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SCREENING OF *CUCUMIS MELO* L. GERMPLASMS FOR RESISTANCE TO PUMPKIN BEETLE, *Aulacophora* SPP. (COLEOPTERA: CHRYSOMELIDAE)

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ABSTRACT

Pumpkin beetles (*Aulacophora* spp.) are important pests of *Cucumis melo*, causing considerable damage to leaves, flowers and fruits, thereby reducing crop productivity. The present study evaluated twenty-five *C. melo* genotypes under field conditions to identify resistant sources against pumpkin beetle infestation. Observations on the number of adult beetles, leaf, flower and fruit damage, stem girth and grub population were recorded to assess the response of the genotypes. Significant variation was observed among the genotypes for all the parameters studied. The Weighted Damage Index (WDI) ranged from 1.002 to 3.723, with F1-Sungro Seeds recording the lowest WDI (1.002) and exhibiting the highest level of resistance. Based on the WDI, twelve genotypes were classified as resistant, ten as moderately resistant and three as moderately susceptible. In contrast, none of the evaluated genotypes was categorised as highly resistant, susceptible and highly susceptible. The resistant genotypes identified in this study may serve as potential donor parents in host-plant resistance breeding programmes and provide valuable genetic resources for developing pumpkin beetle-resistant *C. melo* cultivars.

***Key words*:** *Aulacophora* spp., *Cucumis Melo*, Weighted damage index

Introduction

Cucumis melo L. is an economically important and genetically diverse cucurbit crop with substantial genetic variability that can be exploited for the development of insect pest resistant cultivars (Shahwar *et al.*, 2023). Among the major insect pests of cucurbits, the pumpkin beetle, *Aulacophora* spp. (Coleoptera: Chrysomelidae), causes considerable damage from the seedling stage onwards. Adults feed on cotyledons, tender leaves, flowers, and flower buds, while larvae damage roots and underground plant parts, resulting in poor crop establishment and productivity (Rahaman & Prodhan, 2007; Rahaman *et al.*, 2008).

Pumpkin beetles, *Aulacophora* spp., are important defoliator pest of cucurbits in the early vegetative stage and are managed predominantly through chemical insecticides. Nevertheless, their repeated and indiscriminate use may accelerate insecticide resistance, contaminate the environment, and adversely affect non-target organisms. Host plant resistance offers a sustainable and cost-effective component of integrated pest management by reducing pest infestation and dependence on chemical inputs. Screening genetically diverse germplasm is therefore critical for identifying resistant genotypes that can serve as potential sources of resistance in breeding programmes. As the incidence of red pumpkin beetle has emerged as an increasing concern among cucurbit growers, coupled with the limited information available on host plant resistance to this pest in the state, the present study was undertaken to identify potential sources of resistance among *Cucumis melo* L. genotypes. The present study evaluated 25 culinary melon

(*Cucumis melo var. acidulous*, *Cucumis melo var. conomon*, *Cucumis melo var. flexuosus*) genotypes under field condition to identify sources of resistance to pumpkin beetle, *Aulacophora* spp.

Materials and Methods

Field screening of *Cucumis melo* genotypes

Thirty-seven *Cucumis melo* L. germplasm accessions and landraces collected from various agricultural universities as well as local farmers (Table 1) were used for the present study. Based on the laboratory germination testing in a petri plate by Dorgan and Briggs (1992), 25 genotypes that exhibited more than 80 per cent germination were selected for field screening, which was conducted at the Instructional Farm, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala during January – April, 2026. Twenty-five genotypes were sown in a randomized block design with two replications. Randomisation and field layout were generated using GRAPES, the statistical software developed by Kerala Agricultural University (Gopinath *et al.*, 2021). Seeds were directly sown in pits (50 cm diameter × 30 cm depth) at a spacing of 2.0 m × 1.5 m. Each genotype was represented by three pits per replication, with four plants maintained per pit (12 plants per replication). The experiment occupied an area of approximately 14 cents.

