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A NOTE ON CLONAL REACTION TO LEAF SPOT DISEASES IN BANANA

The fungus leaf spot diseases affecting banana cultivars are many. Nair (1966) has reported three important species, namely *Cordana musae*, *Septoria keralensis* and *Macrophoma musae* causing various leaf spot symptoms in banana under Vellayani (Trivandrum) conditions. With the introduction of Gros Michel and Cavendish varieties the incidence of 'Sigatoka' leaf spot disease caused by *Mycosphaerella musicola* is also found to be very prevalent in Kerala. In all these diseases the youngest leaves are apparently free from infection while older ones are infected. In the tropics, according to Simmonds (1939), the initial microscopic spots taken four to eight weeks to develop and hence the youngest leaves of even a heavily infected plant are apparently healthy. Based on this finding Meredith and Lawrence (1970) have suggested a system to classify the banana cultivars according to the intensity of the infection. They took the number of the youngest leaf with symptoms as a criterion of the susceptibility of the plant and found that the varieties belonging to the commercially important triploid group (AAA) were all very susceptible whereas AAB and ABB groups included some moderately susceptible cultivars. The diploids were either very or moderately susceptible. Nair (1966) has also observed considerable variation between varieties of banana in their susceptibility to leaf spot diseases.

In the present study, undertaken at the Banana Research Station, Kannara, Trichur during 1975—1976, seventy banana cultivars were classified according to their resistance to leaf spot diseases common in Kerala. The scoring system suggested by Meredith and Lawrence (1970) was used for this classification. Five plants were scored in each variety. The scoring was done on the 8th month after planting which synchronise with the onset of the S. W. monsoon. In each plant the number of the youngest leaf starting from the centre which showed the leaf spot symptoms was noted.

The genomic status of each variety has previously been determined using the scoring method of Simmonds and Shepherd (1955). The leaf spot resistance was graded according to the number of the youngest leaf on which the symptoms was seen as shown in Table 1. The observations on the clonal reaction to the leaf spot diseases are given in Table 2.

All the four resistant varieties belonged to the diploid AA group. 'Tongat' and 'Sannachenkadali' are table varieties even though their fruits are

Table 1

Number of the youngest leaf on which disease symptom was seen.	Grade No.	Resistance level
1 to 5	1	Highly susceptible (H. S.)
6 to 10	2	Susceptible (S)
11 to 15	3	Tolerant (T)
16 to 20	4	Highly tolerant (H. T.)
No symptom	5	Resistant (R)

Table 2**Clonal reaction of seventy banana cultivars with respect to leaf spot diseases**

Genome group	Resistance grade				
	1	2	3	4	5
AA	1. <i>Musa acuminata</i> 2. Namrai	J. Sikuzani 2. Matti	!. t isangmas		1. Paka 2. Pisanglilin 3. Tongat 4. Sanna- chenkadali
AAA	1. Gros Michel 2. Giant governor 3. Robusla 4. Lacatan	1. Dwarf cavandish 2. Monsmarie 3. Pachachingan 4. Amritsagar 5. Chakkara-kadali.	1. Chenkadali 2. Vadakkan- kadali 3. Wather 4. Ambala-kadali		
AAB	1. Mottapoovan 2. Mannan 3. Karimkadali	1. Myndoli 2. Nendran 3. Attunendran 4. Moongil 5. Rastali 6. Poovan 7. Vitroopakshy	1. Giant plantain 2. Palayar- kodan 3. Kodappani- llakunnen 4. Poomkali	1. China	

Table 2 (Contd.)

