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SCREENING GERmplasm COLLECTION OF COWPEA (*VIGNA SINENSIS* ENDL.) FOR TOLERANCE/RESISTANCE TO COLLAR ROT CAUSED BY *RHIZOCTONIA SOLANI*

In Kerala during Kharif season cowpea is grown in sizable area either as an intercrop in coconut gardens or as a pure crop in uplands, or home-stead gardens for its green pods. Lately in the experimental fields of Rice Research Station, Pattambi, wilting of cowpea during kharif season had become a regular feature. Among the diseases affecting cowpea web blight (collar rot) caused by *Rhizoctonia solani* was reported by Onesirosan (1975). This disease is gaining much importance due to its devastating nature and its severe crop damage during kharif season. The heavy uninterrupted rains received during this season favours the quick spread of the disease and consequent crop loss.

The first visible symptom of the disease is the occurrence of water soaked lesions on the leaves and rotting of stem at the collar region. As the disease advances lesions enlarge and on the rotten region of the stem at the collar region white cottony mycelial web and numerous creamy white globular sclerotial bodies start to appear. In the advanced stages of infection the leaves turn yellow and the whole plant withers and dries off.

*Rhizoctonia solani* being soil borne and the sclerotia persists in the soil for a long period, effective control measures are difficult. Drenching agallol is found to be of little success. Taking into account the serious nature of this disease for kharif cowpea crop—the major kharif pulse of Kerala—a preliminary screening trial was conducted with 3 view to isolate a variety with inherent resistance/tolerance to this disease. The results of this trial are presented herein.

Twenty nine promising varieties selected from the germplasm collections maintained at Rice Research Station, Pattambi formed the material for the present study and are listed in Table 1. Sowing was done at a spacing of 30 cm between rows and 20 cm between plants with one seed per hole. The gross plot size was 4M x 3M. N, P & K were applied at the rate of 10:30:10 kg/ha as basal dose. Observations on total plant count immediately after establishment (10 days after sowing) and total No. of plants affected by web blight upto 30 days after sowing were recorded under natural incidence of the disease. The experiment was conducted during 1977—78 and 1978—79 kharif seasons. The data were analysed separately as detailed below:

Table 1 Incidence of disease observed during different years

Variety	1977-78		1978-79	
	% Incidence*		Variety	% Incidence*
New Era	1.43 a		Ptb-1	4.5 a
C-5-7	2.86 ab		Calicut-78	7.0 a
Calicut-78	2.86 ab		Selection-1476	7.5 a
Pusa Barsati	4.29 abc		Calicut-51	9.0 a
Selection-1476	5.00 abc		C-5-7	10.0 a
Copusa-3	7.14 bc		Mancherry local	20.0 a
Ptb-1	7.86 bc		Culture-2	20.56 b
Copusa-2	8.57 bc		V-37	21.00 b
C. G. 28	8.57 bc		Pusa Barsati	25.0 bc
Vayalathur Red	10.00 bcd		Mayyanadu local	28.0 bcd
H. G. 22	10.71 cd		Copusa-3	31.0 cd
Copusa-1	10.71 cd		New Era	38.5 de
Calicut-51	12.86 cde		Copusa-1	40.5 ef
V-37	20.00 def		H. O. 22	42.0 ef
V-38	20.71 ef		V. 38	46.5 efg
Mayyanadu local	25.71 efg		Cowpusa-2	47.0 efg
Culture-I (Pattambi)	28.57 fg		Pusa phalguni	47.5 efg
V-16	31.43 g		Culture-(Pattambi)	52.0 fgh
Culture-2	35.72 gh		Vayalathur Red	51.0 fghi
S. 488-9-1-1	44.29 hi		Pusa defasli	53.0 ghi
K-39	47.14 hi		P-118	60.0 hij
Mancherry local	47.14 hi		Kolingi payar	60.0 hij
Pusa Phalguni	53.57 i		Culture-1	61.0 hij
Kolingi payar (Black)	70.72 j		Kolingi payar (White)	62.0 ij
Culture-1	72.86 jk		V-16	64.0 j
Pusa defasli	74.29 jk		S. 488-9-1-1	75.5 k
P. I18	80.72 k		C. G.28	76.5 k
Kolingi payar (White)	80.72 k		No. 104	77.5 k
No. 104	81.43 k		K. 39	82.5 k

\* Varieties whose percentages followed by the same letter are not significantly different at 5% level.

The significance of the difference between varieties were analysed by converting percentage to angles and comparing,

$$\frac{O_1 - O_2}{\sqrt{821 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

to 1.96 (critical value)

where  $O_1$  &  $O_2$  are angles and  $n_1$  and  $n_2$  the corresponding initial population in comparing treatments.

From the results obtained it is seen that the disease incidence varied widely from 1.43% to 82.5% depending on varieties, thus indicating that the varieties showed much variation in resistance/tolerance to this disease.

It is observed that varieties ptb-1 (Kanakamani), Calicut-78, selection-1476, C-5-7, and Pusa parsati showed consistently low percentage of disease incidence during both the years. This may probably be due to the high relative resistance/tolerance of these varieties to this disease. It is also seen that the varieties Pusa Dofasli; P-118. Culture-1, Kolingipayar (white and black) S.488-9-1-1, number 104 and K-39 are highly susceptible to this disease, the strain 104 being the most vulnerable one. This study has indicated the possibility of selecting varieties inherently resistant to *Rhizoctonia solani* for practical exploitation.

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### സംഗ്രഹം

രൈസക്ടോണിയവാട്ടം എന്ന രോഗത്തിന് സ്വതസിദ്ധമായ പ്രതിരോധശക്തിയുള്ള ഒരു വൻപയറിനും ഉരുത്തിരിച്ചെടുക്കുവാനായി 1977-78; 1978-79 വർഷങ്ങളിലെ ഒന്നാം വിളക്കാലത്ത് 29 മേത്തരം വൻപയറിനങ്ങൾ ഉപയോഗിച്ചു നടത്തിയ പ്രാഥമിക പരീക്ഷണത്തിൽനിന്നും പി. ടി. ബി. ഒന്ന് (കനകമണി); കാലിക്കറ്റ്-78; സെലക്ഷൻ-1476; സി-5-7; പുസപർസാത്തി എന്നീ ഇനങ്ങൾ തുടർച്ചയായി രോഗപ്രതിരോധശക്തിയുള്ള ഇനങ്ങളാണെന്ന് കാണുകയുണ്ടായി. എന്നാൽ പുസഡോഫസലി പി-118; കൊളിഞ്ഞിപ്പയർ (വെള്ളയും, കറുപ്പും), കൾച്ചർ-1; എസ്സ്-448-9-1-1; നമ്പർ-104; കെ-39 എന്നീയിനങ്ങൾ ഈ രോഗത്തിന് കൂടുതൽ വശംവദമാകുന്നതായും കാണുകയുണ്ടായി. നമ്പർ 104 എന്നയിനത്തിനാണ് ഈ രോഗംമൂലം കൂടുതൽ നാശനഷ്ടമുണ്ടായതായി കണ്ടത്.

### REFERENCE

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