Performance of rice varieties against the rice blue beetle, *Leptispa pygmaea* Baly (Coleoptera:Chrysomelidae)

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ABSTRACT

One hundred and five varieties / entries were screened for their field reaction against Leptispa pygmaea. None of the varieties was found to be completely resistant. Moderate resistance was observed in nine traditional Pattambi varieties viz., Ptb.3 (Eravanpandy), Ptb.4 (Vellari), Ptb.7 (Parambuvattan), Ptb.9 (Thavalakannan), Ptb.18 (Eravapandy), Ptb.19 (Athikkiraya), Ptb.20 (Vadakkan Chitteni), Ptb.25 (Thonnooran), Ptb.26 (Chenkayamma) and a short duration high yielding variety of Mannuthy (Hraswa) with a damage score of '3. The varieties MO 12, IET 17895 (UTR 57), Ptb.39 (Jyothi), Ptb.41 (Bharathy) and Varna were found to be highly susceptible to the pest with a damage score of '9'.

Key words: *Blue beetle, Ptb varieties, Moncompu varieties*

More than 100 insect pests attack rice crop, out of which 20 are major pests (Pathak and Dhaliwal, 1981). The rice blue beetle, *Leptispa pygmaea* Baly (Chrysomelidae : Coleoptera) hitherto reported as a minor pest (David and Kumaraswami, 1975) has recently assumed a serious status by causing pest out breaks in the rice growing tracts of northern districts *viz.,* Palakkad, Kannur and Kasargod in Kerala. Host plant resistance being the most important basic component of IPM, a study was undertaken in order to identify any source of resistance against the pest by screening 105 available rice varieties.

Cultures/varieties released by the Kerala Agricultural University (KAU) and a few entries from the Directorate of Rice Research (DRR), Hyderabad were field screened for resistance against *L. pygmaea* at the Regional Agricultural Research Station, Pattambi, Kerala Agricultural University during wet and dryseason, 2005.

Twenty two days old rice seedlings of different varieties/cultures/entries were transplanted in the field with a spacing of 20 x 15 cm in one row of 20 hills variety^{-1} at the rate of one seedling hill^{-1}. Observations on the rice blue beetle damage *viz.,* total damaged hills, number of damaged leaves and damage score hill^{-1} from ten randomly selected hills were made at 10 and 20 days afer transplanting. The maximum and minimum mean values of these observations were recorded. Based on the intensity of blue beetle damage recorded by scoring technique, the reaction of the tested varieties was evaluated as per the method given below.

Technique for evaluation of rice varieties for resistance to L. pygmaea

Damaged leaves hil^{-1}l (%)	Score	Reaction
No damage	0	Highly Resistant (HR)
1-10	1	Resistant (R)
11-25	3	Moderately Resistant (MR)
26-50	5	Moderately Susceptible (MS)
51-75	7	Susceptible (S)
More than 75	9	Highly Susceptible (HS)

Among the 106 rice varieties / entries tested for field resistance to *L. pygmaea*, none was found to be resistant. Moderate resistance was observed in nine Pattambi traditional varieties *viz.*, Ptb.3 (Eravanpandy), Ptb.4 (Vellari), Ptb.7 (Parambuvattan) , Ptb.9 (Thavalakannan), Ptb.18 (Eravapandy), Ptb.19 (Athikkiraya), Ptb.20 (Vadakkan Chitteni), Ptb.25 (Thonnooran), Ptb.26 (Chenkayamma) and a short duration high yielding variety of Mannuthy (Hraswa) (Table 1). They exhibited a leaf damage score of '3. Nadarajan and Skaria (1993) reported that the varieties

Table 1. Reaction of different rice varieties / entries against the infection by the blue beetle, *Leptispa pygmaea*

