethrel-250 ppm (E 250)

Tubers weighing 18-45 g were dipped in growth regulator solution for an hour, dried in shade for a while and then planted on raised bed at a depth of 20 cm with a spacing of 1m row to row and 1m plant to plant accomodating 5 plants in each bed for each treatment. The plots were fertilised by applying organic matter @ 30t/ha and N: P:K (in the form of urea, single superphosphate and muriate of potash) @ 80:50:50 kg/ha. Plants were provided with a support to twine by placing stout stakes. The fruits from each replication were picked at random from each treated plant and fresh fruits were analysed for total soluble solid, total sugar, reducing

sugar and non-reducing sugar by adopting the standard method of A.O.A.C. (1975). The ascorbic acid was determined by iodine titration method (Jacob, 1958) and riboflavin contents of fruits were analysed by fluorimetric method described by NIN, Hyderabad (1972).

### RESULT AND DISCUSSION

The mean performance of the effect of plant growth regulators on quality is presented in Table 1. Though the application of plant growth regulators did not significantly effect the quality yet an increasing trend with respect to TSS, total sugar, non reducing sugar, ascorbic acid and riboflavin was observed as compared to control (Table 1). Similar increase in TSS by the application of growth regulators was also reported by Das (1975) in ribbed gourd. Doijode and Rao (1983) also observed significant higher sugar content in peas by seed treatment with 30 ppm NAA and 60 ppm GA3 as compared to control. The increase in sugars due to growth regulators treatments may be due to accumulation of sugar at lower concentrations. Though the growth regulators could not produce any significant effect on riboflavin content of fruit, yet increased riboflavin content of fruits was observed due to growth regulators. As regards the fruits quality expressed in terms of riboflavin, ethrel 250 ppm proved to be promising by registering an increased value of 0.17 mg/100 g over control, while the G10, TG 10 and E150 behaved more or less in a similar trend in influencing the riboflavin content of fruits (Table 1). There was an increase in the ascorbic acid content of the fruit due to growth regulators. However, the effect was not significant. Among the growth regulators, higher concentration of ethrel (250 ppm) recorded the highest ascorbic acid of 264.69 mg/100 g (Table 1). Similar increase in the ascorbic acid content by spraying ethrel was also reported by Das (1975) in ribbed gourd.

Though the number of seeds in spine gourd fruit is an important attribute of fruit quality, yet all the growth regulators did not contribute any significant effect to reduce the number of seeds. However, G10 was found to exert the maximum influence over the control in reducing the number of seeds (Table 1).

**Table 1. Mean performance of the effect of plant growth regulators of quality of spine gourd**

Treatment	TSS (%)	Total sugar (%)	Reducing sugar (%)	Non reducing sugar (%)	Ascorbic acid (mg/100mg)	Riboflavin (mg/100g)	Moisture of the fruit (%)	Number of seeds per fruit
Control	4.70	2.08	1.70	0.38	253.42	0.11	82.80	29.00
G10	5.10	2.42	1.99	0.43	255.60	0.14	85.61	24.66
TG10	4.80	2.17	1.75	0.42	263.94	0.16	88.69	25.00
E150	4.83	2.29	1.76	0.53	264.60	0.15	86.50	25.66
E250	5.03	2.37	1.83	0.54	264.69	0.17	89.69	26.00
C.D. at 0.05	N.S	N.S	N.S	N.S	N.S	N.S	N.S	N.S

Plant growth substances were found to be not significantly effective as compared to control in moisture percent of the fruit. All the concentrations of growth regulators showed higher moisture per cent over control. This may be done to the effect of higher relative humidity on plant material. Plant growth regulators generally enhance the loss of moisture from plant materials in post harvest condition (Das, 1979) which was due to increase enzymatic activities created by plant growth regulators. However, in pre harvest condition, loss of moisture was not enhanced probably due to continuous uptake of moisture by plant in growing condition. Wills et al (1981) reported that increase in the relative humidity prevented moisture loss from okab materials. Therefore, this insignificant variation of moisture percent in the present investigation might be associated with the high relative humidity prevailing in the morning (89.4%) and evening (62.8%) during the experimentation in addition to the continuous uptake of water by the plant.

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