

# Evaluation of Banana Varieties for Intercropping in Arecanut Gardens

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## Abstract

*Field experiments were conducted at the Central Plantation Crops Research Institute (CPCRI), Research Centre, Kannara, during the period 1975 to 1981 to identify banana varieties suitable for intercropping in arecanut gardens and to study the effects of intercropping with banana on the yield of arecanut palms. Among the banana varieties tried, 'Robusta', 'Mysore Poovan', 'Red banana' and 'Karpuravally' were found suitable for intercropping in arecanut gardens. The variety 'Red banana' gave maximum net returns under intercropping in arecanut gardens. There was no adverse effect on the yield of arecanut palms due to intercropping with banana.*

## Introduction

Banana is usually grown as a nurse crop in arecanut gardens during the initial three or four years with the main objective of providing shade to the growing arecanut seedlings. The advantages of growing banana as an intercrop in arecanut gardens were reported by Khader and Antony (1968), Bhat and Khader (1970) and Bhandary (1974). The effects of intercropping with banana for different durations and intensities in arecanut gardens were studied at CPCRI, Regional Station, Vittal (Bhat, 1978). But no information on the suitability of different banana varieties / cultivars for intercropping in

arecanut gardens was available. So field experiments were taken up at CPCRI Research Centre, Kannara, to evaluate some banana varieties for intercropping in arecanut garden and to study the effect of intercropping with them on the productivity of arecanut palms.

## Materials and Methods

The field experiment was conducted in a seventeen year old arecanut garden having lateritic soil overlaid with river alluvium. Arecanut palms were planted in the garden with a spacing of 2.7×2.7m. The experiment was laid out in randomised block design with eight treatments and five replications. The treatments consisted of intercropping with seven banana varieties and a control plot with no banana. The banana varieties tried during 1975-'78 were 'Peyan', 'Karpuravally', 'Dwarf Cavendish', 'Red banana', 'Mysore poovan', 'Kunnan' and 'Nendran'. Since the quality

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of the 'Pevan' fruits was not acceptable to the market and the yield of 'Kunnan' was very poor, these varieties were replaced with 'Robusta' and 'Poovan' respectively and the experiment was repeated during the period 1978 - '81 in the same area.

The banana suckers were planted in the middle of arecanut rows adopting a spacing of 5.4x2.7m. In each plot there were sixteen arecanut palms and eight banana plants. The recommended package of practices for both arecanut palms and banana were carried out. During summer months arecanut palms and banana plants were irrigated at weekly intervals. In the case of banana the weight of bunches from the plant crop and the following two ratoon crops were recorded. Observation on the number and fresh weight of the nuts were recorded in the case of arecanut palms and the data were statistically analysed.

## Results and Discussion

### Performance of banana varieties:

The data on mean yield of banana varieties grown as intercrop in arecanut

garden during 1975 - '78 and 1978 - '81 are provided in Table 1. The variety 'Mysore Poovan' gave the highest yield with a mean bunch weight of 15.3 kg / plant during 1975 - '78. During the period 1978 - '81 also the yield from 'Mysore Poovan' was the highest with a mean bunch weight of 12.3 kg/plant. The varieties Karpuravally and Robusta ranked as second and third respectively in mean bunch yield. The yields from 'Kunnan', 'Poovan' and 'Nendran' were not satisfactory. The performance of Dwarf Cavendish was very poor due to severe incidence of 'Kokkan' disease. The variety Karpuravally was free from incidence of bunchy top disease. In the case of other varieties also the incidence of bunchy top was negligible.

### Economics of intercropping with different banana varieties:

The average yield of banana varieties grown during 1978 - '81, cost of cultivation, value of the bunches and the net profit per hectare due to intercropping with banana in arecanut garden are

Table 1. Yield of banana varieties as intercrop in arecanut garden  
Weight of bunch / plant (kg)

	1975 - 1978				1978 - 1981			
	Plant crop	Ratoon			Plant crop	Ratoon		
		I	II	Mean		I	II	Mean
Peyan / Robusta*	10.4	9.9	9.8	10.0	14.2	13.5	8.4	12.0
Karpuravally	14.6	13.9	13.5	14.0	11.3	12.0	10.0	11.1
Dwarf cavendish	8.8	8.3	7.9	8.3	10.7	9.0	7.0	8.9
Red banana	9.0	9.3	9.4	9.2	11.8	10.5	8.0	10.1
Mysore Poovan	15.7	15.2	14.9	15.3	10.1	14.3	12.5	12.3
Kunnan / Poovan*	4.3	4.1	4.2	4.2	7.0	6.0	5.3	6.1
Nendran	6.4	5.2	5.5	5.7	6.0	5.4	4.1	5.2

\*Peyan, Kunnan - 1975 to 1978

Robusta, Poovan - 1978 to 1981

presented in Table 2. Intercropping with all the banana varieties tried except Poovan was profitable. The variety 'Red banana' though ranked as fourth in per hectare yield gave maximum net profit/ha due to the higher market rate obtained for the produce. Net returns to the tune of Rs. 5190 / ha could be obtained from intercropping with 'Red banana' in arecanut gardens. This is in addition to the returns obtained from the main crop arecanut. 'Red banana' which is commonly known as 'Kappapazham' is a well appreciated dessert fruit, especially in Southern Kerala where the cost ranges from Rs. 4 to Rs. 5 per kg. Though there is not much difference in per hectare yield between the varieties 'Robusta' and 'Mysore Poovan' the former gave higher net profit. Next to Mysore

Poovan, the bunchy top disease tolerant variety 'Karpuravally' stood with a net profit of Rs. 2166/ha.

**Effect of intercropping with banana on the productivity of arecanut palms:**

The data on mean number of nuts/palm and weight of fresh nuts/palm for the period 1976 - '77 to 1979 - '80 are given in Table 3. The above yield attributes of arecanut palms were not significantly influenced by intercropping with banana. This finding is in confirmation with the earlier reports by Roy (1974), Nagaraj (1974), and Bhat (1978). The different banana varieties grown also had no adverse effect on the productivity of arecanut palms.

**Table 2. Economics of intercropping with banana varieties in arecanut garden**

Banana varieties	Cost of cultivation Rs. / ha	Yield of banana bunches (kg / ha)	Market rate Rs. / kg	Gross value Rs. / ha	Net profit from the intercrop Rs. / ha
Robusta	3900	7200	1.00	7200	3300
Karpuravally	3828	6660	0.90	5994	2166
Dwarf cavendish	3900	5340	1.00	5340	1440
Red banana	3900	6060	1.50	9090	5190
Mysore Poovan	3766	7380	0.90	6642	2876
Poovan	3828	3660	1.00	3660	-168
Nendran	3900	3096	1.50	4644	744

**Table 3. Effect of intercropping with banana varieties on the yield of arecanut palms**

Treatments	Yield of arecanut palm (mean of 4 years)	
	No. of Nuts / palm	Fresh weight of nuts kg / palm
Arecanut alone (Control)	375	11.2
Peyan / Robusta	387	11.6
Karpuravally	403	12.7
Dwarf cavendish	379	11.3
Red banana	378	11.7
Mysore Poovan	307	9.1
Kunnan / Poovan	317	9.6
Nendran	363	11.1
CD	NS	NS

NS = Not significant

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