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FOLLOWER TIMING AND NUTRIENT REQUIREMENT OF RATOON CROP OF BANANA CV. *MUSA* (AAB) 'MYSORE' (PALAYANKODAN)

The growth and development in a banana mat may be limited due to intra-mat and inter-mat competition, especially in situations of low soil fertility and high plant populations. The intra-mat competition for photosynthates among the mother plant, followers and fruits acting as competing sinks is of greater importance in ratoon crops. Earlier studies showed that regular pruning and maintaining soil fertility "minimised the competitions and produced stable yields in successive generations.

The present studies were conducted at the Banana Research Station, Kannara during 1988-92 to find out the optimum time of retaining the suckers for ratooning and to work out the fertilizer requirement of followers in the cultivar *Musa* (AAB) 'Mysore'. The soil of the experimental area was sandy loam with a soil pH of 5.6, organic carbon 0.47%, available P 40 kg ha^{-1} and available K 415 kg ha^{-1}. The experiment was laid out in split plot design with three main plot treatments and five sub-plot treatments, replicated thrice. The main plot treatments consisted of retaining one follower per mat before flowering, around flowering and after harvest of mother plant (T_1-T_3). The sub-plot treatments included five fertilizer levels: 50%, 100%, 150% and 200% of the recommended dose of fertilizers (L_1 to L_4) and the zero control (L_5). The recommended dose of fertilizers was 100 g N, 200 g P_2O_5 and 400 g K_2O per plant and was applied in two equal split doses during vegetative growing period. The unwanted suckers were pruned periodically by chemical treatment and the crop was irrigated during summer months. The bunch characters of first ratoon crop were pooled for two seasons and compared by the method described by Calinski *et al.* (1985).

The bunch weight, number of hands and number of fingers were not affected by the time of retaining the suckers for ratooning (Table 1). The bunch weights in different treatments were on par and it indicated that the followers could be retained at any time of growth and development in mother plant.

Table 1. Bunch weight and bunch characters as influenced by treatments*

Treatment	Bunch weight** (kg)	No. of hands	No. of fingers
Timing of followers			
T1	12.20a	9.75a	154.00a
T2	13.14a	10.20a	158.50a
T3	12.39a	9.34a	155.00a
CV (%)	6.64	17.73	20.19
Fertilizer levels			
L1	11.91 (2.46)d	9.00b	159.14h
L2	12.91 (2.54)c	10.17b	160.28b
L3	13.29 (2.58)c	10.00b	158.15b
L4	14.41 (2.66)b	10.55b	166.17b
L5	10.37 (2.33)e	9.09c	I36.05c
CV (%)	3.64	10.98	18.64

*Means followed by the same letter are not **significantly** different at 5% level using Calinski's cluster analysis
**Bunch weights given in parentheses are transformed values

Probably the followers appearing at any time develop normally under optimum plant population and soil fertility. Ustimenko-Bakumovsky (1983) reported that retaining one follower around flowering and another during fruit ripening period was the most frequent desuckering practice followed in banana.

The fertilizer treatments significantly influenced the bunch weight and other bunch characters. Applying 200% recommended dose of fertilizers (L_4) recorded maximum bunch weight, which was 39% above the yield in control (L_5). The bunch weight increased along the increase in fertilizer levels from zero to 200% and the relationship between yield and fertilizer was linear within the range. It indicated that the nutrient requirement of ratoon crop was higher. Probably the plant population in ratoon crop was large (2204 plants per ha) and it accounted for the high removal of nutrients from the soil. Stover *et al.* (1987) reported that competition for nutrients, moisture and light was intensified in ratoon crop when plant population was

Table 2. Economic analysis of fertilising ratoon crop of banana, Rs ha^{-1}

Treatment	Calculated yield, kg ha^{1}	Gross income Rs ha^{1}	Cost of cultivation* Rs ha^{1}	Net profit ratio	Cost benefit ratio	Marginal benefit cost ratio
50% NPK	26250	78750	25230	53520	3.12	3.18
100% NPK	28454	85362	30144	55218	2.83	2.41
150% NPK	29291	87873	35058	52815	2.51	1.85
200% NPK	31760	95280	39972	55308	2.38	1.77
No NPK	22855	57138	18426	38712	3.10	--