	8. Vannan	5. Neymannan
	9. Nendrapa- datti	6. Java
	10. Charapadatti	
	11. Chelti	
	12. Adakkakunnen	
	13. Zanzibar.	
ABB	1. Thenkunnen	1. Monthan 2. Kanchikela 3. Kallumon- than 4. Boodibale. 5. Venneettu- mannan, 6. Thellabontha 7. Sawai 8. Peykunnen
		1. Kostha bontha 2. Peyan 3. Elavazhai 4. Karpoora- vally 5. Pisangawak
AAAA		1. Bodies abtafort
BB	<i>M. balbisiana</i>	
AH	1. Aiyaramka- poovan 2. Adukkam 3. Nendra- kunnen	1. Neypoovan 2. Njalipoovan 3. Valiyakunnen 4. Venneettu- kunnen
ABBB		1. Hybridsawai 2. Klueteparod

very small. The other two varieties namely 'Pisang lilin' and 'Paka' are short duration varieties which produce only very small bunches. Both of them are now extensively used as male parent in breeding works (Shepherd, 1974). The present results confirm the value of these varieties as male parent in banana breeding works to transfer the leaf spot disease resistance to commercial varieties. The fruits of 'Sannachenkadali' are very thin and on ripening they develop 'cashew apple like' flavour which is not relished by the consumers. Hence this variety is not recommended in breeding works.

Most of the varieties belonging to ABB group were either tolerant or highly tolerant. Under AAB group only seven varieties out of a total of twenty-three scored were either highly tolerant or tolerant. Many of the Kerala varieties like Chenkadali, Vadakan Kadali, Ambalakadali, Palayankodan, Kodappanilla-kunnen, Poomkalli, Neymannan, Monthan, Venneethumannan, Peykunnen, Ney-poovan, Njalipoovan, Valiyakunnen and Venneethukunnen were found to be tolerant to leaf spot diseases when compared to the introduced varieties like Gross Michel and Robusta.

സംഗ്രഹം

70 വ്യത്യസ്ത വാഴയിനങ്ങളുടെ ഇലകളെ ബാധിക്കുന്ന ഫംഗസ് രോഗങ്ങൾക്കെതിരായുള്ള പ്രതിരോധശക്തി തിട്ടപ്പെടുത്തുന്നതിനു വേണ്ടിയുള്ള ഒരു പരീക്ഷണം 1975-76ൽ കണ്ണൂരിലെ വാഴഗവേഷണ കേന്ദ്രത്തിൽ നടത്തി. രോഗബാധയുടെ പ്രകടലക്ഷണം കാണിക്കുന്ന ഏറ്റവും ഇളയ ഇലയുടെ എണ്ണത്തെ അടിസ്ഥാനമാക്കിയാണ് ഓരോ വാഴയിനത്തിന്റേയും പ്രതിരോധശക്തി തിട്ടപ്പെടുത്തിയത്. AA എന്ന ട്രിപ്പോയ്ഡ് ജീനോമിക ഘടനയോടുകൂടിയ നാലു വാഴയിനങ്ങൾ പൂർണ്ണമായ രോഗപ്രതിരോധശക്തി പ്രകടിപ്പിച്ചതായി കണ്ടു. ചെങ്കടലി, വടക്കൻ കടലി, അമ്പലക്കടലി, പാളയൻകോടൻ, കൊടുപ്പനില്ലാകന്നൻ, പൂകള്ളി, നെയ്കണ്ണാൻ, മൊന്തൻ, വെണ്ണീറുകന്നൻ, പേയ്കന്നൻ, നെയ്പുവൻ, ഞാലി പുവൻ, വെണ്ണീറുമണ്ണാൻ, വലിയ കന്നൻ എന്നീ കേരളീയ വാഴയിനങ്ങൾ ഇലപ്പുള്ളിരോഗത്തെ ഒരു പരിധിവരെ ചെറുക്കുന്നവയാണെന്നു കണ്ടു. rarefimanjincaio ഗ്രോമിഷൽ, രോബസ്റ്റ തുടങ്ങിയ വിദേശീയ വാഴയിനങ്ങൾ പത്രഫംഗസ് രോഗങ്ങൾക്കു തികച്ചും അടിപ്പെടുന്നവയായിട്ടാണു കണ്ടത്.

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