Table 1: Details and sources of 37 *Cucumis melo* genotypes collected for the study.

S. no	Genotypes	Source	Germination (%)	Selection status
1	KAU Vishal	KAU, Vellayani	100	Selected
2	Mudicode local	KAU, Vellanikkara	95	Selected
3	Saubhagya	KAU, Vellanikkara	100	Selected
4	Arunima	KAU, Vellanikkara	100	Selected
5	CR006	Karpagatharu heirloom seeds, Tamil Nadu	100	Selected
6	CR008	Karpagatharu heirloom seeds, Tamil Nadu	85	Selected
7	CR012	Karpagatharu heirloom seeds, Tamil Nadu	85	Selected
8	CR007	Karpagatharu heirloom seeds, Tamil Nadu	75	Not selected
9	CR009	Karpagatharu heirloom seeds, Tamil Nadu	75	Not selected
10	CR011	Karpagatharu heirloom seeds, Tamil Nadu	70	Not selected
11	Arka Siri	IIHR Bangalore	70	Not selected
12	Kashi Santhushti	IIVR Varanasi	100	Selected
13	Kashi Madhu	IIVR Varanasi	75	Not selected
14	Punjab long melon -1	M-Tec Garden, online store	65	Not selected
15	Durgapura Madhu	RARI Durgapura, Rajasthan	70	Not selected
16	RM 50	RARI Durgapura, Rajasthan	70	Not selected
17	NS 910	Namdhari seeds, online stores	75	Not selected
18	N 1215	Noorumeni seeds, Local market	90	Selected
19	FH 200	Farmhouse seeds, Local market	95	Selected
20	FH 201	Farmhouse seeds, Local market	100	Selected
21	Enoor local	MSSRF, Wayanad	100	Selected
22	Meppadi local	MSSRF, Wayanad	100	Selected
23	Marthandam local	Marthandam, Tamil Nadu	80	Selected
24	Rasipuram local	Rasipuram, Tamil Nadu	100	Selected
25	Kazhakootam local	Kazhakootam,Thiruvananthapuram	85	Selected
26	Kudashanad local	Kudashanad, Pathanamthitta	65	Not selected
27	Thirumala local	Thirumala, Alappuzha	75	Not selected
28	Thazhup local	Thazhup, Alappuzha	70	Not selected
29	Kanjikuzhi local	Kanjikuzhi, Alappuzha	75	Not selected
30	Periya local	Periya, Kasaragod	60	Not selected
31	Panayal local	Panayal, Kasaragod	90	Selected
32	Pullur local	Pullur, Kasaragod	100	Selected
33	Naduvathoor local	Naduvathoor, Kozhikode	100	Selected
34	Mangad local	Mangad, Kollam	90	Selected
35	F1 Hybrids	Sungro seeds, online stores	100	Selected
36	F1 Hybrids	Higher seeds, online stores	65	Not selected
37	Alangad local	Alangad, Ernakulam	80	Not selected

Recommended agronomic practices were followed throughout the crop growth period based on the Package of Practices of Kerala Agricultural University (KAU, 2024). No pesticides were applied during the experiment. The meteorological data during the crop period were collected from the Agrometeorology Department, College of Agriculture, Vellayani.

Assessment of pumpkin beetle infestation under field conditions

Population of adult beetles:

At the three-leaf stage, one plant from each pit was randomly selected and tagged for recording observations, resulting in six tagged plants per genotype. Observations were recorded weekly, from the three-leaf stage until harvest, during the morning (7:00-10:00 AM) and the evening (4:00-6:00 PM) hours. Each tagged plant was observed twice during the morning and evening periods, and the number of adult beetles visiting the plant was counted. The mean of the two counts were used as the observation for that plant to minimize counting errors.