*Variable costs

Rate: Fruit grade-1 Rs 3 per kg; Fruit grade-2 Rs 2.5 per kg; Wages : Rs 63 per working day

increased. The economic parameters indicated that 50% of the recommended dose of fertilizers (T1) was optimum with respect of net profit, cost benefit ratio and marginal benefit cost ratio due to fertilizers (Table 2). Earlier studies at Kannara showed that when two followers per mat were retained, 100% of the recommended dose was optimum for the first ratoon crop (Anon., 1988). The number of hands and the number of fingers also showed similar trends as bunch weight and were significantly higher in fertilizer treated plots. There was no interaction between timing of followers and fertilizer levels.

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REFERENCES

Anonymous, 1988. *Annual Research Report.* Banana Research Station, Kannara, Trichur

Calinski, T. and Corsten, L.C.A. 1985. Clustering means in Anova by simultaneous testing. *J. Biometrics* 41 : 39-48

Stover, R.H. and Simmonds, N.W. 1987. *Banana.* Longman scientific and Technical, England, p. 58-59

Ustimenko-Bakumovsky, G.V. 1983. *Plant Growing in the Tropics and Subtropics.* Mir Publishers, Moscow, p. 217

CONTRIBUTION OF TECHNOLOGIES FOR RAINFED SORGHUM

Sorghum is an important food and forage crop of dryland farmers. To study the production technology contribution towards sorghum yield, an experiment was conducted at the Tamil Nadu Agricultural University during north east monsoon season during 1987-88. Twelve production technologies were taken up for the study. They were: off-season tillage (summer ploughing), ploughing once with country plough, compartmental bunding (8 m x 5 m), improved variety (Co 26), seed hardening (with 2% potassium dihydrogen phosphate), seed pelleting (with Chlorphyriphos @ 10 ml per kg of seed), seed inoculation with azospirillum and phosphobacterin, seed treatment with jalashakti (polymer @ 20 g per kg of seed), pre-monsoon sowing (15 days prior to normal sowing i.e., September 17th), recommended dose of fertilizers, (40:20 kg NP ha^{-1} as basal), mulching with coir pith @ 20 t ha^{-1} soon after **germination,** intercropping with cowpea in paired rows (60/30 x 15 cm) and one hand-weeding at 20 days after sowing.

All the twelve technologies were included in one treatment (improved technologies combination). By excluding each one of the twelve technologies from the combination, twelve more treatments were formulated and an absolute control was also maintained without these technologies. These 14 treatments were replicated thrice in a randomised block design. The soil of the experimental site was **clay** loam. Rainfall received during crop growth period was 470.6 mm.

Integration of different production technologies increased the yield of sorghum over farmers' **method (Table 1). Among the different production** technologies tested, fertilizer application, weed control, improved seed, off-season tillage, pre-monsoon sowing, compartmental bunding, coir pith mulching and seed hardening contributed more towards sorghum yield. This was attributed to the importance of these technologies in the growth and development of the crop under dry fanning. The technology combination which lacks any one of the above mentioned technologies recorded lower sorghum yield (Table 1). Contribution of intercropping, seed pelleting, jalashakti and bio-fertilizer was less.

Table 1. Effect of production technologies on sorghum grain yield

Treatments	Grain yield (kg ha^{-1})
1 Absolute control	110
2 All the twelve technologies	692
3 All technologies excluding weed control	337
4 All technologies excluding intercropping	644
5 All technologies excluding mulching	371
6 All technologies excluding fertilizer	126
7 All technologies excluding pre-monsoon sowing	359
8 All technologies excluding jalashakti	665
9 All technologies excluding bio-fertilizer	633
10 All technologies excluding seed pelleting	629
11 All technologies excluding seed hardening	405
12 All technologies excluding improved variety	354
13 All technologies excluding compartmental bunding	370
14 All technologies excluding summer ploughing	358
CD (0.05)	90

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