Evaluation of Cucumber (*Cucumis sativus* L) Genotypes for Field Resistance to Red Pumpkin Beetle (*Aulacophora foveicollis* Lucas)

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Host preference of red pumpkin beetle (*Aulacophora foveicollis* Lucas) was studied on sixty-eight indigenous germplasm lines of cucumber during 2002. These germplasm lines were grown in randomized block design with three replications. Data were collected on infestation of red pumpkin beetle on plants at different stages like cotyledonary, true leaf, flowering and fruiting of crop. Eight germplasm lines (PCUC7, PCUC36, PCUC47, PCUC66, PCU99, PCUC102, PCUC108 and PCUC110) showed resistance against red pumpkin beetle. These genotypes may be for used in future resistance breeding in cucumber.

Key Words: Cucumber, Red pumpkin beetle, Resistance

Cucumber is an important cucurbit grown in all agro-climatic zones of India. It suffers from attack of a number of insect-pests and diseases. The red pumpkin beetle (*Aulacophora foveicollis*) is one of the most destructive pests especially during seedling stage of plants when the crop can be totally damaged (Singh *et al.*, 2003). A large number of insecticides have been tested to control this insect but their hazardous effects on health of consumer and environment necessitate research for safer methods of control.

Materials and Methods

Sixty-seven indigenous *(desi)* cucumber germplasm lines were collected from farmers field. The experiment was conducted in randomized block design with three replications each at Vegetable Research Centre (VRC) of GBPUAT, Pantnagar. These were sown in the 1st week of March 2002 with spacing of 1x1 meter. All the recommended practices for raising the crop were carried out except application of chemicals. Fertilizer dose of 60:50:60 :: N:P:K and irrigation was given at weekly intervals. The observations on infestation were recorded on five randomly selected plants in each plot at different stages *viz,* cotyledonary, true leaf, flowering and fruiting. Percent infestation data obtained through visual observation and scoring were analyzed as per Gomez and Gomez (1983) (Table 1).

Table 1. Scoring of pest infestation

Scale (% infestation)	Category
<10	Resistant
10-30	Moderately resistant
30-50	Moderately susceptible
50-70	Susceptible
>70	Highly susceptible

Results and Discussion

There were significant differences among the genotypes of cucumber with respect to red pumpkin beetle infestation at different crop stages (Table 2). At the cotyledonary leaf stage, infestation ranged between 15.0 %(PCUC32) to 70% (PCUC96) while the check Pusa Sanjog had 45% infestation. Hence, these germplasm varied between moderately resistant to susceptible. PCUC31, PCUC37, PCUC38, PCUC42, PCUC55, PCUC63, PCUC67 PCUC87, PCUC93, PCUC96, PCUC97, PCUC101, PCUC111, PCUC117, PCUC120 were found susceptible, PCUC7, PCUC25, PCUC27, PCUC29, PCUC32. PCUC35, PCUC36, PCUC40, PCUC47, PCUC48, PCUC51, PCUC53, PCUC60, PCUC61, PCUC62, PCUC65, PCUC66, PCUC69, CUC95, PCUC99, PCUC102, PCUC104, PCUC108, PCUC109, PCUC110, PCUC116, PCUC118, PCUC124 were moderately resistant and rest were moderately susceptible. At true leaf stage infestation varied between 5% (PCUC51, PCUC69) to 54% (PCUC107) while check had 20% infestation. Hence, at this stage PCUC51, PCUC69 showed resistant and PCUC107 were susceptible and PCUC14, PCUC16, PCUC19, PCUC24, PCUC25, PCUC31, PCUC37, PCUC42, PCUC46, PCUC55, PCUC57, PCUC63, PCUC67, PCUC87, PCUC93, PCUC96, PCUC97, PCUC101, PCUC111, PCUC117, PCUC120 were fond moderately susceptible and rest were moderately resistant.

