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RESPONSE OF PIGEONPEA GENOTYPES AGAINST PIGEONPEA LEAF WEBBER *GRAPHOLITA CRITICA* (MEYR.) (LEPIDOPTERA: TORTRICIDAE)

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ABSTRACT

Fifty three pigeon pea genotypes were screened against leaf webbber, *G. critica* of which 11 genotypes were from Multilocation trial Medium duration (MLT-MD), 18 genotypes from All India Crop Improvement Project (AICRP) trials and 24 genotypes from International Crops Research Institute for Semi-arid Tropics (ICRISAT) trials. Under MLT-MD trials the variety Asha and TS 3R C4 (2.67 webs/ 5 plants) recorded the lowest number of webs. In AICRP trials the lowest number of webs per five plants was observed in RVSA 81 (1.33 webs/ 5 plants), Rajeev lochan, P-703 (2.00 webs/ 5 plants), RVSA 34, RVSA 64, WRG 157 and WRG 98 (2.33 webs/ 5 plants). The leaf webbber population in genotypes under ICRISAT trials ranged from 2.33 webs / 5 plants in ICPHRL 4979-7 to 4.67 webs / 5 plants in ICPHRL 4985-1 and ICP-7035.

Key words: *Grapholita critica*, Screening, Pigeonpea.

INTRODUCTION

Pigeonpea, *Cajanus cajan* (Linnaeus.) is an important legume crop produced in Asia, Africa, Latin America and the Caribbean region. India is probably the primary center of origin of pigeonpea. In India, it is one of the very important grain legumes and occupies second position in area and production next to chickpea. *Grapholita critica* is becoming a predominant insect pest in the recent past in all pigeonpea growing areas of our country. This pest is a major factor responsible for heavy loss in early and medium late maturing pigeonpea genotypes (Sahoo and Senapati, 2000). *Grapholita critica* incidence is common throughout the pigeonpea growing areas of India, which was a minor pest and becoming major during the course of time. It is a minor pest (Narendra *et al*., 1998) in some pigeonpea growing areas but the chances of becoming a major pest (Akhilesh and Nath, 2003; Sinam and Singh, 2004) is more due to its nature of damage. Since information on varietal resistance is lacking the present studies were conducted on this aspect.

MATERIALS AND METHODS

Fifty three pigeonpea entries were screened against *G. critica* incidence in a field trial laid out at Agricultural college, Gulbarga during 2012-13 of which 11 genotypes were from Multilocation trial Medium duration (MLT-MD), 18 genotypes from All India Crop Improvement Project (AICRP) trials and 24 genotypes from International Crops Research Institute for Semi-arid Tropics (ICRISAT) trials. Experiment was carried out in a single row trial replicated thrice in which each genotype was sown in rows of 5 m length. The recommended

package of practices were followed to raise the crop except plant protection.

Observations were made at weekly interval during the peak incidence period on each genotype. Five plants were selected randomly in each row and tagged. At the end of harvest yield was recorded from the tagged plants in each row and computed for ha area. The numbers of larval webs per five plants were counted in each genotype by randomly selecting five plants in each row and the data was statistically analysed by using the software Duncan's multiple range test (DMRT).

RESULTS AND DISCUSSIONS

The data on the screening of pigeonpea genotypes against leaf webber, *G. critica* revealed that of the 11 pigeonpea genotypes under Multilocation trial Medium duration (MLT-MD), lowest number of webs per five plants observed in TS 3R C4 and ASHA (2.67 webs/ 5 plants) (Table 1). Similarly on 18 genotypes from All India Crop Improvement Project (AICRP), trials the lowest number of webs per five plants was observed in RVSA 81 (1.33 webs/ 5 plants). Rajeevlochan, P-703 (2.00 webs/ 5 plants), RVSA 34, RVSA 64, WRG 157 and WRG 98 (2.33 webs/ 5 plants) (Table 2) and in case of 24 genotypes from International Crops Research Institute for Semi-arid Tropics (ICRISAT), the lowest number of webs per five plants was observed in ICPHRL 4979-7 (2.33 webs/ 5 plants), ICP 13212, ICP 10531 (2.67 webs/ 5 plants) (Table 3).

Bhadauria *et al.* (1998) reported that ICPL 84023, MPG 537, ICPL 85012 and ICPL 85010 are the least susceptible to attack by *G. critica.*

The grain yield in genotypes under MLT-MD, AICRP and ICRISAT ranged from 1529 kg per ha in GRG-811, 1262 kg per ha in WRG-65 and 1388.88 kg per ha in ICPHRL4985-1 respectively. Sahoo and Senapati (2000) reported that relative abundance of *G. critica* in UPAS 120 (early duration variety) was 48.72, 13.25 and 9.55 per cent at 50 per cent flowering, pod elongation and grain filling stage, respectively. Bant and Harpreet (2006) reported that three genotypes, AL1340, AL1498 and AL1502 maintained their superiority and showed resistant reaction for *G. critica*. Sahoo and Senapati (2000) concluded that the

Table 1. Screening of promising pigeonpea genotypes from multilocation trials medium duration (MLT-MD) against *Grapholita critica*