Leaf damage:

The tagged plants were examined twice during each observation period, and the number of leaves exhibiting characteristic feeding damage caused by pumpkin beetles was recorded. Leaves showing irregular or circular holes on the leaf lamina, lace-like or skeletonized appearance due to feeding between the larger veins, and partial or complete defoliation were considered damaged. Damage to cotyledons and young leaves was also recorded, particularly during the seedling stage. Leaf area damage was estimated following the graphical method described by Sestak *et al.*, (1971). Three fully expanded leaves, each from the upper, middle and lower canopy of the tagged plants, were traced on millimetre graph paper, and the corresponding damaged areas were similarly traced. The damaged leaf area was determined by counting the affected grid squares and expressed in cm^2. The mean number of damaged leaves and leaf area damaged per plant were calculated for each genotype.

Floral damage:

The number of flowers showing visible feeding damage by pumpkin beetles on the tagged plants was recorded at weekly intervals. Flowers exhibiting feeding symptoms such as irregular holes, partially consumed petals, damaged or missing petal portions, and damaged edges were counted and recorded as damaged flowers per plant. Flowers with visible pollen feeding by adult pumpkin beetles were also considered damaged. The mean number of damaged flowers per plant was calculated.

Fruit damage:

The number of fruits exhibiting characteristic feeding damage caused by pumpkin beetles was recorded during the fruiting period. Fruits showing feeding scars and blemishes, small and deep cavities on the rind, or broken fruit skin with oozing of resinous fluid or sap from the damaged areas were considered damaged and recorded accordingly. The mean number of damaged fruits per plant was calculated for each genotype.

Stem girth:

Stem girth was measured at weekly intervals on the tagged plants using a flexible measuring tape. Measurements were taken approximately 2-3 cm above the soil surface and expressed in millimetres (mm). The mean stem girth was calculated for each genotype.

Grub population:

At harvest or when crop failure occurred, the tagged plants were carefully uprooted, and the root and collar regions were examined for the presence of pumpkin beetle grubs. The surrounding soil in the root zone was also carefully searched, and the total number of grubs recovered per plant was recorded. The roots and underground stems were examined for feeding damage, including tunnelling or boring injuries associated with disruption of water and nutrient uptake. Plants showing severe root and stem damage, secondary rotting, wilting, drying, or complete collapse were recorded as affected by grub damage. Complete plant death associated with severe root and stem injury was also noted as crop failure. The mean grub population per plant was calculated for each genotype.

In addition to pumpkin beetle, other insect pests and diseases were also observed in the field during the study period. The major insect pests recorded were fruit fly (*Bactrocera* spp.) and cucumber moth (*Diaphania indica*), which were observed causing damage to the crop at different growth stages. Among the diseases, gummy stem blight caused by *Didymella bryoniae* was the predominant, characterized by lesions on the stems and leaves with gummy exudation. These pests and diseases were recorded during the field evaluation to provide additional information on the overall pest and disease incidence in the genotypes under study.

Scoring and classification of genotypes using a weighted damage index

As no standardized grading or indexing method was available for the integrated assessment of beetle damage in the so far published literature, a Weighted Damage Index (WDI) was developed in the present study to

Table 2: Resistance categories of *Cucumis melo* genotypes.

WDI range	Resistance category
0-0.9	Highly resistant
1-1.9	Resistant
2-2.9	Moderately resistant
3-3.9	Moderately susceptible
4-4.9	Susceptible
>5	Highly susceptible

facilitate the comparative evaluation and classification of genotypes based on their overall level of damage. The index integrates the mean damage recorded on leaves, flowers and fruits into a single quantitative measure. Relative weights of 0.3, 0.3 and 0.4 were assigned to leaf, flower and fruit damage, respectively, with a slightly greater weight given to fruit damage owing to its direct influence on marketable yield. The resulting WDI provided an integrated measure of damage and enabled the genotypes to be systematically compared and classified based on their overall susceptibility.

