

Susceptibility of various gourd cultivars/genotypes to red pumpkin beetle, *Aulacophora foveicollis* (Lucas)

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ABSTRACT

The genotypes/cultivars of cucurbitaceous vegetables (bottle gourd, ridge gourd and smooth gourd) evaluated against red pumpkin beetle, *Aulacophora foveicollis* (Lucas) to their susceptibility at Anand Agricultural University, Anand during *kharif* 2004 and summer 2005. The genotypes/cultivars ABGS-99-1, ABGS-4 and Pusa naveen of bottle gourd, ARGS-98-1 and ARGS-98-3 of ridge gourd and ASGS-02-12, JSGL-55 and Pusa chikni of smooth gourd were found relatively less susceptible to this pest and also good in yield potential.

Key words : Susceptibility, cucurbits, *A. foveicollis*

Cucurbits are important vegetable crops grown in almost all states of India. Cucurbitaceous crops are attacked by a number of pests and diseases, which cause severe reduction in the development of crop and also the yield. Of the attacked insect pests, red pumpkin beetle, *Aulacophora foveicollis* (Lucas) is one of the most destructive and serious pest (Pradhan, 1994). Various control measures have been suggested from time to time but none of them provide satisfactory solution. Hence, efforts were directed towards host plant resistance. The development of a resistant variety with a good yield and quality would be most desirable for an economic control measures. Therefore, an attempt was made to screen out the comparative susceptibility of bottle gourd, ridge gourd and smooth gourd cultivars/genotypes against red pumpkin beetle.

MATERIALS AND METHODS

An experiment was conducted in Randomized Block Design with three replications in pesticide free open field during *kharif* 2004 and summer 2005 at Main Vegetable Research Station, Anand Agricultural University, Anand. The genotypes/cultivars of each gourd (Table 1) were sown at a distance of 2 x 1 m in plot size of 10 x 7 m during 1st week of July in *kharif* and 1st week of February in summer. Five plants in

net plot area were selected randomly from each genotypes/cultivars and the observations on number of adult beetles were recorded at weekly interval starting from one week of germination till the end of crops. Data, so obtained were subjected to appropriate transformation and statistically analysed for interpretation. The yield of genotypes/cultivars of each crop was also recorded separately from net plot area.

RESULTS AND DISCUSSION

Bottle gourd

Pooled results of two seasons (Table 1) showed significantly least (3.53) number of beetles on ABGS-99-1 followed by ABGS-4 (3.76) and Pusa naveen (4.04). Pusa naveen and SKN-BOG-1 registered statistically equal beetle population. The genotype ABGS-01-09 recorded 4.49 beetles per plant and it was significantly less susceptible to remaining genotypes/cultivars. Among the tested genotypes/cultivars, cultivar PSPL exhibited significantly highest (5.47) beetle population.

Significantly highest (201.93 q/ha) fruit yield harvested from ABGS-99-1 than rest of genotypes/cultivars evaluated except ABGS-4 which produced 194.38 q/ha fruits (Table 1). The cultivar Pusa naveen yielded 155.81 q/ha fruits and it was at par with SKN-BOG-1 (150.35 q/ha). The genotypes SKN-BOG-1,

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Table 1 Incidence of *A. foveicollis* on different genotypes/cultivars of gourds and its effect on yield

