

Evaluation of cucurbitaceous vegetables as intercrops in coconut (*Cocos nucifera*) plantations of Andamans*.

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Coconut (*Cocos nucifera* L.) plantations occupy approximately 47 % of the cultivated area in the Andaman Islands. Intercropping helps to meet the food requirement besides increasing the net returns per unit area (Nair and Varghese 1976).

Coconut plantation (up to 8 years of planting and after 20 years of age) offers excellent scope for intercropping and hence in utilizing the available land resources in an optimum manner. Studies reveal that only 28 % of the land is occupied by the coconut trees (Kushwaha *et al.* 1973) and more than 80 % of the root activity was confined to a lateral distance of 2 m from the trunk (Anil Kumar and Wahid 1988). Thus the remaining area could be profitably exploited for cultivating other crops. The venetian leaf structure and leaf orientation of the palms permit light penetration to the interspaces. According to Bavappa (1995), the solar energy received by the crops under coconut canopy in older palms spaced 7–10 m apart is 43% of the normal sunlight. This light penetration facilitates growth of many shade tolerant crops in the interspaces.

The vegetables are very highly priced in the island as all the vegetables are imported from the mainland (with a high damage of up to 50 % in transit) and also as very little is being produced locally. The experiment conducted at the CPCRI, Kasaragod have indicated that vegetables like snake gourd (*Trichosanthes anguina* L.), bottle gourd (*Lagenaria siceraria* (Molina) Stardl.), ridge gourd (*Luffa acutangula* Roxb.) and coccinia (*Coccinia indica* L. Voigt) among the cucurbits are compatible with coconut (Hegde *et al.* 1993). Intercropping with vegetables was found to generate additional employment of 215 to 365 man-days/ha/year. With this background, as inter cropping vegetables in coconut plantations is a promising proposition, the experiment was taken up. The suitability of different cucurbitaceous crops and their varieties for inter cropping under Andaman conditions was studied during the 3 seasons (August–November, October–January and December–March). The cucurbits that were evaluated are

sponge gourd (*Luffa cylindrica* Roem.), ridge gourd (*Luffa acutangula* Roxb.), bottle gourd (*Lagenaria siceraria* (Molina) Stardl.), pumpkin (*Cucurbita moschata* Poir) and snake gourd (*Trichosanthes anguina* L.). Promising varieties of each of these crops along with a local check was tested in randomised block design with 4 replications in a 25-year-old coconut plantations (7.5 × 7.5 m) at the CARI farm, Sipighat during 1997–99. The vegetables were sown in pits in the inter spaces dug at the spacing of 2 × 1 m (14 pits in the interspace of 4 palms) and the recommended fertilizer dose was applied. The crop was irrigated in third season.

Among the crops evaluated bottle gourd, pumpkin and snake gourd failed to flower and set fruits during the first 2 seasons. Hence during the third season these were excluded from the trial. Varietal evaluation of cucumber, ridge gourd and sponge gourd was carried out and the results have been presented. Among the crops, cucumber performed the best as intercrop during all the 3 seasons. The local variety recorded the highest average yield (11.52 tonnes/ha) over the other varieties followed by 'Poinsette' and 'Priya' (Table 1). The performance of 'Japanese green long' was very poor during all the three seasons. During first season variety 'Poinsette' recorded significantly higher yield (8.98 tonnes/ha) followed by 'Priya' (8.45 tonnes/ha) and Local (7.07 tonnes/ha). During second season local variety gave significantly higher yield (17.09 tonnes/ha) than 'Poinsette' and 'Priya', but the same varieties remained on par during third season. Among the three season irrespective of varieties, second season (October–January) recorded higher yield because of the presence of optimum moisture levels (381.6 mm rainfall). In the first season very heavy rains resulted in heavy flower and fruit drop, whereas the third season coincides with the dry spell.

Similarly, in 'Pusa Nasdar' ridge gourd recorded higher during all the seasons compared with the other varieties followed by local except first season. In case of 'Hind Sponge gourd' sponge gourd recorded higher yield during second and third season, whereas 'Pusa Chikni' performed better during the first season only. Among the 3 cucurbitaceous vegetables cucumber has given higher net returns compared to ridge and sponge gourd. Local variety of cucumber, 'Pusa

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Table 1 Performance of cucumber varieties as intercrop in coconut plantation

Varieties	Yield (tonnes/ha)				Net returns (Rs./ha)	B:C ratio
	I season	II season	III season	Average		
'Poinsette'	8.98	13.27	9.89	10.71	113715	2.41
'Japanese green long'	3.93	1.73	2.75	2.80		
'Priya'	8.45	12.19	9.62	10.09	102500	2.09
'Hind long green'	3.89	10.09	7.45	7.14	60195	1.28
Local	7.07	17.09	10.42	11.52	125915	2.67
CD (P=0.05)	0.22	1.18	1.63			

Total cost of cultivation for 3 seasons is Rs 47,000 except 'Priya' ie Rs 49 000; price of cucumber: Rs 5/kg

Table 2 Performance of ridge and sponge gourd varieties as intercrop in coconut plantations

Varieties	Yield (tonnes/ha)				Net returns (Rs/ha)	B:C ratio
	I season	II season	III season	Average		
<i>Ridge gourd</i>						
'Pusa Nasdar'	2.49	9.06	5.91	5.82	40,390	0.85
'CO 1'	2.14	1.74	2.82	2.23		
'CO 2'	2.39	3.35	3.02	2.92		
Local	2.27	8.07	4.57	4.97	27,620	0.58
<i>Sponge gourd</i>						
'Pusa Chikni'	2.76	3.25	3.16	3.06		
'Hind sponge gourd'	2.64	10.53	4.76	5.98	42,705	0.90

Total cost of cultivation for 3 season is Rs 47 000; price of ridge gourd and sponge gourd, Rs 5/kg

Nasdar' of ridge gourd and 'Hind Sponge Gourd' recorded highest net returns and B : C ratio.

Thus it could be concluded that cucumber is one of the best vegetable intercrop for coconut plantations in the Andamans. Ridge gourd and sponge gourd can also be recommended as suitable intercrops in coconut plantations of these islands.

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