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**Research Note**

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# Effect of growth regulators and certain organic sprays on bunch characters in banana cv. ROBUSTA

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**ABSTRACT :** The investigation aimed at to study the effect of growth regulators and organic sprays on bunch characters of banana variety Robusta. Fourteen different treatments (including control) were imposed in this experiment. The treatment comprised of various combinations of growth regulators (GA 50 ppm and NAA 25 ppm) and organic sprays (vermiwash, cow's urine, coconut water) as well as cultural practices (dehanding one or two apical hands, bunch cover using polythene tube) along with a control (without any treatments). The growth regulators and organic sprays were applied one month after emergence of the bunch. The bunch weight, bunch length, weight of hands, weight of fingers, pulp weight increased while bunch maturity period decreased by the application of the treatment consist of removing one apical hand and spraying 50 ppm GA, one month after bunch emergence. The results also showed that bunch shape index, finger girth increased whereas when the treatment consist of removal of two apical hands and spraying of 50 ppm GA one month after bunch emergence was imposed. The finger length and number of fingers falling in the acceptable range were also improved by application of GA 50 ppm clubbed with one or two apical hands.

**KEY WORDS :** Banana, Growth regulators, Vermiwash, Dehanding, Bunch covers, Cows urine

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Banana is one of the major fruit crop grown in the country. It is very much preferred by marginal and poor farmers. To meet the market demand it is inevitable to increase the production without deterioration in edible qualities. Studies on the use of plant growth regulator studies conducted in banana have shown the immense possibilities for increasing yield and quality without much investment. The plant growth regulators like, GA, NAA, 2,4-D, ethrel, 2, 4, 5-T etc. are useful in banana cultivation for improving yield and quality. The cultivars differ in their response to growth regulators.

The bunch cultural practices involve the use of various combinations of hormonal and nutrient resources as well as cultural operations in order to increase bunch yield and improve finger characters. So, development of a bunch cultural practices will benefit the growers for increasing and sustaining productivity and income. Among the different cultivars of banana, Robusta (*Musa* AAA group) is one of the popular varieties cultivated in the homesteads of Kerala. The variety is assuming importance in commercial cultivation because of it's export potential due to high edible quality. The cultivar is having high yield potential and can withstand drought to a certain extent.The fruit retains the green colour of the rind even when ripe. The average bunch weight ranges from 12 to 18 kg. The fruit is long and large with a thick rind.

A field experiment was conducted during to standardise the bunch cultural practices to optimize bunch characters in banana (*Musa* AAA Robusta). The investigation was undertaken at the Department of Pomology and Floriculture, College of Agriculture, Vellayani, Thiruvananthapuram. The location is situated at $8^0$ 5' North latitude, $77^0$ 1' East longitude and at an altitude of 29 m above the mean sea level. Soil of the experimental site was red loam belonging to 'Vellayani series'. The land was cropped with banana prior to the commencement of the present investigation. Sword suckers of uniform size and age were selected as a planting material. The variety used was Robusta. The experiment consisted of thirteen different treatments *viz*., $T_0$ ( Control) ,$T_1$ (Dehanding of one apical hand), $T_2$ ( Dehanding of two apical hands), $T_3$ (Bunch cover using polythene tube), $T_4$ (Dehanding of one apical hand +

vermiwash spray on the bunch at one month after emergence), $T_5$ (Dehanding of two apical hands + vermiwash spray on the bunch at one month after emergence) ,$T_6$ (Dehanding of one apical hand + cow's urine spray on the bunch at one month after emergence), $T_7$ ( Dehanding of two apical hands + cow's urine spray on the bunch at one month after emergence), $T_8$ (Dehanding of one apical hand + coconut water spray on the bunch at one month after emergence), $T_9$ ( Dehanding of two apical hands+ coconut water spray on the bunch at one month after emergence), $T_{10}$ ( Dehanding of one apical hand + GA 50 ppm spray on the bunch at one month after emergence), $T_{11}$ (Dehanding of two apical hands + GA 50 ppm spray on the bunch at one month after emergence), $T_{12}$ (Dehanding of one apical hand + NAA 25 ppm spray on the bunch at one month after emergence), $T_{13}$ (Dehanding of two apical hands + NAA 25 ppm spray on the bunch at one month after emergence). The design of the experiment was Randomized Block Design (RBD) with two replications. Main items of observations were bunch characters such as-bunch weight, bunch length,weight of hands, bunch shape index and bunch maturity period. The data collected were analyzed by applying the technique of analysis of variance for randomized block design following Panse and Sukhatme (1967).

Results of the present studies revealed that there was significant difference among the various treatments for bunch characters of fruits (Table 1).

