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SCREENING OF COCONUT CULTIVARS/HYBRIDS AGAINST *THIELAVIOPSIS PARADOXA* (DE SEYNES) HOHNEL, USING PETIOLE INOCULATION TECHNIQUE

B. RAMANUJAM, K.K.N. NAMBIAR and M.J. RATNAMBAL

Central Plantation Crops Research Institute
Kasaragod - 671 124, Kerala

The reaction of 26 coconut cultivars comprising 16 talls, 6 dwarfs and 4 hybrids was tested against *T. paradoxa*, the pathogen of stem bleeding disease of coconut using detached petiole inoculation method. All the cultivars tested were susceptible to *T. paradoxa* in different degrees. Maximum lesion size was noticed in Malayan Green Dwarf (158.32 cm^2) and minimum in Banawali Green Round (52.62 cm^2).

INTRODUCTION

Stem bleeding disease of coconut caused by *Thielaviopsis paradoxa* (de Seynes) Hohnel is widely prevalent in different coconut growing tracts of the country causing considerable loss. The pathogen infects coconut stem through growth cracks or injuries resulting in cortical decay and exudation of reddish brown or black fluid from the stem. The pathogen also infects coconut petioles and nuts causing decay. Ramanujam *et al.* (1996) studied the virulence of *T. paradoxa* isolates on the stem of WCT palms and also on their detached petioles by artificial inoculation and observed that the infection patterns on stems and petioles were more or less similar. Radhakrishnan *et al.*, (1980) studied the natural incidence of stem bleeding disease in a coconut germplasm collection and identified the tolerant/susceptible groups. However, no studies on the reaction of coconut varieties to *T. paradoxa* by artificial inoculation have been reported so far. Hence the present study was taken up to screen coconut germplasm against *T. paradoxa* by artificial inoculation.

MATERIALS AND METHODS

Twenty six varieties comprising sixteen talls, six dwarfs and four hybrids from CPCRI germplasm collection at Kasaragod, Kerala were used for screening against *T. paradoxa* (Table 1). Six palms (replications) were used for each variety. The age of the palms ranged from 20-27 years. Since the pathogen is equally infective on stem and petioles, screening of germplasm was carried out on detached coconut petioles using bore hole method of inoculation adopted by Usman and Nambiar, 1992. Fresh leaf petioles from the lower whorls of coconut palms of each cultivar were collected and cut into bits of 30 cm length. The cut ends were smeared with petroleum jelly to arrest water loss. A bore hole (0.5 cm diameter) was made at the centre of the petiole bit with a sterilized cork borer. Seven day old *T. paradoxa* (Kasaragod-I isolate) inoculum grown on coconut rachis bits (0.5°cm length) was inserted into the bore hole and covered with sterile wet cotton pads. The inoculated petiole bits were covered with polythene bags and incubated at

24±2°C for 15 days. The lesion size was recorded after splitting the petiole bits and the lesion area calculated.

RESULTS AND DISCUSSION

T. Paradoxa produced characteristic reddish brown circular or elliptic lesions in the inoculated petioles. All the twenty six varieties screened were susceptible to *T. Paradoxa* in different degrees (Table 1). The lesion area observed in the different varieties varied from 52.62 to 158.32 cm^2. Maximum lesion size was noticed on Malayan Green Dwarf (158.32 cm^2) followed by Chowghat Orange Dwarf (146.23 cm^2), Chandra Sankara (141.36 cm^2) and Philippine Ordinary (138.55 cm^2) and these four varieties were at par with regard to their susceptibility. Minimum lesion size was noticed on Banawali green round (52.62 cm^2) followed by Malayan Orange Dwarf, Banawali Brown Round and Laccadive Ordinary (56.35, 64.48 and 70.96 cm^2 respectively) and were at par. Among sixteen talls, Philippine Ordinary, Strait Settlement Green, Andaman Giant and Fiji Tall recorded higher lesion sizes (138.55, 136.81, 130.29 and 121.92 cm^2 respectively) and are at par, while Banawali Green Round, Banawali Brown Round and Laccadive Ordinary showed smaller lesions (52.62, 64.48 and 70.96 cm^2 respectively) and weare at par. Among the six dwarfs, bigger lesion sizes were recorded on Malayan Green Dwarf, Chowghat Orange Dwarf and Chowghat Green Dwarf (158.32, 146.23 and 132.58 cm^2 respectively) and smaller lesions were recorded on Malayan Orange Dwarf and Gangabondam (56.35 and 75.53 cm^2) respectively. Among the hybrids, Chandra Sankara recorded the largest lesions (141.36 cm^2) while Laksha Ganga showed the smallest (79.68 cm^2).

Highly susceptible nature of Philippine Ordinary, Strait Settlement Green, Andaman Giant and Fiji Tall and less susceptible nature of Laccadive Ordinary, Malayan Orange Dwarf and Gangabondam are in confirmation with results obtained in the studies on natural incidence of stem bleeding disease in these cultivars (Radhakrishnan and Potty, 1980).

Table 1. Lesion area on the petioles of different cultivars/ hybrids due to *T. paradoxa* inoculation

	Varieties	Lesion area (cm^2)
Talls		
Banawali Green Round	(BGR-1966)	52.62
Banawali Brown Round	(BBR-1966)	64.48
Laccadive Ordinary	(LCO-1972)	70.96
Java Giant	(JVG-1972)	74.04
Ayiramkachi	(AYK-1972)	88.54
Federated Malay States	(FMS-1972)	105.60
Cochin China	(CCN-1972)	105.92
Strait Settlement Apricot	(SSA-1972)	106.15
West Coast Tall	(WCT-1972)	107.81
Laccadive Micro	(LCM-1972)	108.44
Andaman Ordinary	(ADO-1972)	112.62
Tiptur Tall	(TPT-1966)	114.92
Fiji Tall	(FJT-1972)	121.92
Andaman Giant	(ADG-1972)	130.29
Strait Settlement Green	(SSG-1972)	136.81
Philippine Ordinary	(PHO-1972)	138.55
Dwarfs		
Malayan Orange Dwarf	(MOD-1972)	56.35
Gangabondam	(GBD-1972)	75.53
Malayan Yellow Dwarf	(MYD-1972)	102.49
Chowghat Green Dwarf	(CGD-1966)	132.58
Chowghat Organge Dwarf	(COD-1966)	146.23
Malayan Green Dwarf	(MGD-1966)	158.32
Hybrids		
Laksha Ganga	(LCO X GBD-1966)	79.68
Chandra Laksha	(LCO X COD-1966)	115.78
Kera Sankara	(WCT X COD-1966)	125.79
Chandra Sankara	(COD X WCT-1966)	141.36
S.E./plot		17.87
Gen. Mean		106.68
C.V.		16.75
C.D. (P=0.05)		20.41

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