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Field Screening of some Pigeonpea (*Cajanus Cajan* (L.) Millsp.) Genotypes against Gram Pod borer [(*Helicoverpa armigera* (Hubner)] and Pod fly [(*Melanagromyza obtusa* (Malloch)]

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Pigeonpea (*Cajanus Cajan* (L) Millsp.) is an important pulse crop grown in India. More than 200 species of insects have been found feeding on pigeonpea, although only a few of them have been found to cause significant and economic damage to the crop. Lal and Katti (1997) reported that pod borer (*Helicoverpa armigera*) and pod fly (*Melanagromyza obtusa*) are the most serious pests causing 80-90% damage to pigeonpea. Sahoo and Senapati (2000) revealed that a yield loss of 27.77 and 14.28 kg ha^{-1} was obtained for each unit increase in larval population and for every unit per cent increase in pod damage due to pod borer complex. Management of these pests mainly relies on insecticides often excluding non-chemical methods of pest management. However, growing varieties resistant to these pests is a viable and cost effective option as pigeonpea is mostly grown by poor and marginal farmers. Therefore, identification of cultivars resistant/tolerant to these pests is of much value. Several workers screened different genotypes of pigeonpea for resistance against insect pests (Raut *et al*., 1993; Nanda *et al.,* 1996 and Mandal, 2005). Information on relative resistance of certain newly developed entries of pigeonpea to these pests is not available. The present study was conducted to screen sixteen pigeonpea genotypes against *H. armigera* and *M. obtusa* through open field screening technique using natural pest population during *Kharif,* 2007 at Regional Agricultural Research Station, Professor Jayashankar Telangana State Agricultural University (*formerly part of Acharya N. G. Ranga Agricultural University*),Warangal.

Sixteen pigeonpea genotypes *viz.*, SKNP 0527, CORG-06-05, PT-02-5, GRG-207, AKT-222544, JSA-68, WRG-91, PT-03-142, SKNP-530, BRG-7-1, BDN-2004-1, BRG-7-2, JKM-218, JSA-81, MAL-29 and PT-03-27 along with four released varieties as checks (LRG-41, ICPL-87119, CO-6 and WRG-27) were sown in a Randomized Block Design with two replications each in 10.8 m^2 plot at a spacing of 90 cm between the rows and 20 cm within the row. The crop was grown in clay loam soil under rainfed conditions. All recommended agronomic practices were followed except plant protection measures. Phenological observations like number of days to 50% flowering, days to maturity were recorded in each genotype. Damage by pod borer *H. armigera* and pod fly *M. obtusa* were assessed by collecting total pods from five randomly selected plants in each plot at the time of maturity. Pod damage was recorded by counting number of pods damaged by pod borer and pod fly separately. At harvest, the grain yield per plot was recorded and converted to kg ha^{-1} and analyzed. Data on per cent pod damage were transformed to Arc sine transformations and analyzed statistically.

The pigeonpea genotypes showed variation in the extent of damage by *H. armigera*, *M. obtusa*, days to 50% flowering, maturity and grain yield (Table 1). Among the entries, days to 50% flowering ranged from 121 to 154 days while days to maturity ranged from 160 to 196 days. The local check variety WRG-27 recorded 8.04% pod damage due to *H. armigera*, 23.47% pod damage due to *M. obtusa*. Another local check variety LRG-41 also recorded equivalent pod damage by *H. armigera* (6.02%) and *M. obtusa* (19.85%). Pod borer damage among the test entries ranged from 6.28 (BRG-7-1) to 33.48 (AKT-222544) while that by *M. obtusa* was highly variable, ranging from 6.05% in CORG-06-5 to 59.7% in BRG-7-1. Of the test genotypes, BRG-7-1 and BRG-7-2 recorded significantly lower pod damage by *H. armigera* and were at par with the

Table 1: Screening of some pigeonpea entries against *H. armigera and M. obtusa* during *Kharif*, 2007