The WDI was calculated using the equation:

$$WDI = (0.3\times L) + (0.3\times FL) + (0.4\times FR)$$

Where,

L = mean leaf area damage,

F = mean number of flower damage and

Fr = mean number of fruit damage.

Genotypes were ranked according to their WDI values, with lower values indicating greater resistance to pumpkin beetle infestation. Based on the WDI values, the genotypes were classified as (Table 2)

Statistical analysis

The experimental data were subjected to analysis of variance (ANOVA) using the GRAPES statistical software. The significance of differences among genotype means were tested at the 5 per cent level of probability, and treatment means were separated using the Least Significant Difference (LSD).

Results and Discussion

Variation in pumpkin beetle infestation among *Cucumis melo* genotypes

Field evaluation of twenty-five *Cucumis melo* genotypes under natural infestation conditions revealed significant variation in their response to pumpkin beetle, *Aulacophora* spp. Significant differences were observed among the twenty-five genotypes for adult beetle population, damaged leaves, leaf area damage, damaged flowers, damaged fruits, stem girth and grub population, indicating the presence of substantial genetic variability for resistance (Table 3). Such variability demonstrates the potential of the evaluated germplasm as a valuable source of resistance for incorporation into breeding programmes. The present findings are consistent with those of Smith *et al.*, (2018) who identified moderately resistant amaranth genotypes through field screening against foliar lepidopteran pests and stem-boring weevils, demonstrating the potential of resistant germplasm for utilization in host plant resistance breeding programmes.

The mean adult beetle population ranged from 1.10 to 7.00 beetles plant^{-1}. Among the evaluated genotypes, Pullur local (1.10 beetles plant^{-1}) recorded the lowest beetle population, followed by F1-Sungro Seeds (1.56 beetles plant^{-1}), whereas CR007 (7.00 beetles plant^{-1}) recorded the highest beetle population, followed by Kazhakootam local (4.93 beetles plant^{-1}) and N1215 (4.43 beetles plant^{-1}). The lower adult population observed on resistant genotypes indicates reduced preference of beetles for these accessions, suggesting the operation of antixenosis mechanisms, which requires further investigations (Brzozowski *et al.*, 2020; Novaes *et al.*, 2020). Earlier studies have also reported considerable variation in pumpkin beetle preference among cucurbit genotypes, attributing this variation to genetically controlled resistance mechanisms and differences in plant morphological and biochemical characteristics (Rai *et al.*, 2004; Khursheed *et al.*, 2020; Ullah *et al.*, 2023; Gupta *et al.*, 2025).

Significant differences were also observed in foliage damage among the genotypes. The number of damaged leaves varied from 7.66 to 22.66 leaves plant^{-1}, with CR006 (7.66 leaves plant^{-1}) recording the lowest number of damaged leaves, followed by Alangad local (7.95 leaves plant^{-1}), Pullur local (8.40 leaves plant^{-1}) and F1-Sungro Seeds (8.47 leaves plant^{-1}), whereas CR007 (22.66 leaves plant^{-1}), Rasipuram local (20.79 leaves plant^{-1}) and CR012 (20.17 leaves plant^{-1}) recorded comparatively higher numbers of damaged leaves. Similarly, leaf area damage ranged from 2.36 to 9.18 cm^2, with F1-Sungro Seeds (2.36 cm^2) recording the least damage and KAU Vishal (9.18 cm^2) exhibiting the highest leaf area damage. The percentage leaf damage ranged from 2.19 to 15.42 per cent, with CR007 (2.19 per cent) recording the lowest damage and Rasipuram local (15.42 per cent) the highest. The variation in the extent of foliage damage among the genotypes indicates differences in their response to beetle feeding. The lower level of foliar damage observed in certain genotypes may indicate the presence of resistance mechanisms that restrict insect feeding and reduce tissue injury. Such differences in feeding damage may potentially be associated with antibiosis, although confirmation of this mechanism would require further

Table 3: Response of *Cucumis melo* genotypes to *Aulacophora* spp. infestation under field conditions.

