

Bunch Trimming Studies in Banana

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ABSTRACT: The present investigation was carried out during the year 2021-22 at Agriculture Research Station, Achalpur university of Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.), India to evaluate the effect of bunch trimming on yield and quality of banana crop. The experiment was conducted in RBD comprises five treatments of retention of hands (6, 7, 8, 9 and 10 hands immediately after opening of last hand) with four replication. Non-significant effects due to different treatment were found in plant height, stem girth and number of leaves in banana. Significantly maximum length (20.50 cm), girth (13.75 cm) and weight of fruits (170.75g) were recorded in retention of six hands per bunch. Whereas, significantly the maximum number of fruits/bunch (151.75), bunch weight (24.13 kg) and yield (107.13 t/ha) were noticed in banana by retention of 10 hands per bunch. Maximum net returns (Rs. 1036716/ha) of export quality of banana fruit and B:C ratio (4.71) were observed in retention of nine hands per bunch followed by eight and seven hands per bunch.

Keywords: Trimming, Bunches, Banana, Retention, Hands.

INTRODUCTION

According to the latest APEDA data, the top five banana exporters states are Maharashtra followed by Kerala, Tamil Nadu, Uttar Pradesh, and West Bengal. For growing good quality of banana farmers are offered good prices by traders. It becomes utmost importance that farmers adopt fruit care practices and grow quality banana. Though this will incur additional expenditure but price obtained will be more to quality produce. For growing export quality a farmer easily obtains 13-15 INR/kg. For good quality produce under domestic market a farmer easily obtains 10 INR/kg. Currently, there is a Geographical Indication (GI) tag for banana produced at Jalgaon and produced banana is called 'Jalgaon Banana'. After receiving GI tag, exports have increased and the price realized by farmers for growing export quality banana (INR 15/kg) is around 50% more as compared to a regular banana grower (INR10/kg) (Anonymous, 2021). Total export of banana was noted 101.31 thousand MT with worth valued at Rs. 34877.39 lakh during the year (Anonymous, 2018).

Nutrient play a significant role in boosting production and promoting quality of fruits. Banana takes up major nutrients in great quantities during peak growth phase and after shooting the rate of nutrient uptake slows down. Nutrients at the shooting stage affects bunch size

and quality of banana. Basal hands of a banana bunch are often larger in size than the terminal hands. These are usually discarded or sold as third graded fruits in the market. Thus, at least two or three hands in a bunch fail to reach the fruit quality standards required for the specialized markets, thereby reducing income of the banana producers. Dehanding consists of removing two or three terminal hands of each bunch and is a routine practice in banana production system for export. By removing the terminal hands, it may be expected that dry matter would be redistributed among the remaining hands of the bunch thus helping to increase the size of the remaining hands (Rodriguez *et al.*, 1988). Keeping the above aspects in view the present investigation was carried out.

MATERIAL AND METHODS

The experiment was conducted at Agriculture Research Station, Achalpur under Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra. Three hundred and twenty (320) tissue culture plants of cv. Grand Nain spaced at 1.5 m × 1.5 m were selected for bunch trimming with four replications. The experiment consisted of different intensities of hands retention *viz.* 6, 7, 8, 9 and 10 *viz.*, T₁, T₂, T₃, T₄ and T₅, respectively. Allocation of bunch trimming treatments were done on the bunches immediately after opening of hand. The

floral remnants and male buds were removed. Observations of plant height, stem girth, number of leaves, number of fruits / bunch, fruit weight (g), length of fruit (cm), girth of fruit (cm), bunch weight (kg), fruit yield (t/ha), pulp weight, peel weight and pulp to peel ratio were recorded. For statistical analysis, Randomized Block Design was used (Panse and Sukatme 1967).

RESULTS AND DISCUSSION

Growth Parameters: The observation on plant height, girth of stem and number of leaves were presented in Table 1 and obtained all non significant effect due to different treatments.

Yield Parameters and Yield: The observation on number of fruits per bunch, fruit weight, length of fruit, girth of fruit, bunch weight and yield/ha were recorded and presented in Table 1.

The different bunch trimming treatment in banana had showed significant differences in respect of length of fruit, girth of fruit, fruits per bunch, fruit weight, bunch weight and yield per hectare.