Varieties/ Cultures	Damaged hills (%)	Damaged leaves hill^{-1} (%)	DamageScore	Reaction
	Min. – Max.	Min. – Max.		
Ahalya (Cul 10-15)	55 - 80	31.33 - 57.50	7	S
Hraswa (Cul24-20)	**40 - 60**	**12.50 - 24.36**	**3**	**MR**
Bhadra (MO 4)	50 - 85	10.75 - 31.40	5	MS
Asha (MO 5)	50 - 85	10.00 - 39.13	5	MS
Pavizham (MO 6)	50 - 80	15.60 - 52.27	7	S
Karthika (MO 7)	45 - 70	23.40 - 45.12	5	MS
Aruna (MO 8)	40 - 80	4.88 - 45.21	5	MS
Makom (MO 9)	65 - 75	23.53 - 35.60	5	MS
Remya (MO 10)	50 - 75	10.22 - 46.84	5	MS
Kanakom (MO 11)	55 - 80	16.95 - 56.98	7	S
Ranjini (MO 12)	65 - 90	37.63 - 80.21	9	HS
Pavithra (MO 13)	70 - 90	31.52 - 52.08	7	S
Panchami (MO 14)	65 - 80	42.11 - 69.41	7	S
Ramanika (MO 15)	75 - 100	31.76 - 61.84	7	S
Uma (MO 16)	65 - 85	40.28 - 61.68	7	S
Revathy (MO 17)	45 - 85	18.75 - 62.80	7	S
Karishma (MO 18)	45 - 70	11.71 - 62.07	7	S
Krishnanjana (MO 19)	65 - 95	41.30 - 69.81	7	S
Gowri (MO 20)	45 - 85	10.00 - 40.82	5	MS
Aryan (Ptb.1)	30 - 65	18.07 - 59.26	7	S
Ponnaryan (Ptb.2)	50 - 75	4.13 - 46.43	5	MS
Eravanpandy (Ptb.3)	**35 - 60**	**6.20 - 20.29**	**3**	**MR**
Vellari (Ptb.4)	**10 - 45**	**4.17 - 23.08**	**3**	**MR**
Velutharikayama (Ptb.5)	20 - 45	0.86 - 69.38	7	S
Athikkiraya (Ptb.6)	20 - 65	4.62 - 35.15	5	MS
Parambuvattan (Ptb.7)	**25 - 55**	**10.98 - 16.56**	**3**	**MR**
Chuvannari (Ptb.8)	35 - 75	10.61 - 36.52	5	MS
Thavalakannan (Ptb.9)	**30-60**	**6.76-23.01**	**3**	**MR**
Thekkancheera (Ptb.10)	10 - 40	14.96 - 36.30	5	MS
Chitteni (Ptb.12)	50 - 70	6.82 - 37.50	5	MS
Kayama (Ptb.13)	60 - 75	26.61 - 41.38	5	MS
Maskathi (Ptb.14)	30 - 65	11.54 - 33.25	5	MS
Kavunginpoothala(Ptb.15)	25 - 85	25.85 - 61.39	7	S
Kavunginpoothala (Ptb.16)	40 - 70	5.47 - 37.61	5	MS
Jedduhalliga (Ptb.17)	25 - 50	3.03 - 53.01	7	S
Eravapandy (Ptb.18)	**20 - 45**	**2.82 - 21.48**	**3**	**MR**
Athikraya (Ptb.19)	**15 - 40**	**0.66 - 16.79**	**3**	**MR**
Vadakkanchitteni **(Ptb.20)**	**15 - 50**	**3.48 - 22.05**	**3**	**MR**
Thekkan (Ptb.21)	40 - 70	17.36 - 39.34	5	MS
Veluthavattan (Ptb.22)	45 - 80	17.32 - 38.89	5	MS
Cheriya Aryan (Ptb.23)	45 - 60	12.82 -48.89	5	MS
Chuvannavattan (Ptb.24)	15 - 75	3.26 - 30.77	5	MS
Thonnooran (Ptb.25)	**25 - 60**	**16.20 - 24.81**	**3**	**MR**
Chenkayamma (Ptb.26)	**15 - 45**	**4.83 - 15.38**	**3**	**MR**
Kodiyan (Ptb.27)	35 - 70	4.84 - 34.83	5	MS
Kattamodan (Ptb.28)	35 - 70	14.29 - 29.57	5	MS
Karuthamodan (Ptb.29)	50 - 85	30.93 - 63.16	7	S
Chuvannamodan (Ptb.30)	40 - 65	24.11 - 39.62	5	MS
Elappapoochampan (Ptb.31)	50 - 70	28.38 - 36.56	5	MS
Aruvakkari (Ptb.32)	40 - 70	19.17 - 42.67	5	MS

