



Slope Planting on Growth and Flowering of Coconut Palm

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Abstract

Planting coconut palm in lands of steep slope was known to reduce the leaves on crown. Months to flowering were studied on ten palms each on steep slope and flat land of two populations. Plant height, collar girth and leaf characters of these two accessions in slope and flat lands were also compared. Results were discussed with previous work in this line.

Key words : coconut, slope, and flowering

Introduction

Plantation crops are grown in sloping lands in most of the areas. Planting in sloping plots has many problems like loss of upper horizon owing to soil erosion, reduction in water availability due to run off etc.; which leads to poor growth of plants. This could be overcome by planting suitable annual crops as cover / intercrops (Yahya *et. al.*, 1996). Use of grass mulch (Kosugi *et. al.*, 1987) in tea gardens and use of contour line planting, use of bunds and ditches and laying down the pruned fronds in the interrows of oil palm plantations (Prioux, 1987) are useful in overcoming this problem.

Coconut palms planted in flat land,

gentle and steep slope were compared for leaf development, flower initiation, number of leaves on crown (Rocat *et. al.* 1994). In steep sloped plots, the flowering was delayed due to the poor leaf development and reduced number of leaves on crown. However, planting in normal density and application of fertilizer helped to overcome the bad effects.

Materials and methods

Plant height, collar girth, number of leaves on the crown, length of leaf bearing portion, length of petiole, length and breadth of leaflet (cm) were recorded when the plants were four years old. The flowering date (the initiation of first inflorescence) in the palms was also recorded. Ten palms each planted on steep slope (10%) and flat land in two populations of coconut *viz.*, Fiji Tall (Wainigata) and Tall Kaveing were used in the study.

Results and Discussion

The study revealed the delay of 4.2 to 4.4 months in flowering due to sloped land. Fiji Tall (Wainigata) flowered in 64.2 months in flat land but took 68.4 months in steep slope. Tall

Kaveing flowered in 73.4 months in flat land but needed 77.8 months in steep slope. Here the plants are planted in recommended spacing of 7.5 m x 7.5m. The fertilizer recommendation is also followed. But, in farmers' gardens the plants are in crowded stands and without regular fertilizer applications. They may have very much reduced leaf production and delayed flowering as per the experience of Rocat *et.al.*, (1994). Plants in steep slope suffer due to poor soil physical properties (like lack of proper structure) and reduced water and nutrient availability. They have disturbed root system; thus leaf production and number of leaves are greatly reduced. Thus these plants will have long duration of juvenile phase and reduced yield.

Brang (1998) observed the seedling emergence of *Picea abies* pines in forest gaps on slopes was reduced due to drought. Sakai *et al.* (1995) noticed the accumulation of dormant buds in *Euptelea polyandra*, a deciduous tree to have adaptive significance in responding to disturbances caused by planting in steep slopes. But coconut





palm being a monopodial plant has evolved a mechanism to tackle this problem by increasing its juvenile period. The details of data recorded on growth characters are given in Table. Studies on yield and other traits in such cases could give a clear picture.

Further studies on other such plants could give more information.

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Parameter	Fiji Tall (Wainigata)				Tall Kaveing			
	Flat land		Steep Slope		Flat land		Steep Slope	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Plant height (cm)	646.5	19.3	642	16.4	708.5	48.48	610.5	30.2
Collar girth (cm)	111.8	4.13	112.7	4.12	124.8	12.41	107.7	8.3
No. of leaves (cm)	16.6	0.72	15.9	0.64	14.4	0.65	14.1	0.6
Leaf length (cm)	528.1	6.56	560	13.5	608.9	30.88	580.8	26.7
Petiole length (cm)	145	4.35	147.9	6.44	179.4	8.51	154.3	6.5
Leaflet length (cm)	92	3.67	88.5	3.27	100.7	5.06	98.8	4.8
Leaflet breadth (cm)	4.6	0.01	4.65	0.18	5.35	0.4	4.75	0.2

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