Sl. No.	Genotypes	Webs/5 plants*	Yield (kg/ ha)*
1.	GRG 811	4.67(2.24)[a]	1529.67 [a]
2.	GPHR 08-11	3.67(2.00)[ab]	822.59 [c]
3.	GRG 2009	3.67(2.03)[ab]	789.53 [c]
4.	GRG 2010	3.67(2.03)[ab]	1175.21 [b]
5.	GRG2012	4.33(2.15) [a]	956.93 [bc]
6.	GRG 818	3.33(1.94) [ab]	491.80 [d]
7.	GRG822	3.00(1.86) [ab]	1115.86 [b]
8.	JRM 197	3.33(1.95) [ab]	768.78 [c]
9.	TS 3R C4	2.67(1.77) [b]	1072.84 [bc]
10.	Maruthi	3.33(1.95) [ab]	998.91 [bc]
11.	Asha	2.67(1.76) [b]	1007.21 [bc]
	S. Em±	0.12	31.43
	CD @ 5%	0.36	92.73

* Mean of three replications

Means followed by same letter do not differ significantly at p=0.05 as per DMRT

Figures in the parentheses are √x+0.5 transformed values.

Table 2. Screening of promising pigeonpea genotypes from AICRP trials against *Grapholita critica*

Sl. No.	Genotypes	Webs/ 5 plants*	Yield (kg/ ha)*
1.	BRG 10-02	4.00(2.09) [ab]	1079.99 [ac]
2.	BRG 11-01	3.33(1.93) [ac]	472.61 [g]
3.	LRG 52	3.00(1.86) [ad]	660.42 [dg]
4.	RVSA 34	2.33(1.57) [bd]	722.54 [eg]
5.	RVSA 64	2.33(1.68) [bd]	693.19 [fg]
6.	RVSA 68	4.67(2.24) [a]	1184.62 [bg]
7.	RVSA81	1.33(1.34) [d]	809.63 [fg]
8.	RVKT 260	2.67(1.74) [ad]	918.31 [ac]
9.	RVKT261	4.67(2.18) [a]	892.69 [af]
10.	Rajeev lochan	2.00(1.56) [bd]	917.91 [ae]
11.	WRG 79	3.67(1.97) [ac]	1093.06 [a]
12.	WRG 65	3.33(1.88) [ac]	1262.20 [ad]
13.	WRG 181	2.67(1.74) [ad]	708.64 [fg]
14.	WRG 157	2.33(1.67) [bd]	1070.05[cg]
15.	WRG 98	2.33(1.67) [bd]	680.34 [eg]
16.	P-703	2.00(1.48) [cd]	1007.74 [dg]
17.	ICPL 332	4.00(2.11) [ab]	666.53 [fg]
18.	Gullyel local	3.33(1.93) [ac]	816.39 [ab]
	S. Em ±	**0.15**	**31.82**
	CD @ 5%	**0.45**	**91.26**

* Mean of three replications
Means followed by same letter do not differ significantly at p=0.05 as per DMRT
Figures in the parentheses are √x+0.5 transformed values.

occurance of *G. critica* in early duration varieties was around 23.84 per cent, whereas occurance of *G. critica* in medium duration was around 10.65 per cent.

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Table 3. Screening of promising pigeonpea genotypes from International Crops Research Institute for Semi-arid Tropics (ICRISAT) trials against *Grapholita critica*

Sl. No.	Genotypes	Webs/ 5 plants*	Yield (kg/ ha)*
1.	ICPL 909	4.33(2.20) ^{ab}	793.64 ^{dg}
2.	ICPL 87119	3.00(1.86) ^{ab}	980.38 ^{dg}
3.	ICPL 20036	3.67(2.03) ^{ab}	584.79 ^{cd}
4.	ICPHRL 4979-7	2.33(1.66) ^{b}	1225.48 ^{de}
5.	ICRL 88039	4.00(2.08) ^{ab}	496.03 ^{hi}
6.	ICPHRL 4985-1	4.00(2.11) ^{ab}	1388.88 ^{ab}
7.	ICPL 84060	4.33(2.20) ^{ab}	925.92 ^{dg}
8.	ICPL 98008	4.33(2.20) ^{ab}	434.02 ^{dg}
9.	ICPHRL 4985-4	3.33(1.94) ^{ab}	877.18 ^{df}
10.	ICPHRL 4985-11	3.67(2.04) ^{ab}	483.09 ^{dg}
11.	ENT 11	4.33(2.16) ^{ab}	326.79 ^{df}
12.	ICPL 332WR	4.00(2.04) ^{ab}	441.91 ^{eh}
13.	ICP-7035	4.67(2.24) ^{a}	877.18 ^{fi}
14.	ICPX 77303	3.67(1.97) ^{ab}	416.66 ^{a}
15.	ICP13212	2.67(1.73) ^{ab}	277.78 ^{i}
16.	ICP 13198	3.00(1.81) ^{ab}	520.83 ^{fi}
17.	ICPHRL 4985-1	4.67(2.22) ^{a}	578.70 ^{ei}
18.	ICPL.20062	3.33(1.93) ^{ab}	505.05 ^{dg}
19.	ICPL 97253	3.00(1.85) ^{ab}	595.23 ^{dg}
20.	PPE 45-2	3.00(1.83) ^{ab}	416.66 ^{de}
21.	T- 21	4.33(2.15) ^{ab}	555.55 ^{eh}
22.	ICP 10531	2.67(1.77) ^{ab}	462.96 ^{gi}
23.	8863	3.00(1.83) ^{ab}	1064.79 ^{bc}
24.	ICPHRL 4979-2	3.00 (1.85) ^{ab}	555.55 ^{gi}