Genotypes/ Cultivars	Beetles/plant			Yield (q/ha)		
	Kharif	Summer	Pooled	Kharif	Summer	Pooled
<i>Bottle gourd</i>						
ABGS-4	1.82 (3.31)	2.06 (4.24)	1.94 (3.76)	188.67	200.10	194.38
ABGS-98-8	2.13 (4.53)	2.35 (5.52)	2.24 (5.08)	92.16	100.81	96.48
ABGS-99-1	1.75 (3.06)	2.00 (4.00)	1.88 (3.53)	193.17	210.70	201.93
ABGS-01-09	2.02 (4.08)	2.22 (4.93)	2.12 (4.49)	133.33	152.20	142.76
SKN-BOG-1	1.95 (3.80)	2.17 (4.71)	2.06 (4.24)	140.50	160.22	150.35
JBOGL-03-1	2.07 (4.28)	2.31 (5.34)	2.19 (4.79)	130.17	145.50	137.83
PSPL	2.21 (4.88)	2.47 (6.10)	2.34 (5.47)	83.50	90.80	87.15
Pusa Naveen	1.89 (3.57)	2.13 (4.53)	2.01 (4.04)	144.33	167.31	155.81
S. Em. $\pm$	0.024	0.024	0.017	13.09	6.92	4.33
C.D. at 5%	0.072	0.074	0.049	39.77	20.47	12.67
C.V. %	8.30	7.66	7.96	18.74	15.32	13.37
<i>Ridge gourd</i>						
ARGS-98-1	1.55 (2.40)	1.56 (2.43)	1.56 (2.43)	100.33	150.37	125.35
ARGS-98-3	1.59 (2.53)	1.62 (2.62)	1.61 (2.59)	98.50	140.25	119.37
ARGS-00-03	1.62 (2.62)	1.67 (2.79)	1.65 (2.72)	96.50	136.25	116.37
ARGS-00-04	1.66 (2.75)	1.74 (2.92)	1.70 (2.89)	96.33	132.20	114.26
ARGS-02-12	1.71 (2.92)	1.85 (3.42)	1.78 (3.17)	81.33	102.75	92.04
JRGL-2	1.87 (3.49)	2.00 (4.00)	1.93 (3.72)	34.67	75.80	55.23
JRGL-02-69	1.92 (3.69)	2.02 (4.08)	1.97 (3.88)	31.50	70.26	50.88
SKNRG-21	1.70 (2.89)	1.79 (3.20)	1.74 (3.03)	92.50	120.22	106.36
SKNRG-43	1.77 (3.13)	1.89 (3.57)	1.83 (3.35)	70.67	98.27	84.47
Pusa Nasdar	1.81 (3.28)	1.94 (3.76)	1.88 (3.53)	59.17	88.50	73.83
S. Em. $\pm$	0.018	0.021	0.023	5.85	7.19	3.24
C.D. at 5%	0.053	0.062	0.074	17.37	21.51	9.77
C.V. %	6.67	7.43	7.08	13.30	15.70	10.29
<i>Smooth gourd</i>						
ASGS-00-03	1.91 (3.65)	1.96 (3.84)	1.93 (3.72)	137.50	178.20	157.85
ASGS-00-04	1.83 (3.35)	1.85 (3.42)	1.84 (3.38)	151.67	198.85	175.26
ASGS-00-06	1.75 (3.06)	1.73 (2.99)	1.74 (3.02)	174.83	243.68	209.25
ASGS-02-12	1.69 (2.85)	1.64 (2.69)	1.67 (2.78)	261.35	302.28	281.81
JSGL-55	1.72 (2.96)	1.68 (2.82)	1.70 (2.89)	175.67	250.70	213.18
SKNSG-1	1.88 (3.53)	1.90 (3.61)	1.89 (3.57)	143.00	185.20	164.1
SKNSG-17	1.94 (3.76)	2.01 (4.04)	1.97 (3.88)	109.67	159.20	134.40
Pusa Chikni	1.79 (3.20)	1.80 (3.24)	1.80 (3.24)	161.67	212.82	190.26
S. Em. $\pm$	0.007	0.025	0.013	15.19	13.89	6.93
C.D. at 5%	0.023	0.075	0.037	46.07	41.68	20.79
C.V. %	5.68	8.81	6.53	16.00	12.87	13.67

*Figures in parentheses are original values, those outside are $\sqrt{x}$ transformed values