Entry	Days to 50%	Days to Maturity	Mean percent pod damage by H. armigera	M. obtusa	Grain yield ($Kgha^{-1}$)
SKNP 527	131	176	16.77 (24.76)	9.83 (18.27)	853
CORG-06-5	127	172	23.68 (29.09)	6.05 (14.23)	1157
PT-02-5	126	172	23.89 (29.16)	8.83 (17.00)	824
GRG 207	121	160	30.41 (33.46)	8.37 (16.72)	441
AKT 222544	127	171	33.48 (35.34)	10.51 (18.63)	987
JSA 68	135	180	20.81 (27.07)	17.85 (24.70)	573
WRG-91	138	178	12.61 (20.80)	29.44 (32.86)	961
PT-03-142	127	165	23.94 (29.27)	38.74 (38.49)	578
SKNP 530	130	174	18.68 (25.59)	32.23 (34.59)	1163
BRG-7-1	140	187	6.28 (14.52)	59.70 (50.66)	1224
BDN-2004-1	130	172	22.34 (28.05)	14.92 (22.68)	736
BRG-7-2	137	180	10.13 (18.54)	46.40 (42.97)	766
JKM-218	133	176	20.37 (26.83)	17.51 (24.64)	1033
JSA-81	138	182	20.32 (26.75)	10.03 (18.15)	1174
MAL-29	141	191	18.48 (25.44)	30.72 (33.65)	1131
PT-03-27	135	176	14.44 (22.91)	8.01 (16.32)	1078
LRG-41 (c)	154	196	6.02 (14.11)	19.85 (26.24)	1276
ICPL 87119 (c)	135	180	15.06 (22.69)	20.11 (26.63)	1785
CO-6 (c)	129	171	24.51 (29.66)	20.74 (26.88)	1240
WRG-27 (c)	134	175	8.04 (16.99)	23.47 (28.92)	1322
S Em $\pm$	-	-	(1.88)	(2.67)	172
CD (5%)	-	-	(5.55)	(7.90)	508

*** Figures in parentheses are Arc Sine Transformations**

local checks LRG-41 and WRG-27. However, these two genotypes recorded significantly highest damage due to pod fly and were found susceptible to pod fly. Even, the entry PT-03-142 was also found susceptible to pod fly with 38.74 per cent pod damage. The genotypes SKNP-0527, CORG-06-5, PT-02-5, GRG-207, AKT 222544, JSA 81 and PT-03-27 recorded less pod fly damage (6.05 to 10.51%) and performed better than check varieties with respect to pod fly damage. These entries suffered pod borer damage in the range of 14.44 to 33.48%.

The check varieties recorded grain yield of 1240 to 1785 kg ha^{-1} with significantly superior yield of 1785 kg ha^{-1} in the variety ICPL 87119 followed by 1322 kg ha^{-1} in WRG-27 and 1276 kg ha^{-1} in LRG-41. Test entries recorded yield in the range of 441 (GRG-207) and 1224 (BRG-7-1). Most of the entries except GRG 207, JSA 68, PT-03-142, BDN 2004-1, BRG-7-2 recorded equivalent yield to that of checks.

The present study thus revealed that none of the entries were completely free from infestation by *H. armigera* or *M. obtusa.* However, the entries BRG-7-1, BRG-7-2 with 6.28 and 10.13 per cent damage were found promising against *H. armigera* and can be grown wherever the pest is a major problem. The entries SKNP-0527, CORG-06-5, PT-02-5, GRG-207, PT-03-27, JSA-81 recorded less than 10 per cent pod damage due to pod fly and were found promising against pod fly. Despite suffering from either pod borer or pod fly damage or both, the entries CORG-06-5, SKNP 530, BRG-7-1, JKM-218, JSA-81, MAL 29, PT-03-27 recorded higher yields like check varieties. This could be due to tolerance mechanism. Dua *et al*. (2005) reported existence of all the four mechanisms of resistance *viz.*, non preference, antibiosis, tolerance and avoidance in pigeonpea. The present finding is in conformity with Patel and Patel (1990) who reported that the grain yield of GAUT 82-90 and GAUT 83-17 were significantly higher even though they had relatively high infestation of *H. armigera* and *M. obtusa*.

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