

IRRIGATION AND MULCHING IN NENDRAN BANANA

Nendran (French plantain AAB) is an important commercial variety of banana cultivated under irrigated conditions. The crop occupies an area of 0.19 lakh hectares in Kerala with an annual production of 2.50 lakh tonnes. It is planted in October-November and has a duration of 10 to 11 months. The prevalence of dry weather for a period of about four to five months after sprouting of the suckers necessitates irrigation during this period. Precise information on the optimum irrigation schedule for maximum yield in Nendran banana is lacking. Information on the effect of organic mulch on the growth, yield and water use by irrigated Nendran will be of great value to the growers. The present investigation was therefore undertaken to find out the response of Nendran banana to different levels of irrigation with and without mulching.

The experiment was conducted for two consecutive seasons in 1980-81 and 1981-82 at the Agronomic Research Station, Chalakudy. The soil type of the experimental field was laterite and was sandy loam in texture with field capacity 14.6%, permanent wilting point 7.2%, bulk density 1.47 g/cc and pH 6.2. The status of organic carbon and available phosphorus in the soil was medium and that of available potassium was low. The weather conditions during the two seasons were quite normal and more or less identical (Table 1). The ground water table of the experimental site was always below 3 m from ground surface. The eight treatments comprising the combinations of four levels of irrigation (irrigation at IW/CPE ratio 0.6, 0.9 and 1.2 with 50 mm depth of water and alternate day irrigation with 10 mm depth of water) and two levels of mulching (without and with mulch) were

laid out in RBD with three replications. Paddy straw @ 3.5 kg per plant was applied as mulch just before the commencement of irrigation. Three to four months old sword suckers of uniform corm size were planted at a spacing of 2 m x 2 m and followed the recommended package of practices. Irrigation was applied to the crop from December to May during both the seasons according to treatments (Table 2).

The effect due to irrigation on mean bunch weight was significant (Table 3). Application of 10 mm of water (40 litres per plant) on alternate days significantly out-yielded all other treatments in both the years and pooled mean. Irrigations with 50 mm water (200 litres per plant) at wider intervals (0.6, 0.9 and 1.2 IW/CPE ratios) were on par with each other and inferior to alternate day irrigation. Irrigation treatments also significantly influenced the yield attributing characters viz., number of hands and number of fingers per bunch in both the years and the mean weight of a finger in 1981-82 (Table 3). The trend in these characters was almost similar to that of the bunch weight and the pronounced effect of alternate day irrigation on bunch weight can be attributed to the influence of that treatment on the yield attributes. Mulching or its interaction with irrigation failed to influence bunch weight as well as bunch and fruit characters significantly. The results clearly indicate the marked influence of frequent shallow irrigation (alternate day irrigation with 10 mm of water) on growth and yield of banana as compared to irrigation at wider intervals. The total quantity of water applied in alternate day irrigation was almost equal to the total quantity applied in irrigation scheduled at 1.2 IW/CPE ratio.

Table 4. Mean yield and economics of banana as influenced by treatments

Treatments	Total cost of production (Rs/ha)	Mean yield (kg/ha)	Income (Rs/ha)		Net return
			Gross	Net	
Irrigation schedule (IW/CPE ratio)					
0.6	38040	21975	65925	27885	0.73
0.9	38490	22525	67575	29085	0.76
1.2	39300	23375	70125	30825	0.78
Alternate day	42540	28700	86100	43560	1.02
Mulching					
Without mulch	39590	23800	71400	31810	0.80
With mulch	42215	24750	74250	32035	0.76

The results corroborate with the findings of Bredell (1970) and Trochoulis and Benson (1972) in other cultivars wherein the fruit yield, numbers of hands and fruits per bunch and fruit weight were decreased with increase in soil dryness. Shmueli (1953) reported that almost 65% of water was taken up from the first 30 cm of soil and only 5% used from below 60 cm. Root system of banana is a poor drawer of water and must therefore receive water at regular intervals (Champion, 1963). Frequent shallow irrigation (alternate day) obviously resulted in better growth and yield due to the lower moisture tension in the top soil from where most of the

soil moisture and nutrients are absorbed by the plant.

Comparative economics of different treatments (Table 4) indicated that alternate day irrigation resulted in maximum net income and net return per rupee invested. Mulching did not result in any appreciable increase in net income but caused a slight reduction in the net return per rupee invested.

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Agronomic Research Station
Chalakydy 680 307, India

G.R. Pillai
Kuruvilla Varughese
Jose Mathew
G. Santhakumari

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