

and maize at Mannuthy, Trichur, Kerala, (Ramadas Menon, Personal communication). Nair and Menon (1963) recorded it as a minor pest on the leaves of arecanut palms.

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Heritability of Seedling Vigour in Coconut Palm

In coconut cultivation, selection of planting material from one year old seedling nursery is of considerable importance. Presently, this is done based on the vigour of the seedling as determined by girth at collar, height and number of leaves (Liyanage, 1953). In the present paper, the study of heritability of seedling vigour are discussed.

Forty adult West Coast Tall (WCT) palms growing in the research farm of Central Plantation Crops Research Institute, Kasaragod under scientific management were selected for the study. These palms included low, medium and high yielders in the yield range, 40-100 nuts annually. Seednuts collected during the months of January to March were used to raise the progeny nursery.

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Ten to twenty, 1 year old seedling together with the adult palm from which these seednuts were collected constituted one family. The relative assimilation rate (RAR) in adult palm was determined as per the method described by Ramadasan et al. (1984). In this method, the rate of growth of leaves in the crown was taken as the index of the rate of growth of palm. Hence the rate of dry matter production in the actively growing youngest unfolding leaf was integrated with increase in area in unit time. The RAR has been shown to be significantly and positively correlated with annual yield of nuts in adult WCT palm ($r = 0.58$). The chlorophyll content in adult palms and the progeny seedlings were determined as per the method described previously (Mathew and Ramadasan, 1973). The shoot dry weight and girth at collar were studied in 600 progeny seedlings as per the method described by Ramadasan, Sathesan and Balakrishnan (1980). The chlorophyll content was determined in 10 families comprising of 50 progenies and RAR was determined in 40 mother palms; while the shoot dry weight, NAR and girth at collar were determined in the 600 one year old progeny seedlings, comprising of 40 families. The NAR was estimated in the seedlings following the method of

Watson (1952), keeping the time interval as 4 weeks.

The heritability values were estimated using Half sib analysis by splitting the total variation into "between the mother palm" and "within the mother palm" variation.

The heritability values together with the mean and range values of the characters studied are presented in Table I.

The results indicate high heritability for total shoot dry weight, the NAR and total chlorophyll content. Mathew and Ramadasan (1975) reported significant positive correlation between the total chlorophyll content and annual yield of nuts in West Coast Tall palms ($r = 0.2735$). They have also reported significantly more chlorophyll content in the T×D and D×T hybrids than in WCT and dwarf palms (Mathew and Ramadasan, 1973). Similar results have been obtained in one year old seedlings of WCT and D×T hybrid seedlings. These results show the association of high chlorophyll content with high vigour and high productivity. Ramadasan et al. (1980) have reported that, of the selection characters presently employed, the girth at collar together with leaf area contribute mostly to the shoot dry

Table I. *Mother palm and progeny characters and their heritability*

Characters	Mother palm		Progenies		Heritability
	Mean	Range	Mean	Range	
NAR ($\text{g.m}^{-2}.\text{week}^{-1}$)	*4.07	*1.18-8.01	6.73	1.71- 14.3	0.64
Total chlorophyll content (mg.g^{-1} fresh weight)	1.83	1.62-2.27	1.90	1.6 - 2.09	0.81
Shoot dry weight (g)	*4.07	*1.18-8.01	118.37	85.06-141.59	0.74

* RAR of adult palm ($\text{g.m}^{-2}.\text{week}^{-1}$)

weight of the seedling. Girth at collar as the most important selection characters has been reported by Menon and Pandalai (1958) also. Hence, the heritability of these physiological factors suggest that in WCT palms the efficiency of dry matter production is a heritable factor. Since it has already been shown that the girth at collar is mostly contri-

buting to seedling vigour, the suitability of choosing girth at collar alone as the seedling selection character is worth exploring.

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Seasonal Fluctuation of Population and Habits of the Adults of *Longitarsus nigripennis* Mots. on Black Pepper*

The pollu beetle of black pepper (*Piper nigrum* L.) was earlier reported to be present in the field upto the harvest of pepper berries and absent thereafter till the early monsoon rains. The adults were suspected to go under aestivation during the period (Ayyar, Susainathan and Muliyl, 1921; Rao and Ramaswamiah, 1927). The additional information obtained on the occurrence of the pest in the field during different seasons in two different

tracts of Kerala is presented in this paper.

The observation on the occurrence, habits and population of the adults of *L. nigripennis* was made at two locations, viz., Calicut and Kottayam representing two agroclimatic conditions. The fields were visited at regular intervals for this purpose. Populations were estimated in terms of the counts of adults found on 200 random leaves at each time of

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