SOUTHERN CHAPTER

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01 Prophylactic and curative effect of combined application of fungicide and insecticide on leaf rot disease of coconut – P.K. KOSHY, P.M. JACOB, M. SASIKALA and G. RAJEEV – *Central Plantation Crops Research Institute, Regional Station, kayangulam, Krishnapuram 690 533*

The leaf rot disease superimposed on root (wilt) affected palms and reduction in photosynthetic area and yield. Effect of combined application of fungicide (Contaf 2 ml/Idofil M-45-3 g) and insecticide (Phorate 10G-2g) was tested on the 31CGD X WCT hyrbids and 2 CGD x Tiptur Tall (Arsikere) planted in the CPCRI Farm at Kayangulam during 1991. Of these, 16+2 were positive to the serological test in 1996 as well as in 1999. Combined application of fungicide and insecticide was carried out in November, 1996 and later in April and November, 1997-99. Of the five palms which had advanced leaf rot symptoms, two CGDxWCT and two CGDxTiptur Tall (Arsikere) palms had become totally free from the leaf rot disease and started showing recovery in yield subsequent to the treatment. Of the two palms which had mid whorl yellowing, one had developed leaf rot symptoms and other did not. After inititation of the treatment the leaves that have appeared subsequent to the treatment did not develop leaf rot symptoms and the yield also started showing a gradual increase. The inflorescence necrosis and shedding of tender nuts was stopped and the palms which were barren for two years started bearing. The treatment also helped in preventing the expression of leaf rot symptoms on the serologically positive plams. Among the 16+2 only 8 of them showed the visual symptoms of root (wilt) even after three years of positive reactions. All the experimental palms had severe infestation of rhinoceros beetle and in addition the diseased palms had infestation of microcerus and meanly bugs. After initiation of the treatments threse palms also remained free from attack of rhinoceros beetle, mealy bugs and millocerus. Thus it has been proved beyond doubt that combined application of systemic fungicide and insecticide twice a year suggested as above offers complete protection from leaf rot disease and insect pests.

PROPHYLACTIC AND CURATIVE EFFECT OF COMBINED APPLICATIONS OF FUNGICIDE AND INSECTICIDE ON LEAF ROT DISEASE OF COCONUT

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The coconut root (wilt) disease, which was reported over a century ago, is contiguously prevalent in eight southern districts from Thiruvananthapuram to Trissur and now occurs sparsely in all the northern districts of Kerala (**1**). It has also been reported from border districts of Tamil Nadu and from Goa. The annual loss due to the disease has been estimated to be 968 million nuts in Kerala alone (**2**). Leaf rot is a disease of fungal complex mainly caused by *Colletotrichum gloeosporioides, Exserohilum rostratum* and *Fusarium* spp., that gets superimposed on 65% of root(wilt) affected palms (**3**). These two diseases are closely related and infact it is the leaf rot, which is responsible for the disfiguration of the palms and reduction in the photosynthetic area and yield.

Effect of combined application of fungicides (Contaf @ 2 ml or Indofil M-45 @ 3 g per palm and insecticide Phorate 10G @ 20 g per palm was tested on the serologically positive palms of the 31 CGDxWCT hybrids and 2 CGD x Tiptur Tall hybrids (+2 Arsekere) planted at the C.P.C.R.I. farm, Kayangulam during 1991 as recommended by CPCRI in the leaflet on 'Leaf rot disease' (**4**). The combined application of fungicide and insecticide was started on the 16 + 2 hybrid palms which were found serologically positive, during November 1996 and thereafter in April(Contaf) and November(Indofil M-45) every year, for 3 years. Similar treatments were given to healthy (serologically negative) palms also to study the prophylactic effect.

Of the five palms which had advanced leaf rot symptoms, 1 CGD x WCT and 2 CGD x Tiptur Tall (+2 Arsikere) palms had become totally free from the leaf rot disease and started bearing well (Table 2), after the initiation of the treatment. The

two palms which had mid whorl yellowing one palm developed leaf rot symptom also. Subsequent to the treatment this palm recovered from leaf rot disease (Table 2) and the other palm did not develop any leaf rot. The inflorescence necrosis and shedding of tender nuts also stopped and started bearing, which was completely barren for two years. Based on serological test, the time lag between the detection of latent stage of the disease and manifestation of visual symptoms varied from 6 to 24 months (**5**). The 16 coconut palms that were positive should have shown the visual symptoms of the root (wilt) followed by leaf rot but only 8 of them showed the visual symptoms of root (wilt) without leaf rot after 3 years of the positive reaction to the diagnostic tests (Table1 and 3). All the treated palms remained free from leaf rot disease, attack of rhinoceros beetle, red weevil, mealy bugs and millocerus during the course of the experiment, compared to surrounding palms in the farm.

Table 1. Results of serological test and visual observations of the progenies of disease free elite palms planted during 1991

Year	Total No. of palms	Number of palms with			No. of palms replanted
		Positive serological reaction	Negative serological reaction	Visual symptoms	
1996	31 +2 Arsikere	16 +2 Arsikere	15	3 +2 Arsikere	Nil
1999	26 +2 Arsikere	18 +2 Arsikere	8	8 +2 Arsikere	5

Table 2. Yield data of five palms affected by leaf rot disease

Palm No.	Annual yield of nut					Remarks
	1996	1997	1998	1999	2000	
3	156	29	Nil	Nil	2	Mid whorl yellowing
7	21	48	45	22	35	Mid whorl yellowing
8	48	16	94	15	116	
9	26	33	30	17	143	
18	75	57	31	18	90	

Table 3. Serological reaction and visual observations on leaf rot on progenies of disease free elite palms planted during 1991

Progeny No.	1996			1999			Remarks
	Serological reaction of palms		Visual symptom	Serological reaction of palms		Visual symptom	
	+ ve	- ve		+ ve	- ve		
1.		-	Nil				Replanted
2.	+		Nil	+		Nil	
3.	+		Nil	+		Diseased	Mid whorl yellowing
4.	+		Nil	+		Nil	
5.		-	Nil		-	Nil	
6.		-		+		D.E.	
7.		-		+		D.M.	
8.	+		Diseased with LR	+		Diseased	Diseased in 1996 itself
9.	+		Diseased with LR	+		Diseased	Both are Arsikere
10.		-		+			L.R + Millocerus
11.		-	Nil		-	Nil	
12.		-	Nil	+		Nil	
13.		-	Nil	+		Nil	
14.	+		Diseased with LR	+		?	Doubtful
15.	+		Nil	+		Nil	
16.	+		Nil				Replanted
17.	+		Nil	Dead			Replanted
18.	+		Diseased with LR	+			Diseased in 1996
19.	+		Nil	+		Diseased	Mid whorl Yellowing
20.		-	Nil		-	Nil	
21.	+		Nil	+			Stunted growth
22.		-	Nil		-	Nil	
23.		-	Nil		-	Nil	
24.	+		Nil	+		D.E.	
25.		-	Nil		-	Nil	
26.	+		Nil	+		Nil	
27.		-	Nil				Replanted
28.		-	Nil		-	Nil	
29.	+		Nil				Replanted
30.	+		Diseased with LR	+		Diseased	Diseased in 1996
31.		-	Nil		-	Nil	
32.	+		Nil	+		D.A	
33.	+		Nil	+		D.E.	

DE – Disease Early, **DM** –Disease Middle, **DA** – Disease Advanced, **LR** – Leaf Rot, **Diseased** – Root (wilt) without leaf rot.

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