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Arikrayi (Ptb.33)	20 - 70	9.01 - 29.67	5	MS
Valliyachampan (Ptb.34)	25 - 65	3.15 - 31.51	5	MS
Annapoorna (Ptb.35)	35 - 65	11.58 - 37.04	5	MS
Rohini (Ptb.36)	45 - 60	18.95 - 57.33	7	S
Aswathy (Ptb.37)	45 - 70	24.80 - 49.32	5	MS
Triveni (Ptb.38)	40 - 80	10.08 - 50.00	5	MS
Jyothi (Ptb.39)	45 - 80	8.70 - 81.93	9	HS
Sabari (Ptb.40)	55 - 75	29.84 - 64.13	7	S
Bharathy (Ptb.41)	60 - 85	47.11 - 79.31	9	HS
Suvarna Modan (Ptb.42)	20 -70	9.80 - 57.80	7	S
Swarnaprabha (Ptb.43)	35 - 75	8.28 - 33.16	5	MS
Reshmi (Ptb.44)	35 - 70	4.14 - 39.25	5	MS
Matta Triveni (Ptb.45)	30 - 45	6.00 - 55.84	7	S
Jayathy (Ptb.46)	50 - 75	11.45 - 58.24	7	S
Neeraja (Ptb.47)	25 - 60	4.97 - 40.60	5	MS
Nila (Ptb.48)	50 - 85	7.14 - 37.74	5	MS
Kairali (Ptb.49)	55 - 75	28.13 - 46.51	5	MS
Kanchana (Ptb.50)	60 - 70	17.99 - 57.73	7	S
Aathira (Ptb.51)	50 - 70	19.54 - 38.10	5	MS
Aishwarya (Ptb.52)	35 - 65	8.28 - 37.86	5	MS
Mangalamashuri (Ptb.53)	35 - 60	9.32 - 65.12	7	S
Karuna (Ptb.54)	35 - 50	5.53 - 25.15	5	MS
Harsha (Ptb.55)	60 - 70	15.63 - 55.14	7	S
Varsha (Ptb.56)	35 - 60	10.10 - 61.11	7	S
Swetha (Ptb.57)	60 - 80	17.21 - 58.11	7	S
Ptb-2005-1 (F5-11-3)	35 - 55	9.01 - 49.23	5	MS
Ptb-2005-2 (F5-17-1-1)	30 - 70	9.92 - 49.33	5	MS
Ptb-2005-3 (F5-23-1)	60 - 95	17.22 - 61.45	7	S
Ptb-2005-4 (F5-23-2)	75 - 90	25.17 - 64.79	7	S
Ptb-2005-5 (F6-11-1-1)	80 - 85	26.36 - 63.64	7	S
Ptb-2005-14 (C3-2-(KM))	60 - 80	37.23 - 60.42	7	S
Ptb-2005-15 (C3-2-49-H-11)	30 - 60	10.47 - 34.91	5	MS
WR-3-2-1 (IET18206)	65 - 75	19.70 - 50.00	5	MS
NDR-1091-5 (IET18716)	60 - 70	20.18 - 34.78	5	MS
RR 363-1 (IET18717)	55 - 70	14.29 - 34.91	5	MS
NDR 9830109 (IET18784)	60 - 65	7.75 - 32.31	5	MS
IR 72014-11-NDR-35 (IET18476)	45 - 60	7.14 - 37.50	5	MS
CSAR 442 (IET18892)	60 - 75	23.53 - 41.24	5	MS
RGL 11694 (IET18895)	60 - 85	24.68 - 54.67	7	S
DBS 13-1-AR (IET18904)	55 - 70	21.01 - 54.26	7	S
HKR 01-62 (IET18917)	50 - 60	30.95 – 50.00	5	MS
RAU 1415-9 (IET18924)	50 - 60	7.43 - 48.50	5	MS
UTR 57 (IET17895)	45 - 85	17.36 - 81.01	9	HS
CR 749-20-2-18-15 (IET18946)	55 - 90	16.28 - 43.88	5	MS
NDR-2069 (IET18948)	55 - 70	14.55 - 44.68	5	MS
CN1163-7-9-1 (IET18183)	30 - 70	14.55 - 61.54	7	S
Kayamkulam-1 (Lakshmi)	50 - 75	5.51 - 58.46	7	S
Kayamkulam-2 (Bhagya)	65 - 70	26.04 - 46.30	5	MS
Kayamkulam-3 (Onam)	55 - 70	14.01 - 51.09	7	S
Kayamkulam-4 (Dhanya)	20 - 55	6.16 - 42.17	5	MS
Kayamkulam-5 (Dhanu)	35 - 60	3.39 - 41.49	5	MS
Kayamkulam-6(Sagara)	35 - 60	2.90 - 36.45	5	MS
Kayamkulam-7 (Chingam)	20 - 75	2.94 - 61.54	7	S
Kunjukunju (Priya)	20-50	13.33-53.66	7	S
Kunjukunju (Varna)	50-80	52.67-78.30	9	HS