Significantly maximum number of fruits per bunch (151.75), maximum bunch weight (24.13 kg) and yield (107.13t/ha) were noticed in treatment where, 10 hands per bunch were retained. It was followed by retention of

9, 8, 7 and 6 hands. This result is supported by the findings of Irizarry *et al.* (1992) who reported that three hands removal reduced total yield. Mandal and Sharma (2000) also reported that removal of 1, 2 and 3 lower hands reduced yield by 9, 12.7 and 17.4%, respectively in cultivar Alpan.

Significantly maximum fruit weight (170.75 g), length of fruit (20.50 cm), girth of fruit (13.75 cm) and pulp weight (116.00 g) were noticed in retention of 6 hands per bunch followed by retention of 7, 8, 9 and 10 hands. Increase in fruit weight due to dehanding might be due to higher rate of fruit filling because of reduction in sink size (Jullien *et al.*, 2001). Arcila *et al.* (2002) found that longer size fruit was attained with hand tear off at 20 days after flowering and leaving 4-6 hands per bunch in banana hybrid FHIA-21.

Economics of bunch trimming: Economics presented in Table 2 indicated that, retention of nine hands per bunch recorded highest yield of export quality (100.98 t/ha), net returns (Rs. 1036716/-) and B:C ratio (4.71) which was followed by retention of eight hands. Lowest yield of export quality, net return and B:C ratio (85.53 t/ha, Rs. 835866 and 4.03) were recorded in retention of six hands. Similar results were reported by Digal (2016).

Table 1: Effect of bunch trimming on growth, fruit yield and quality of banana.

Sr. No.	Treatments	Plant height (cm)	Stem girth (cm)	Number of leaves	No. of fruits/bunch	Fruit weight (g)	Length of fruit (cm)	Girth of fruit (cm)	Bunch weight (kg)	Fruit Yield t/ha	Pulp weight (g)	Peel weight (g)	Pulp to peel ratio
1.	Retention of 6 Hands	186.50	60.75	24.25	112.75	170.75	20.50	13.75	19.26	85.53	116.00	39.75	3.01
2.	Retention of 7 Hands	186.25	59.00	23.00	124.00	169.25	19.75	12.80	20.97	93.12	111.25	42.00	2.67
3.	Retention of 8 Hands	184.50	60.00	25.00	134.25	164.50	19.25	12.66	22.09	98.10	107.50	40.00	2.72
4.	Retention of 9 Hands	183.50	61.75	23.75	139.75	162.75	18.75	12.28	22.74	100.98	105.50	39.25	2.72
5.	Retention of 10 Hands*	185.50	60.75	23.75	151.75	159.00	18.25	12.00	24.13	107.13	101.50	38.50	2.67
	SE m ±	0.74	1.23	0.44	2.03	2.44	0.42	0.30	0.49	2.16	1.38	2.48	0.20
	C.D. 5%	NS	NS	NS	6.24	7.52	1.30	0.92	1.50	6.66	4.24	NS	NS

Table 2: Economics of bunch trimming in banana for export purpose cv. Grand Naine.

Sr. No.	Treatments	Yield (t/ha)	Gross Income (Rs/ha)	Cultivation Cost (Rs/ha)	Net return (Rs/ha)	B : C Ratio
1.	Retention of 6 Hands	85.53	1111890	276024	835866	4.03
2.	Retention of 7 Hands	93.12	1210560	276024	934536	4.39
3.	Retention of 8 Hands	98.10	1275300	276024	999276	4.62
4.	Retention of 9 Hands	100.98	1312740	276024	1036716	4.71
5.	Retention of 10 Hands*	107.13	728484	276024	452460	2.64

Banana fruit selling rate for export Rs 13000 per ton.

Banana fruit selling rate for local market Rs 6800 per ton

* Retention of 10 Hands is not eligible for export

CONCLUSIONS

Maximum net return and B:C ratio observed in retention of nine hands per bunch followed by eight and seven hands per bunch. Considering the yield, quality and economics of banana, retention of nine hands per bunch is recommended for export purpose of banana.

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Conflict of Interest. None.

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