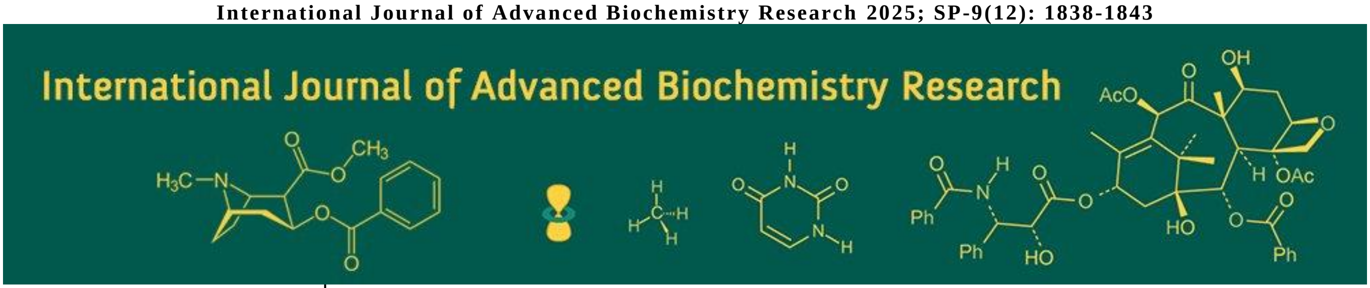

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Biophysical, biochemical screening of guava varieties against Fruitfly, (*Bactrocera dorsalis*) in guava

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Abstract
The present investigation evaluated the biophysical and biochemical traits of five guava (*Psidium guajava* L.) varieties Taiwan pink, Taiwan white, Allahabad Safeda, Lucknow-49 and Lalithin relation to fruit fly (*Bactrocera dorsalis* Hendel) infestation under field conditions. Among the varieties Taiwan pink was most susceptible variety, recording the highest number of maggots per infested fruit (32.25) and 100 per cent fruit infestation, followed by Taiwan white. In contrast, Lalith exhibited the least susceptibility with significantly lower maggot population (10.73) and fruit infestation (18.47%). Biophysical traits such as Rind thickness, fruit firmness and number of seeds per fruit were significantly and negatively correlated with infestation. Biochemical analysis revealed that total sugars, reducing sugars, non-reducing sugars, moisture content and total soluble solids were positively correlated with fruit fly infestation, whereas pectin content, total phenols, titratable acidity and vitamin C exhibited significant negative correlations. Higher sugar and moisture levels in Taiwan pink and Taiwan white rendered these varieties more susceptible, while elevated phenols, pectin, acidity and vitamin C in Lalith contributed to resistance.

Keywords: Guava varieties, *Psidium guajava* L., fruit fly, *Bactrocera dorsalis* (Hendel), biophysical traits

Introduction
Guava (*Psidium guajava* L.) is an important tropical fruit tree belonging to the family Myrtaceae. It originated in tropical America and is now widely cultivated for its edible fruits throughout tropical and subtropical regions of the world (Mitra, 1998; Paull and Duarte, 2011) [17, 24]. Among fruit crops, guava is valued for its high productivity, hardiness, and wide adaptability to diverse agro-climatic conditions. The crop bears abundantly every year and offers attractive economic returns with relatively low production inputs. Owing to these favourable attributes, guava is popularly known as the “apple of the tropics” and the “poor man’s fruit” (Singh, 2007; Bose *et al.*, 2016) [34, 6].
In India, guava ranks as the fourth most important fruit crop after mango, banana, and citrus in terms of area and production. During 2024, guava was cultivated over approximately 3.58 lakh hectares across the country. Madhya Pradesh accounted for the largest area under guava cultivation (0.55 lakh ha), followed by Uttar Pradesh (0.54 lakh ha), Andhra Pradesh (0.31 lakh ha), Bihar (0.29 lakh ha), and Maharashtra (0.20 lakh ha) (Anonymous, 2025) [4]. Despite its nutritional and economic importance, guava productivity in several regions remains below its potential due to various biotic and abiotic constraints.
Among the biotic factors, insect pests constitute one of the most serious constraints limiting guava production at different growth and developmental stages. Nearly 80 insect species have been reported to infest guava, causing significant losses in fruit yield and quality (Rajitha and Viraktamath, 2005) [25]. However, fewer than 20 species are considered economically important. Fruit flies, bark-eating caterpillars, fruit borers, whiteflies, and coccids are regarded as major pests, while aphids, thrips, and stem borers are classified as minor pests (Sarwar, 2006; Haseeb, 2007) [29, 12].
Plants possess a range of resistance mechanisms that allow them to avoid, tolerate, or mitigate insect pest damage (Sarfraz *et al.*, 2006) [28]. Investigations into the biophysical, associated with resistance in guava varieties against major insect pests are therefore crucial.