Genotypes	Adult beetles Plant^{-1}	Damaged leaves plant^{-1}	Leaf area damage (cm^2)	Damaged flower plant^{-1}	Damaged fruits Plant^{-1}	Stem girth (mm)	Grubs plant^{-1}
Saubhagya	2.10^{fghi}	10.05^{ghij}	4.81^{cdefghijk}	1.10^{ef}	0.40^{cdef}	32.25^{efgh}	3.00(1.87)^{defg}
Naduvathoor local	1.70^{ghi}	12.75^{defghij}	4.75^{cdefghijk}	1.33^{def}	0.62^{abcde}	37.78^{abcdef}	2.27(1.66)^{efgh}
CR008	2.82^{defgh}	10.20^{ghij}	3.31^{ghijk}	1.50^{def}	0.37^{def}	29.91^{h}	5.70 (2.47)^{bc}
KAU Vishal	3.17^{cdefg}	17.73^{abcd}	9.18^{a}	3.03^{abc}	0.54^{abcde}	39.10^{abc}	6.50 (2.63)^{b}
CR006	1.97^{fghi}	7.66^{j}	2.47^{jk}	1.70^{bcdef}	0.38^{cdef}	30.35^{gh}	0.16 (0.80)^{k}
CR012	3.22^{cdefg}	20.37^{abc}	6.81^{abcd}	2.54^{bcde}	0.79^{abc}	36.33^{abcdef}	1.89(1.52)^{fghi}
Mudicode local	2.10^{fghi}	11.75^{efghij}	2.68^{hijk}	1.48^{def}	0.63^{abcde}	32.00^{fgh}	1.56(1.43)^{ghij}
N 1215	4.43^{bc}	13.25^{defghij}	6.16^{bcdef}	3.13^{ab}	0.41^{cdef}	36.29^{abcdef}	10.12(3.26)^{a}
Kashi santhushti	1.70^{ghi}	8.70^{hij}	7.66^{ab}	2.16^{bcdef}	0.45^{cdef}	41.33^{a}	5.74 (2.50)^{bc}
Pullur local	1.10^{i}	8.40^{ij}	4.08^{defghijk}	1.30^{def}	0.37^{def}	35.45^{bcdefgh}	1.00(1.22)^{hijk}
Rasipuram local	3.31^{cdef}	20.79^{ab}	5.74^{bcdefg}	4.25^{a}	0.66^{abcd}	37.79^{abcdef}	5.07(2.35)^{bcd}
CR007	7.00^{a}	22.66^{a}	3.79^{efghijk}	4.25^{a}	0.58^{abcde}	37.70^{abcdef}	3.67(2.01)^{cdef}
Alangad local	2.95^{cdefgh}	7.95^{ij}	4.97^{bcdefghijk}	1.20^{def}	0.30^{def}	32.35^{efgh}	1.05(1.16)^{hijk}
F1- Sungro seeds	1.56^{hi}	8.47^{ij}	2.36^{k}	1.00^{f}	0.08^{f}	32.71^{efgh}	0.50 (0.97)^{jk}
Panayal local	2.77^{defgh}	15.10^{cdefg}	5.74^{bcdefg}	1.80^{bcdef}	0.55^{abcde}	38.00^{abcde}	0.06 (0.74)^{k}
Marthandam local	3.76^{bcd}	19.79^{abc}	4.77^{cdefghijk}	2.16^{bcdef}	0.41^{cdef}	40.70^{ab}	3.50(1.99)^{cdef}
Mangad local	2.75^{defgh}	13.37^{defghi}	4.55^{defghijk}	1.75^{bcdef}	0.70^{abcd}	33.12^{defgh}	3.73(2.05)^{cde}
Arunima	2.28^{defghi}	11.50^{efghij}	4.95^{bcdefghijk}	1.83^{bcdef}	0.08^{f}	32.70^{efgh}	4.33(2.19)^{bcd}
Ennor local	3.70^{bcde}	12.70^{defghij}	6.54^{abcde}	2.32^{bcdef}	0.41^{cdef}	37.47^{abcdef}	4.17(2.16)^{bcde}
Kudashanad local	2.90^{cdefgh}	10.25^{ghij}	2.48^{ijk}	1.25^{def}	0.50^{abcde}	35.30^{bcdefgh}	0.00 (0.71)^{k}
Meppadi local	2.66^{defgh}	10.95^{fghij}	3.59^{fghijk}	1.50^{def}	0.25^{ef}	38.95^{abcd}	0.72 (1.09)^{ijk}
FH 200	3.78^{bcd}	16.83^{bcde}	5.34^{bcdefgh}	2.08^{bcdef}	0.41^{cdef}	33.04^{efgh}	4.51(2.23)^{bcd}
FH 201	2.20^{efghi}	11.75^{efghij}	5.22^{bcdefghij}	1.60^{cdef}	0.59^{abcde}	37.15^{abcdef}	0.12 (0.78)^{k}
Thazhup local	3.38^{cdef}	11.35^{efghij}	3.45^{fghijk}	2.15^{bcdef}	0.87^{ab}	36.05^{abcdefg}	0.72 (1.10)^{ijk}
Kazhakootam local	4.93^{b}	15.62^{bcdefg}	5.26^{bcdefghij}	2.58^{bcd}	0.33^{def}	34.75^{cdefgh}	4.66(2.26)^{bcd}
SE	0.533	1.943	0.976	0.51	0.143	2.021	0.18
CD	1.543	5.62	2.822	1.475	0.414	5.845	0.52

