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Relation Between Incidence of *Myllocerus curvicornis* (F.) and Intensity of Root (Wilt) Disease in Coconut Cultivars and Hybrids*

Myllocerus curvicornis (F.) (Coleoptera : Curculionidae) a polyphagous species was recorded as a pest of coconut in India by Kurian et al. (1978). The weevils feed from the margin of leaflets in circular pattern preferring the tip of the leaflet of the leaves of middle and inner whorls. The present study was undertaken to observe the host preference if any, among 37 cultivars and hybrids and also to find out the relation between root (wilt) disease incidence and the weevil infestation.

Observation on the incidence of the weevil was made on 37 coconut cultivars/hybrids, each with 12 palms planted during 1972 - 1973 at CPCRI, Regional Station, Kayangulam. Data on the total leaves and the weevil attacked leaves were collected. To assess the preference of the weevil for different cultivars/hybrids data collected from only eight apparently healthy palms in each cultivar/hybrid was used.

Laboratory studies were carried out to confirm the presence of the weevils

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in the leaves of coconut palms belonging to different stages of the disease, compared to apparently healthy palms. Normal looking weevils collected from field and coconut leaflets from apparently healthy, disease early, disease middle and disease advanced West Coast Tall palms were used for the trial. Four flasks containing the above mentioned leaflets (25cm long), after assessing the initial weight, were kept inside the four corners of a battery jar, (34 × 15 × 10 cm). Three such jars were kept; in the first two ten weevils each were liberated and the latter was kept without releasing any weevils (control) to work out the loss of weight due to evaporation. The weight of leaflet was recorded after 24 hours. The quantity of leaf consumed by the weevil was worked out as follows :-

$$\frac{\text{Initial weight of leaflet in control} \times \text{Weight of leaflet in control after 24 hours}}{\text{Initial weight of leaflet in control}} = \text{Weight after 24 hours in treatment.}$$

Data presented in Table I reveals that all the 37 cultivars/hybrids were susceptible to the attack of the weevil, eventhough the intensity varied greatly. The pest infestation of 69.70 per cent observed in Malayan Dwarf Green (Direct introduction) was the maximum among 37 cultivars and hybrids and this was significantly higher than 29 other cultivars/hybrids. Malayan Dwarf Green introduced from Kulasekharam,

had also high percentage of infestation (59.27). The hybrid Fiji × S. S. Green was least preferred by the pest.

The results of feeding trials revealed that the rate of consumption of leaves varied from 0.067g from apparently healthy palm to 0.167g from disease advanced palms, the weight of leaves consumed by the pest increasing with increase in intensity of the disease. The rate of consumption of leaves from disease advanced palms was highly significant than that from apparently healthy palms, disease early and disease middle (0.167g, 0.007g, 0.039g and 0.065g respectively. C. D. 1% = 0.065).

This is further supported by the results of the field observations. Out of 182 diseased palms, 33 palms belong to disease early, 124 belong to disease middle and 25 belong to disease advanced group. For the three groups the pest intensity were 66.8, 81.6 and 96.6 per cent and disease index were 21, 36 and 56.4 respectively. The correlation between the pest incidence and disease intensity was highly significant. ($r = 0.493^{***}$).

Heavy incidence by a number of insects was positively correlated with the high nitrogen content of the plants and with the application of nitrogenous fertilizers, which favours the tall sappy growth and thin cell walls. (Tanada and Holdaway, 1954; Daniels and Porter, 1956; Lyubenov, 1956; Hamstead and Gould, 1957; Maltais, and Auclair, 1957; Rodriguez, 1958 and Fennah, 1955 and 1959).

In the case of root (wilt) affected palms, the nitrogen content is found to

Table I. *Percentage leaf damage in different varieties/cultivars of coconut*

Variety/hybrid	Per cent of leaf damage	
	Apparently healthy palm	
Malayan Dwarf Green (D. M. D. G.)**	69.70	
Malayan Dwarf Green (K. D. G.)*	59.27	
Malayan Dwarf Yellow × Java Giant (K. D. G. × J. G.)	58.76	
Malayan Dwarf Green × Java Giant (K. D. G. × J. G.)	56.97	
Dwarf Orange (C. D. O.)	55.54	
Kulasekharam Dwarf Yellow (K. D. Y.)*	49.32	
Federation of Malayan States	47.94	
Java × Malayan Dwarf Green (J. × K. D. G.)	47.62	
Cochin China	42.76	
M ₂ Irradiated	41.43	
Java × Malayan Dwarf Orange (J. × K. D. O.)	40.02	
Car Nicobar	37.75	
Malayan Dwarf Orange (K. D. O.)*	35.66	
Malayan Dwarf Orange (D. M. D. O.)**	35.18	
Malayan Dwarf Orange × Java Giant (K. D. O. × J. G.)	34.18	
S. S. Green	32.38	
Andaman Giant	31.57	
Java × Malayan Dwarf Yellow (J. × K. D. Y.)	29.26	
Laccadive Ordinary	28.30	
San Ramon × Gangabondam	27.97	
Laccadives × San Ramon	25.69	
Andaman Ordinary	23.41	
West Coast Tall	23.25	
Jamaica	22.02	
Malayan Dwarf Yellow (D. M. D. Y.)**	20.12	
Java × Gangabondam	19.55	
Philippines	18.85	
Fiji × Gangabondam	18.50	
Java Giant	16.38	
D × T	14.63	
T × D	14.54	
Tall × Gangabondam	13.36	
Laccadive Micro	10.4	
S. S. Apricot	10.29	
Tall × Malayan Dwarf	9.69	
British Solomon Islands	8.33	
Fiji × S. S. Green	7.29	
	C. D. 1% = 25.4	

** Direct introduction from Malaysia

* Introduced to Kulasekharam and the progenies.

be more in the middle and advanced stages of the disease compared to that of healthy trees, and the accumulation is found to be more towards the young and expanding leaves when the disease intensity increases. Even in healthy palms, there is considerable difference in the nitrogen content of the same tree, the maximum being in the inner whorls of leaves (Sankarasubramony, Pandalai and Menon, 1952; Pandalai, 1959; Anon, 1976). The accumulation of nitrogen in the leaves of the diseased palms may make the

cell walls thin. This is evidenced by the observations that the pinnae (leaflets) from disease advanced palms were thinner and their cell constituents showed a general reduction in size. (Anon, 1977).

From the above observations it is concluded that heavy incidence and the attack even in the inner leaves of diseased palms may probably be due to the succulent and thinner cell walls of the leaves of root (wilt) affected palms.

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