

Studies on the Effect of Mulches on Coconut Seedling Establishment

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Coconut, an important commercial crop of the coastal Karnataka, is grown in a wide range of agroclimatic conditions. Though favoured by an annual precipitation exceeding 3000mm, prolonged drought prevails here from November to May, when there is much soil moisture depletion. Even under such situations coconut cultivation is being attempted in the coastal belt with only protective irrigation and/or by adopting dry orchard techniques. However, this results in heavy mortality or poor growth of the seedlings. Investigations carried out in this regard in Kerala have revealed that in the first three years after planting irrigation at the rate of 45 litres of water per plant once in four days is optimum for seedling growth (Nelliath, 1968). Further studies conducted at the Central Plantation Crops Research Institute, Kasaragod, recommended placing three or four porous mud pots around the seedlings and periodically filling them with water, as an alternate

measure. The Research Station has also recommended the use of different kinds of mulches including coir pith to conserve moisture. Therefore, the present investigation was undertaken to evaluate the effect of different types of mulches and methods of watering to minimise the use of water for good survival of coconut seedlings.

A field experiment was laid out at the Regional Research Station, Brahmavar, Dakshina Kannada District, Karnataka, to evaluate the different kinds of mulches and to economise water during establishment of coconut seedlings. Uniform one year old coconut seedlings (var. West Coast Tall) obtained from the Agricultural Research Station, Ullal were planted during August 1985 giving a spacing of 9 m both ways. Later in November 1985, different types of mulches were used to cover the soil surface around the collar region of the seedlings. Coir pith and paddy husk mulches were provided (10

cm thick). Simultaneously, other treatments were also adopted. The details of these are given in Table 1. Before the receipt of pre-monsoon showers in May 1986, soil samples were drawn and moisture content estimated from the different treatments. In June 1986, the survival of seedlings was worked out. The experiment was laid out in randomised complete Block Design with three replications and ten plants per treatment.

The data on the survival of coconut seedlings, ten months after planting in the main field are presented in the Table 1. The study revealed significant differences in the survival of the seedlings. Among the treatments highest survival was recorded in treatment with coir pith mulch (86.7%), closely followed by that with paddy husk mulch (83.3%). It was least in 600 gauge black polythene cover which is even lesser than the control. The higher mortality in treatments

with polythene mulches is probably due to temperature build-up in the soil. The beneficial effect of coir pith as a mulch in conserving soil moisture has been reported by several workers (Shanthappa and Viswanath, 1972; Shanthamallaiiah, Murugendra Kumar and Krishna Manohar, 1978). The maximum percentage of soil moisture was in treatment receiving coir pith mulch which significantly differed

from others except paddy husk mulch. All the mulch treatments showed higher percentage of soil moisture than in control. The surface soil moisture content in pot watered treatments was not more than in organic mulch and earthen pitcher.

The effectiveness of mulching in maintaining the soil moisture was earlier brought out by similar studies conducted on cardamom in Kerala (Zachariah, 1978). The

good survival of coconut seedlings under coir pith mulch can be attributed to the higher soil moisture content and low soil temperature which would have helped in better growth of the root system.

The beneficial effects of providing mulch (coir pith or paddy husk) in the better establishment of coconut seedlings and also in the retention of soil moisture during summer are markedly noticed from the study.

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TABLE 1

EFFECT OF MULCHES ON THE SURVIVAL OF COCONUT SEEDLINGS AND ON SOIL MOISTURE

Treatments	Survival (out of 30)		Soil moisture (%)
	No.	%	
Mulch — Coir pith 10 cm thick	26	86.7	4.41
„ — paddy husk 10 cm thick	25	83.3	3.87
„ — Black polythene 400 gauge	17	56.7	2.37
„ — -do- 600 gauge	15	50.0	2.57
Earthen pitcher — 10 l/week	23	76.7	3.75
Pot Watering — 10 l/week	21	70.0	2.81
Control (no watering)	16	53.0	2.18
'F' Test	★		★
SEm \pm	0.83		0.20
CD (0.05)	2.55		0.62
CV %	21.08		11.08