REACTION OF EXOTIC CULTIVARS OF COCONUT (*COCOS NUCIFERA* L.) TO ROOT (WILT) DISEASE OF KERALA

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Abstract: The degree of resistance/tolerance of ten exotic and geographically distinct cultivars of coconut to root (wilt) disease of unknown etiology was studied at the Regional Agricultural Research Station, Kumarakom, Kerala. All the exotic cultivars tested were found susceptible to the disease with varying degrees of intensity. However, the coconut cultivar San Ramon recorded significantly lower disease incidence followed by Guam, St. Vincent and Kenya. The infection of leaf rot incited by *Bipolaris halodes* (Drechsler) Shoem. was also low in these cultivars.

The root (wilt) disease, a complex malady of coconut, has affected nearly one third of the seven lakh hectares of the crop in the State of Kerala. The annual yield loss due to this disease is estimated to be 97 crores of nuts. No specific measure for the control of this disease has been evolved so far. Control of diseases using resistant varieties has been described as the "painless method" that does not levy on the farmer's pocket. The powdery mildew of grapes, mosaic disease of sugarcane, curly top virus of sugarbeet, lethal yellowing of coconut etc. are some of the diseases in which resistance breeding has been successfully resorted to. The deliberate selection and hybridization in coconut for disease resistance using germplasm from world-wide sources has long been neglected (Child, 1974). With the present knowledge, satisfactory control of root (wilt) disease can only be achieved by the use of resistant/tolerant varieties of coconut. With this objective in view, the present investigation was taken up at the Regional Agricultural Research Station, Kumarakom, Kerala, India.

A field trial with the following exotic cultivars of coconut having geographically distinct characters was laid out in a completely randomised block design during 1976 and maintained till date. The test varieties and the number of palms in each test variety (given in parenthesis) are: San Ramon (12), St. Vincent (14), Jamaica (10), British Solomon Island (17), Kenya (22), Guam (21), Strait Settlement Green (16), Federated Malayan States (26), Java (22), Fiji (21) and West Coast Tall (18). The palms were grown under normal management levels in the reclaimed alluvial soils of the back water region of Kerala where the disease pressure has been very high from the year of planting. The root (wilt) disease intensity was computed using standard method evolved by George and Radha (1973). The incidence of leaf rot disease was measured by recording the number of leaves affected in each palm. The root (wilt) index was statistically analysed and the trend in leaf rot incidence was worked out.

The test varieties are ranked on the basis of root (wilt) disease intensity and presented in Table 1 together with the leaf rot incidence in each case. A statistical analysis of the data on root (wilt) disease index indicated significant difference among cultivars. The lowest disease intensity was recorded by the variety San Ramon followed by Guam, St. Vincent and Kenya. They were

Table 1. Reaction of exotic cultivars of coconut to root (wilt) and leaf rot diseases

Rank No.	Test varieties	Mean root (wilt) disease index	Mean number of leaves affected by leaf rot
1	San Ramon	12.22	0.08
2	Guam	19.86	0.95
3	St. Vincent	22.64	0.00
4	Kenya	23.04	0.55
5	SS Green	23.64	1.19
6	FMS	25.45	1.08
7	BSI	25.99	1.00
8	Jamaica	26.51	2.00
9	Fiji	30.18	1.86
10	Java	30.91	2.64
11	WCT (Local check)	39.83	3.17

CD (0.05) for comparison of root (wilt) disease index betwen SR and Guam 10.38, St. Vincent and SR 11.27, Kenya and SR 10.29, SSG and SR 10.95, FMS and SR 10.01, BSI and SR 10.81, Jamaica and SR 12.28, Fiji and SR 10.38, Java and SR 10.29, WCT and SR 10.69, SSG and WCT 9.86, FMS and WCT 8.79, BSI and WCT 9.70, Jamaica and WCT 11.31, Fiji and WCT 9.21 and Java and WCT 9.12

significantly superior to all other varieties. However, the other exotic varieties like SSG, FMS, BSI, Jamaica and Fiji were significantly superior to the local check variety WCT. The coconut cultivars WCT and Java were observed to be highly susceptible to root (wilt), showing significantly higher disease indices. Mathai *et al.* (1985) reported similar results. They also observed root (wilt) tolerance in Andaman Ordinary, SSG and Cochin China. In the present study all the exotic cultivars are found susceptible to the disease with varying degrees of intensity under the conditions prevailing in the back water region of Kerala. According to Maramorosch and Hunt (1981) exotic palms are often prone to locally endemic diseases when introduced into new areas. This is in agreement with the present observation. The ability of some of the cultivars to endure the invasion of the disease can be utilized in resistance breeding.

The degree of tolerance of the varieties to leaf rot disease caused by *Bipolaris halodes* (Drechsler) Shoem. was also studied. The number of leaves affected by leaf rot disease indicated a comparatively low trend in San Ramon, Guam, St. Vincent and Kenya. As in the case of root (wilt) disease, the incidence of leaf rot was high in WCT and Java. The results obtained in the present study confirm the observations made by Mathai et al. (1985).

REFERENCES

Child, R. 1974. *Coconuts*, 2nd ed., Longman, London. p 335

George, M.V. and Radha, K. 1973. Computation of disease index of root (wilt) disease of coconut. *Indian J. agric. Sci.* 43 : 360- 370

Maramorosch, K. and Hunt, P. 1981. Lethal yellowing disease of coconut and other palms. In *Mycoplasma Diseases of Trees and Shrubs*. Academic Press Inc., New York, p 362

Mathai, G., Mathew, A.V. and Kunju, U.M. 1985. Reaction of coconut cultivars (*Cocos nucifera*) to root (wilt) and leaf rot diseases. *Indian Phytopath.* 38 : 561-562

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