



Studies on ratooning in *Musa spp.* cultivar 'Grandnaine'

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ABSTRACT

A field experiment in banana was carried out at the Banana Research Station, Jalgaon during 2009-2013. The objective of the study was to determine the proper time of keeping follower as a ratoon crop in plant crop system that would maximize the yield of commercially grown banana cv. Grand Naine. The treatments applied were keeping followers after 7, 8, 9, 10, 11, 12 and 13 months after planting of plant crop. The result indicated that, the treatment of keeping follower 10 months after planting of plant crop was found better in respect to growth and yield of banana and was recommended for cultivation of Grand Naine banana under plant crop + 1st ratoon crop system in Maharashtra state.

Key words: Banana plant crop, Follower, Ratoon crop.

Banana is the important and highly remunerative fruit crop grown in tropical and subtropical regions of the world. In India it is grown on 0.79 million ha areas with an annual production of about 27.57 million tonnes and contribute 24% share in global production (Singh, 2007)

Banana is traditionally propagated through the suckers produced from the auxiliary buds of underground rhizomes once the plant crop attains maturation. The planting of banana through tissue cultured plantlets on commercial scale was started from 1988 in Maharashtra. However, due to increased cost of tillage operations, labour and tissue culture plants, the banana growers are now gradually diverting towards taking one ratoon crop. In doing so, the growers are keeping the followers randomly at any stage of plant crop without knowing the effect of follower on the growth and yield of plant crop.

Keeping follower late in 'Robusta has been found to be more beneficial as reported by Nambiar *et al* (1979). Lichtenberg *et al* (1986) reported that selecting sucker for ratooning in between 5 to 10 months after planting of plant crop was found beneficial. However, no such information has been there for banana cultivators under Maharashtra conditions. With a view to study the proper time of sucker selection for ratooning in a tissue cultured banana plantation under Maharashtra conditions the present study was carried out between 2009-2013.

The present investigation was carried out at Banana Research Station, Jalgaon (M.S.) during 2009-13. The seven

treatments were replicated three times. The planting was done at 1.5x1.5m, and RDF 10 kg FYM +200:40:200 gm NPK/plant was applied. All plants were given uniform cultural practices. The treatment details as under:

Treatment details:

- T₁: Keeping follower at 7th month after planting
- T₂: Keeping follower at 8th month after planting
- T₃: Keeping follower at 9th month after planting
- T₄: Keeping follower at 10th month after planting
- T₅: Keeping follower at 11th month after planting
- T₆: Keeping follower at 12th month after planting
- T₇: Keeping follower at 13th month after planting

Under the growth parameters studied, significantly maximum pseudostem girth (76.8 cm) was recorded by the treatment keeping follower 10 MAP over rest of the treatments in ratoon crop (Table 1). Similar findings were reported by Blomm *et al.* (2008). However, significantly the least days for flowering (223 days) and harvesting (326 days) was recorded in the treatment keeping follower 13 MAP in ratoon crop (Table 1). These results are in conformity with the one found by Robinson and Nel (1986) who determined that there was no cumulative cycle time or yield advantage to be gained from early selection (5 MAP) compared with late selection (10 MAP).

Under yield parameters studied significantly highest number of hands (9.3) per bunch, maximum number of fingers (168) and highest bunch weight (21.0 kg) were recorded in the treatment keeping follower 10 MAP than rest of the treatments in ratoon crop (Table 2). These results

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TABLE 1 : Plant growth and duration of banana as influenced by ratooning treatments (Pooled mean)

Treat ments	Pseudostem (cm)				Days Required			
	Height		Girth		Flowering		Harvesting	
	PC	RC	PC	RC	PC	RC	PC	RC
T1	207.7	234.5	65.1	75.4	244	274	356	382
T2	206.6	240.0	64.7	75.8	242	265	352	373
T3	206.4	234.2	65.0	75.2	238	262	352	370
T4	207.0	227.9	64.9	76.8	236	249	349	355
T5	206.1	228.0	64.7	71.5	234	235	346	341
T6	207.3	222.4	65.1	70.5	233	227	345	332
T7	205.6	227.6	64.7	69.1	231	223	341	326
SE+	1.15	7.06	0.61	0.87	1.01	4.79	2.57	5.20
CD at 5%	NS	NS	NS	2.57	2.98	14.15	7.60	15.38

PC:Plant Crop , RC: Ratoon Crop

TABLE 2 : Yield attributes of banana as influenced by ratooning treatments (Pooled mean)

Treat ments	Per bunch numbers		Bunch weight (Kg)		Finger size (cm)		Yield mtha (Plant crop + Ratoon crop)		B:C ratio			
	Hands	Fingers	Length		Girth							
	PC	RC	PC	RC	PC	RC	PC	RC	PC	RC		
T1	8.7	8.8	150	157	19.6	18.7	22.1	21.2	12.9	11.7	170.5	2.41
T2	8.8	9.0	148	159	20.1	19.5	22.3	21.5	13.1	11.8	176.0	2.50
T3	8.7	9.0	147	163	20.3	19.9	22.6	21.5	13.3	12.1	178.6	2.53
T4	8.7	9.3	149	168	20.8	21.0	22.9	22.2	13.3	12.3	186.0	2.62
T5	8.8	8.8	150	160	20.5	19.4	22.9	21.4	13.4	11.9	177.7	2.50
T6	8.7	8.8	153	158	20.6	18.8	22.9	21.1	13.5	11.8	175.3	2.45
T7	8.4	8.6	151	154	20.2	18.4	23.1	21.0	13.6	11.6	171.6	2.41
SE+	0.03	0.10	1.08	2.58	0.35	0.33	0.11	0.11	0.09	0.05	1.11	2.02
CD at 5%	0.09	0.31	3.20	7.64	NS	0.98	0.33	0.33	0.27	0.15	3.29	2.05

PC: Plant Crop, RC: Ratoon Crop

are on similar lines as reported by Naik *et al* (1949) when one follower was left in the 9 MAP for second crop. This may be due to uptake of required nutrients by the developing sucker as at this stage, the plant crop was at bunch maturing phase when there is no need of further uptake of any nutrients from soil.

Similar trend of results were found when yields were calculated per hectare (93.4 mt/ha) than rest of the treatments (Table 2). This result was in agreement with Nambiar *et al*

(1979) who reported higher yield with late selection of the follower.

The benefit cost ratio (B:C ratio) of 2.62 with sustainable value index of 0.99 was recorded by treatment keeping follower 10 MAP.

The experiment on ratooning studies concluded that for getting higher growth, yield, quality and B:C ratio from both plant and ratoon crop, the follower at 10 MAP of plant crop be kept.

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