At flowering stage minimum infestation was recorded on PCUC38 and PCUC61 (5%) and maximum on PCUC101 (80%) while check had 15% infestation. PCUC38, PCUC46, PCUC61, PCUC62 were found resistant and PCUC101 found highly susceptible. At fruiting stage, infestation ranged between 5% (PCUC 61, PCUC 96) to 50% (PCUC29, PCUC53, PCUC116

Table 2. **Mean percent infestation of red pumpkin beetle at different stages of cucumber crop**

Cultivar	Cotyledonary leaf stage	True leaf stage	Flowering stage	Fruiting stage
PCUC4	45.0	23.0	15.0	12.0
PCUC7	20.0	15.0	25.0	40.0
PCUC13	48.0	25.0	25.0	45.0
PCUC14	60.0	34.0	10.0	12.0
PCUC16	50.0	40.0	15.0	40.0
PCUC19	50.0	35.0	20.0	20.0
PCUC20	45.0	20.0	35.0	45.0
PCUC21	35.0	15.0	40.0	45.0
PCUC24	40.0	22.0	45.0	15.0
PCUC25	20.0	24.0	33.3	40.0
PCUC27	25.0	15.0	42.0	45.0
PCUC29	25.0	20.0	15.0	50.0
PCUC31	55.0	25.0	40.0	35.0
PCUC32	15.0	10.0	10.0	40.0
PCUC34	40.0	25.0	15.0	42.0
PCUC35	25.0	20.0	15.0	40.0
PCUC36	30.0	22.0	18.0	20.0
PCUC37	60.0	45.0	10.0	18.0
PCUC38	50.0	24.0	05.0	10.0
PCUC40	20.0	10.0	41.7	15.0
PCUC42	52.0	22.0	45.0	40.0
PCUC44	40.0	25.0	15.0	18.0
PCUC45	35.0	30.0	33.2	40.0
PCUC46	50.0	50.0	05.0	15.0
PCUC47	20.0	15.0	15.0	20.0
PCUC48	25.0	15.0	42.0	10.0
PCUC50	30.0	20.0	40.0	13.3
PCUC51	30.0	05.0	25.0	45.0
PCUC53	35.0	30.0	20.0	50.0
PCUC55	60.0	40.0	35.0	35.0
PCUC57	45.0	35.0	40.0	40.0
PCUC60	30.0	25.0	10.0	35.0
PCUC61	25.0	15.0	05.0	05.0
PCUC62	25.0	10.0	08.0	10.0
PCUC63	60.0	48.0	15.0	30.0
PCUC64	35.0	30.0	15.0	10.0
PCUC65	25.0	20.0	15.0	42.0
PCUC66	20.0	10.0	18.0	10.0
PCUC67	60.0	50.0	10.0	10.0
PCUC69	20.0	05.0	10.0	10.0
PCUC73	40.0	20.0	40.0	45.0
PCUC87	60.0	35.0	30.0	10.0
PCUC93	65.0	40.0	30.0	05.0
PCUC94	35.0	20.0	20.0	35.0
PCUC95	30.0	10.0	12.0	7.3
PCUC96	70.0	42.0	31.7	05.0
PCUC97	60.0	40.0	50.0	10.0
PCUC98	35.0	20.0	10.0	10.0
PCUC99	30.0	25.0	15.0	15.0
PCUC101	60.0	50.0	80.0	48.0
PCUC102	25.0	10.0	15.0	10.0
PCUC104	25.0	15.0	10.0	35.0
PCUC105	50.0	10.0	10.0	05.0
PCUC107	35.0	54.0	25.0	35.0
PCUC108	25.0	15.0	10.0	10.0
PCUC109	20.0	20.0	45.0	10.0
PCUC110	25.0	10.0	10.0	10.0
PCUC111	60.0	50.0	40.0	45.0
PCUC112	40.0	15.0	45.0	10.0
PCUC113	35.0	20.0	15.0	15.0
PCUC114	35.0	25.0	10.0	15.0
PCUC115	40.0	20.0	15.0	15.0
PCUC116	30.0	25.0	48.0	50.0
PCUC117	60.0	50.0	25.0	48.0
PCUC118	25.0	20.0	50.0	25.0
PCUC120	65.0	50.0	40.0	40.0
PCUC124	30.0	15.0	15.0	40.0
Pusa Sanjog (Check)	45.0	20.0	15.0	45.0
CD at 5%	16.7	12.1	12.6	12.8

and check Pusa Sanjog had 45% infestation. This study revealed that only cotyledonary stage of cucumber is highly susceptible to red pumpkin beetle. The present findings regarding host plant resistance are in accordance with earlier reports of Nayar *et al.* (1992) who mentioned that cucurbits, especially cucumber, are attacked by red pumpkin beetle in varying proportion. On the basis of the study it appeared that genotypes PCUC7, PCUC36, PCUC47, PCUC66, PCUC99 and PCUC102, PCUC108, PCUC110 had consistent field resistance against red pumpkin beetles across the crop growth stages. These genotypes may be used in future breeding programmes of cucumber to develop varieties resistant to red pumpkin beetle.

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