**Effect of bunch cultural practices on bunch characters of fruit:**

*Bunch weight:*

The results thus indicated that $T_{10}$ ($T_1$+GA 50 ppm spray) recorded the highest bunch weight followed by $T_{12}$ ($T_1$ + NAA 25 ppm spray) and $T_{11}$ ($T_2$ + GA 50 ppm spray), while $T_0$ (control) recorded the lowest bunch.

*Bunch length:*

The data indicated that $T_{10}$ ($T_1$+GA 50 ppm spray) recorded the highest bunch length followed by$T_{11}$ ($T_2$ + GA 50 ppm spray) and $T_{12}$ ($T_1$ + NAA 25 ppm spray), while bunch length was lowest in $T_0$ (control) followed by $T_1$ (Dehanding – one apical hand) and $T_4$ ($T_1$ + vermiwash spray).

*Weight of hands:*

The treatment $T_{10}$ ($T_1$+GA 50 ppm spray) recorded the highest weight of hands which was followed by $T_{11}$ ($T_2$+GA 50 ppm spray) and $T_{13}$ ($T_2$+NAA 25 ppm spray). The lowest weight of hand was in $T_0$ (control) followed by $T_4$ ($T_1$+ vermiwash spray) and $T_5$ ($T_2$ + vermiwash spray).

*Bunch shape index:*

The results indicated that bunch shape index was highest in $T_1$ (Dehanding-one apical hand) followed by $T_3$ (bunch cover using polythene tube) and $T_{11}$ ($T_2$ + GA 50 ppm spray). Lowest bunch shape index was recorded in$T_{12}$ ($T_1$ + NAA 25 ppm spray) followed by $T_6$ ($T_1$ + cow's urine spray) and $T_5$ ($T_2$ + vermiwash spray) both, and followed by $T_8$ ($T_1$ + coconut water spray).

*Bunch maturity period:*

The results revealed that bunch maturity period was lowest in $T_{10}$ ($T_1$ + GA 50 ppm spray) followed by $T_{11}$ ($T_2$ + GA 50 ppm spray) and $T_3$ (bunch cover using polythene tube), while bunch maturity recorded highest in $T_0$ (control).

Results obtained from the present studies are in

**Table 1 : Effect of bunch cultural practices on bunch characters of banana cv. ROBUSTA**

| Treatments | Bunch weight (kg) | Bunch length (cm) | Weight of hands (kg) | Bunch shape index | Bunch maturity period (days) |
|---|---|---|---|---|---|
| $T_0$ | 14.9 | 55.35 | 1.847 | 0.069 | 93.87 |
| $T_1$ | 16.2 | 62.15 | 2.454 | 0.160 | 91.87 |
| $T_2$ | 18.2 | 77.15 | 2.174 | 0.070 | 91.37 |
| $T_3$ | 21.0 | 83.80 | 2.757 | 0.155 | 88.00 |
| $T_4$ | 18.2 | 74.55 | 2.068 | 0.085 | 90.25 |
| $T_5$ | 21.3 | 85.45 | 2.119 | 0.062 | 90.00 |
| $T_6$ | 18.7 | 76.95 | 2.178 | 0.062 | 90.87 |
| $T_7$ | 19.8 | 79.85 | 2.324 | 0.075 | 90.00 |
| $T_8$ | 18.2 | 85.80 | 2.208 | 0.065 | 91.25 |
| $T_9$ | 17.8 | 74.60 | 2.132 | 0.069 | 89.87 |
| $T_{10}$ | 23.8 | 90.05 | 2.885 | 0.093 | 86.00 |
| $T_{11}$ | 22.4 | 88.95 | 2.877 | 0.138 | 87.00 |
| $T_{12}$ | 23.0 | 88.60 | 2.660 | 0.046 | 89.75 |
| $T_{13}$ | 20.0 | 78.35 | 2.772 | 0.085 | 89.50 |
| S.E.± | 0.42 | 1.30 | 0.094 | 0.008 | 0.75 |
| C.D. (P=0.05 %) | 1.29 | 3.97 | 0.287 | 0.029 | 2.30 |

agreement with the reports of Chellappan (1983) who found that $GA_3$ at 25 ppm increased the bunch weight to the tune of 35.76 per cent over control in banana variety 'Nendran'. Similraly,increase in bunch size in the present studies are in agreement with the reports of Deshmukh and Chakrawar (1980) who observed that pre harvest application of growth regulators increased the size of the bunch in banana cv. Basrai. Experiments in similar lines with banana cv. Rajapuri (Shirgavi *et al*., 2000) revealed improvement in weight of hands by application of GA at the rate of 50 and 100 ppm. Improvement in finger characters from the present studies are in agreement with the reports of Aravindakshan (1981) who recorded increased weight of fingers in Nendran banana due to pre harvest sprays of growth regulators.

The results of the experiment can be summarized that trimming of one or two apical hands and application of GA at the rate of 50 ppm one month after bunch emergence improved bunch characters of fruits

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