* Each value is from the observations recorded during wet and dry eason 05; * Score value is based on the highest value of leaf damage recorded during wet and dry season 05; *MR : Moderately resistant, MS : Moderately Susceptible, S : Susceptible, HS : Highly susceptible

Ptb.4, Ptb.10, Ptb.28, Ptb.36, H4, GEB 24 were resistant to blue beetle. But in the present study Ptb.4 was found to be only moderately resistant whereas Ptb.10 and Ptb.28 were found to be moderately susceptable and Ptb.36 was susceptable to rice blue beetle.

Seven Moncompu varieties (MO 4, MO 5, MO 7, MO 8, MO 9, MO 10, MO 20), 19 Pattambi traditional varieties (Ptb.2, Ptb.6, Ptb.8, Ptb.10, Ptb.12, Ptb.13, Ptb.14, Ptb.16, Ptb.21, Ptb.22, Ptb.23, Ptb.24, Ptb.27, Ptb.28, Ptb.30, Ptb.31, Ptb.32, Ptb.33, Ptb.34), 11 Pattambi high yielding varieties (Ptb.35, Ptb.37, Ptb. 38, Ptb.43, Ptb.44, Ptb.47, Ptb.48, Ptb.49, Ptb.51, Ptb.52, Ptb.54), 10 DRR cultures (IET 18206, IET 18716, IET 18717, IET 18784, IET 18746, IET 18892, IET 18917, IET 18924, IET 18946, IET 18948) and four Kayamkulam varieties (KYLM 2, KYLM 4, KYLM 5, KYLM 6) were observed to be moderately susceptable to blue beetle. Susceptible varieties included nine varieties of Moncompu (MO 6, MO 11, MO 13, MO 14, MO 15, MO 16, MO 17, MO 18, MO 19), five Pattambi traditional varieties (Ptb.1, Ptb.5, Ptb.15, Ptb.17, Ptb.29), 10 Pattambi high yielding varieties (Ptb.36, Ptb.40, Ptb.42, Ptb.45, Ptb.46, Ptb.50, Ptb.53, Ptb.55, Ptb.56, Ptb.57), three DRR cultures (IET 18895, IET 18904, IET 18183) and two Kayamkulam varieties (KYLM 3, KYLM 7) and a variety of Mannuthy (Ahalya) and Kunjukunju variety (Priya). The present finding is contrary with the report of Elsy *et al*. (1995) who observed that Kunjukunju variety was less susceptable to *L. pygmaea*.

A Moncompu variety (MO 12), a DRR culture (IET 17895), two Pattambi high yielding varieties (Ptb.39 (Jyothi), Ptb.41 (Bharathy) and Kunjukunju variety (Varna) were found to be highly susceptible to the blue beetle with a score of '9'. Jyothi (Ptb. 39), the most popular variety cultivated in Kerala was found to be highly susceptible to *L. pygmaea*.

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