*Figures in parentheses represent square root-transformed values [$\sqrt{(x + 0.5)}$] used for statistical analysis. Means followed by the same letter(s) within a column are not significantly different according to the least significant difference (LSD) test at P = 0.05. SE = Standard error; CD = Critical difference (P = 0.05).

assessment of insect survival, development and reproduction.

Flower damage differed significantly among the evaluated genotypes and ranged from 1.00 to 4.25 flowers plant^{-1}. The least flower damage was recorded in F1-Sungro Seeds (1.00 flowers plant^{-1}), while CR007 (4.25 flowers plant^{-1}) and Rasipuram local (4.25 flowers plant^{-1}) sustained the highest flower damage. Fruit damage also varied significantly, ranging from 0.08 to 0.87 fruits plant^{-1}. F1-Sungro Seeds (0.08 fruits plant^{-1}) and Arunima (0.08 fruits plant^{-1}) recorded the lowest fruit damage, whereas Thazhup local (0.87 fruits plant^{-1}) recorded the highest fruit damage. The present findings are in agreement with those of Khan (2018), who reported that *Aulacophora foveicollis* causes severe feeding damage to cucurbit flowers (up to 60%) by feeding on floral tissues, with the extent of injury varying among host species. Similarly, Rashid *et al.*, (2014) reported that *A. foveicollis* feeds voraciously on leaves, flower buds and flowers, causing considerable yield losses in cucurbit crops. Regmi and Paudel (2020) reported that the red pumpkin beetle is a major destructive pest of cucurbit crops, causing damage from seedling emergence to the harvesting stage. In addition, fruit length, fruit diameter, and flesh thickness were positively associated with fruit infestation, whereas fruit shape and colour had little or no significant influence on host resistance (Haldhar *et al.*, 2018; Hamid *et al.*, 2023).

Stem girth among the genotypes ranged from 29.91 to 41.33 mm, with Kashi Santhushti (41.33 mm) recording the maximum stem girth and CR008 (29.91 mm) the minimum (29.91 mm). No consistent association was observed between stem girth and pumpkin beetle infestation. Grub population varied among the genotypes

Table 4: Weighted Damage Index (WDI) and resistance classification of *Cucumis melo* genotypes against pumpkin beetle (*Aulacophora* spp.).

