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Sunnhemp - an efficient intercrop for coconut nursery

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Abstract: Field experiment conducted at coconut research station, Veppankulam during 1998-2000 revealed that raising sunnhemp in nursery three times (each harvested at flowering stage) followed by one hand weeding at 6th month was found to be the best management practice as it appreciably controlled the weed infestation and produced more quality seedlings (78.9%) besides yielding green manure for manuring the adult coconut palms.

Key words : Coconut, Sunnhemp, Weed, Seedlings.

Introduction

Frequent irrigation, partial shade, and high soil fertility in coconut nursery cause extensive occurrence and infestation of weeds. Generally the weed problem in the nursery may not have any detrimental effect on seed nut germination, but it adversely affect the seedling growth, resulting in poor outturn of quality seedlings. During the nursery period of 10 months, 5-6 hand weedings are essentially required which involves labourers and investment. With an objective to find out the suitable weed management practice for obtaining more quality seedling with less cost of production, a field trial was conducted at Coconut Research Station, Veppankulam during 1998-2000.

Material and Methods

The experimental nursery was raised under 3 year old coconut garden in sandy loam soil and the test variety was East Coast Tall. The treatments were T₁ - control (no weeding), T₂ - hand weeding two times (3rd and 6th month) T₃ - hand weeding 3 times (3, 5 and 6th month) T₄ - hand weeding five times (1.5, 4.5, 6, 6.5 month), T₅ - Sunnhemp (*Crotalaria nucea*) raising 3 times, T₆ - sunnhemp 3 times one hand weeding (6th month) and T₇ - coirpith one hand weeding (3rd month). Sunnhemp seeds were sown in one row between two rows of seed nut. The sunnhemp plants at flowering stage were cut at surface level and again the sunnhemp seeds were sown. The coir pith was applied immediately after seed nut sowing at 2 cm thickness. This trial was laid out in 3D replicated thrice. The plot size was 120 plants per treatment per replication and the nuts were planted at 30 x 30 cm spacing. The observation on germination at 6th month and seedling growth characters at 10th month after

sowing were recorded. The outturn of quality seedlings in each treatment was recorded. The weed population and dry matter production were recorded at 3rd, 6th and 9th month and the mean of three observations was taken for analysis.

Results and discussion

The two years experimental data were pooled for statistical analysis and presented in Table 1.

Weed growth

Significantly the lowest weed population of 112 nos./m² was recorded in sunnhemp + H.W. (hand weeding) treatment (T₆) and it was on par with five H.W. (T₄) and coir pith applied (T₇) treatment. The highest weed population of 285 nos./m² was registered in control plot. Regarding the weed DMP, the lowest values of 37.5 g/m² was registered in sunnhemp + H.W. treatment (T₆) and it was on par with five H.W. treatment (T₄). Though the weed population was on par in T₆ and T₇, the weed DMP in coir pith applied plots (T₇) was significantly higher (56.5 g/m²) than sunnhemp + H.W. treatment (T₆). This might be due to the vigorous growth of weeds utilizing the more available nutrients present in the coir pith.

Seed nut germination

Significantly the highest nut germination of 90.1% was recorded at sunnhemp + H.W. treatment (T₆) and it was on par with sunnhemp alone (T₅) and coir pith + H.W. (T₇). More germination under these treatments might be due to the live mulch effect offered by sunnhemp and coir pith (dead mulch) which could have helped for prolonged soil moisture conservation, maintaining optimum soil temperature reducing the day and night temperature fluctuation in

Table 1. Effect of weed management practices on germination and seedlings growth of coconut

Treatments	Weed population (No./m ²)	Weed DMP (g/m ²)	Seed nut germination (%)	Seedlings characters				
				No. of leaves/plant	Stem girth (cm)	Plant height (cm)	Quality seedlings (%)	B:C ratio
T1-Control	285	93.1	83.3	4.8	10.2	118	60.3	2.01
T2-2H.W.	213	72.5	82.1	5.1	10.9	109	63.2	2.04
T3-3H.W.	191	64.5	81.1	5.1	10.7	102	64.1	2.04
T4-5H.W.	128	43.2	82.1	5.3	11.5	107	66.7	2.05
T5-S.hemp.	146	47.6	89.2	4.8	10.5	118	72.2	2.33
T6-S.hemp+ H.W.	112	37.5	90.1	5.6	11.9	116	78.9	2.50
T7-C.P.+ H.W.	122	56.5	88.8	4.8	9.4	109	67.4	2.06
CD (5%)	17.4	8.2	5.8	0.4	0.8	NS	7.2	-

H.W. - Hand weeding; C.P. - Coir pith; N.S. - Non significant

soils. Uthaiyah and Lingaiah (1989) reported that highest coconut seedling survival was obtained with coir pith at 10 cm thickness. Besides more nut germination, early and uniform germination also were observed in these treatments. In sunnhemp and coir pith applied plots, more than 80% of germination was observed at 4th month itself and germination was completed by 5th month whereas in all other treatments, the germination extended upto 6th months.

Seedlings growth

With respect to seedlings characters, the treatments had significant differences on leaf production and stem girth at collar region but not on plant height. The maximum stem girth of 11.9 cm with higher leaf production of 5.6 nos / plant were recorded in sunnhemp + H.W. treatment (T₆) and it was par with five hand weedings (T₅) for both characters. The maximum outturn of quality seedlings (78.9%) was obtained in sunnhemp + H.W. treatment (T₆) and it was superior to all other treatments. The five hand weedings (T₄) recorded only 66.7% of quality seedlings. Although the seedlings growth characters in sunnhemp + H.W. treatment and five hand weedings treatment were similar, the quality of seedlings was significantly higher in the former than the later treatment. This might be due to higher nut germination recorded in the sunnhemp + hand weeding treatment. The early and uniform germination, less weed infestation, live mulch effect, more soil "N" availability through atmospheric "N" fixation by sunnhemp plants and favourable microclimate

offered by sunnhemp plant all these factors might have influenced more quality seedlings. Vijayaraghavan and Ramachandran (1989) reported that growing sunnhemp in coconut basin significantly increased the nut yield of coconut. This treatment additionally gave fresh green manure of 4 kg/m² of nursery plot in three harvests. This fresh green manure can very well be utilized for manuring the adult coconut palms.

With respect to economics, the maximum B.C. ratio of 2.50 was obtained with sunnhemp + hand weeding treatment (T₆) and it was followed by sunnhemp sown alone (T₅) with 2.33 as against 2.01 for control.

Conclusions

The results indicated that growing sunnhemp three times (each harvested at flowering stage) followed by one hand weeding at 6th month was found to be the suitable superior management practice as it appreciably controlled the weed infestation and produced more quality seedlings besides yielding green manure for manuring the adult coconut palms.

References

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