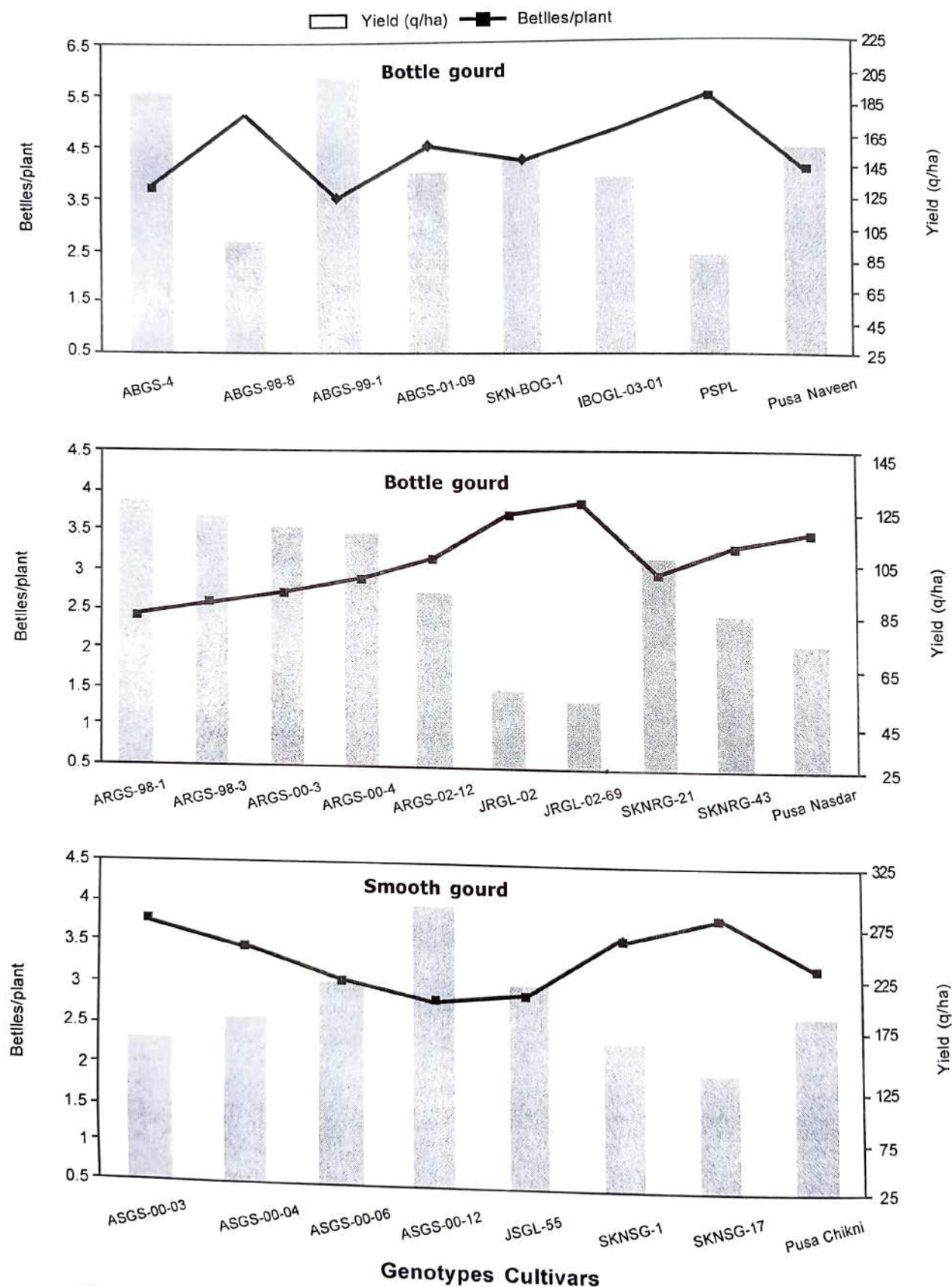


Fig. 1 Suspectibility of gourds genotypes/cultivars to *A. foveicollis* and its effect on yield

ABGS-01-09 and JBOGL-03-1 were found statistically at par with each other and registered 137.83 to 150.35 q/ha fruit yield of bottle gourd. Of the evaluated genotypes/cultivars, significantly lowest (87.15 q/ha) fruit yield recorded in cultivar PSPL followed by ABGS-98-8 (96.48 q/ha).

Ridge gourd

Two seasons combined results (Table 1) indicated that significantly least (2.43) number of beetles found on ARGS-98-1 than rest of the genotypes/cultivars except ARGS-98-3 (2.59). Genotypes ARGS-00-03 and ARGS-00-04 noted 2.72 and 2.89 beetles per plant, respectively (Table 2). Genotypes SKNRG-21, ARGS-02-12, SKNRG-43 and cultivar Pusa nasdar exhibited beetle population between 3 and 3.5 per plant. The genotype JRGL-02-69 registered higher (3.88) beetle population and it was at par with JRGL-2 (3.72).

Data (Table 1) of ridge gourd fruit yield exhibited that the genotype ARGS-98-1 produced highest (125.35 q/ha) yield and it was at par with ARGS-98-3 (119.37 q/ha) and ARGS-00-03 (116.37 q/ha). Latter two genotypes/cultivars were at par with ARGS-00-04 (114.26 q/ha). The genotype SKNRG-21 produced 106.36 q/ha fruit yield and it was at par with former genotype ARGS-00-04. The genotypes/cultivars ARGS-02-12, SKNRG-43 and Pusa nasdar registered 78.23 to 92.04 q/ha fruit yield of ridge gourd. Of the screened genotypes/cultivars JRGL-02-69 was found poor (50.83) in yield potential and it was at par with JRGL-2 (55.23 q/ha).

Smooth gourd

The lowest (2.78) number of beetles per plant recorded in genotype ASGS-02-12 than all the genotypes/cultivars except JSGL-55 (2.89 beetles/plant) in summer and *kharif* pooled analysis (Table 1). Rest of the genotypes/cultivars (ASGS-00-06, Pusa chikni, ASGS-00-04, SKNSG-1, ASGS-00-03 and SKNSG-17) was statistically differed from each other in harboring the *A. foveicollis* beetle population (3.02 to 3.88). Smooth gourd cultivar Pusa chikni was resistant to this pest (Nath, 1963). Significantly highest (3.88) number of beetles per plant were found in genotype SKNSG-17 followed by ASGS-00-03 and SKNSG-1.

The genotype ASGS-02-12 produced significantly higher (125.35 q/ha) fruit yield than all the tested genotypes/cultivars (Table 1). The genotype JSGL-55 yielded 213.18 q/ha fruits and it was statistically at par with ASGS-00-06 (209.25 q/ha). Genotypes/cultivars ASGS-00-03, SKNSG-1, ASGS-00-04 and Pusa chikni registered yield between 150 and 200 q/ha. On the other hand cultivar SKNSG-17 recorded significantly lowest (134.4) fruit yield of smooth gourd.

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