Genotypes	WDI score	Resistance category
F1- Sungro seeds	1.002	Resistant
CR006	1.192	Resistant
Mudicode local	1.406	Resistant
CR008	1.487	Resistant
Pullur local	1.532	Resistant
Meppadi local	1.538	Resistant
Mangad local	1.875	Resistant
Naduvathoor local	1.889	Resistant
Thazhup local	1.896	Resistant
Alangad local	1.911	Resistant
Saubhagya	1.935	Resistant
Arunima	1.920	Resistant
FH 201	2.117	Moderately resistant
Marthandam local	2.200	Moderately resistant
FH 200	2.252	Moderately resistant
Kudashanad local	2.297	Moderately resistant
Kazhakootam local	2.310	Moderately resistant
Panayal local	2.333	Moderately resistant
Ennor local	2.591	Moderately resistant
N 1215	2.591	Moderately resistant
CR007	2.895	Moderately resistant
CR012	2.993	Moderately resistant
Kashi santhushti	3.066	Moderately susceptible
Rasipuram local	3.115	Moderately susceptible
KAU Vishal	3.723	Moderately susceptible

evaluated. However, grub observations could not be recorded in Kudashanad local due to the loss of tagged plants caused by severe gummy stem blight infection before the final assessment. Among the remaining genotypes, Panayal local, FH201(0.12(0.78) grubs plant^{-1}) and CR006(0.16(0.80) grubs plant^{-1}) recorded comparatively lower grub populations, whereas N1215(10.12(3.26) grubs plant^{-1}) registered the highest grub population, followed by KAU Vishal (6.50(2.63) grubs plant^{-1}) and CR0085.70(2.47) grubs plant^{-1}). Rutto *et al.*, (2013) observed significant differences in *Helicoverpa armigera* larval densities among chickpea genotypes, with resistant accessions consistently supporting fewer larvae throughout crop growth. Similarly, Balraj *et al.*, (2026) reported marked genotypic variation in larval incidence, with resistant chickpea genotypes maintaining significantly lower larval populations than susceptible ones. These findings suggest that host plant genotype plays an important role in influencing larval establishment and survival.

Classification of *Cucumis melo* genotypes based on Weighted Damage Index

The Weighted Damage Index (WDI), calculated by integrating leaf, flower and fruit damage, was used to classify the twenty-five *Cucumis melo* genotypes into different resistance categories (Table 4). WDI values ranged from 1.002 to 3.723. F1-Sungro Seeds recorded the lowest WDI (1.002) and exhibited the highest level of resistance among the evaluated genotypes. Eleven additional genotypes, namely CR006, Mudicode local, CR008, Pullur local, Meppadi local, Mangad local, Naduvathoor local, Thazhup local, Alangad local, Saubhagya and Arunima, were classified as resistant. Ten genotypes, namely FH201, Marthandam local, FH200, Kudashanad local, Kazhakootam local, Panayal local, Ennor local, N1215, CR007 and CR012, were categorized as moderately resistant, whereas Kashi Santhushti, Rasipuram local and KAU Vishal were classified as moderately susceptible. None of the evaluated genotypes belonged to the susceptible or highly susceptible categories.

Conclusion

The study revealed significant variability among *Cucumis melo* L. genotypes in their response to pumpkin beetle (*Aulacophora* spp.) infestation. Based on the Weighted Damage Index, twelve genotypes were identified as resistant, while ten were moderately resistant and three were moderately susceptible. F1-Sungro Seeds (1.002) recorded the lowest WDI, followed by CR006 (1.192), Mudicode local (1.406), CR008 (1.487), Pullur local (1.532) and Meppadi local (1.538). These resistant genotypes may serve as potential sources of host plant resistance for pumpkin beetle resistance breeding. Further evaluation across locations and seasons may help validate the stability of resistance in the identified genotypes.

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