Such studies contribute to a better understanding of pest incidence, facilitate the identification of resistant or tolerant genotypes, and support breeding programmes aimed at developing pest-resistant varieties. Moreover, this knowledge aids in designing precise and sustainable pest management strategies for guava cultivation.

Screening for Fruitfly and Fruit Borers
Pest parameters
Fruitfly

Number of maggots per infested fruit: The number of maggots in the infested fruits was recorded by dissecting the fruits in the laboratory.

Fruit infestation percentage

$$\% \text{ infestation of fruit/plant} = \frac{\text{Number of infested fruits/plant}}{\text{Total Number of fruits/plant}} \times 100$$

Biophysical parameters in fruit
Fruit length (cm)

The fruit length of ten randomly selected fruits from each tree in a replication was recorded by measuring the distance from the stalk end to the floral end of the fruit with the help of scale. The average fruit length was calculated and expressed in centimeters.

Fruit girth (cm)

The fruit girth of ten randomly selected fruits from each tree in a replication was recorded with the help of scale. The average fruit girth was calculated and expressed in centimeters.

Number of seeds per fruit

Five fully matured fruits from each tree were randomly selected in each replication and brought to the laboratory. Number of seeds from each fruit were calculated visually by counting number of seeds and recorded.

Fruit firmness (kg/cm^3)

To determine the fruit firmness, a digital penetrometer was used. Five fruits of each variety with three replications were analyzed for firmness testing and mean value of these was recorded.

Rind thickness

Rind thickness of five fruits of each variety from ten replications was noted by using an Electronic digital Vernier callipers. Later, the mean values of five fruits of each variety were calculated.

Biochemical parameters

Biochemical composition of leaves and fruits *viz.*, Total sugars (%), Reducing sugars (%), Non- reducing sugars (%), Pectin (%), Total phenols (mg/g), Moisture content (%), Chlorophyll content (SPAD units), Titrable acidity (%), Vitamin- C(mg/g), TSS (^{O} Brix), Tannins (mg/g) were analyzed.

Screening of guava cultivars against Fruitfly

Nearing maturity of the fruits the female fruitfly laid eggs on the fruit making ovipositional punctures that is expressed as dark green depressions on the surface of the fruits on maturity. Data on number of ovipositional punctures per fruit, number of maggots per fruit, fruitfly infestation percentage recorded in different guava cultivars.

Number of maggots

The mean number of maggots per infested fruit differed from variety to variety. Out of five guava varieties screened, maximum number of maggots per infested fruit was observed in Taiwan pink (32.25) which was statistically on par with Taiwan white (30.48). The minimum number of maggots per infested fruit was recorded in variety Lalith (10.73). In varieties Allahabad Safeda and Lucknow- 49, the mean maggot population was 15.13 and 12.20, respectively.

Fruit infestation (%)

Cent percent fruit infestation at maturity was recorded in varieties Taiwan pink and Taiwan white. Varieties Lalith (18.47%), Allahabad safeda (63.22%) and Lucknow- 49 (46.30%) registered fruit infestation percent.

In present study, Taiwan pink variety was found to be relatively most susceptible to fruit fly infestation, whereas Lalith was found to be less susceptible to fruit fly infestation under field conditions. These results were in close agreement with that of Anilkumar *et al.* (2024) [2] who reported that Taiwan pink was highly susceptible to fruitfly infestation with 82.50%. (Bhaskar *et al.*, 2007; Rajpal (2008) [26]; Gesmallah *et al.*, 2017) [5, 11] also reported that varieties with Red flesh and Local varieties were found to be highly susceptible to fruit fly attack (64.20 to 80.40% fruit infestation).

Biophysical composition of fruits of different guava varieties against fruitfly infestation

Biophysical characters of five varieties of guava *viz.*, Taiwan pink, Taiwan white, Allahabad safeda, Lucknow- 49 and Lalith were studied. Data on fruit parameters *viz.*, fruit length (cm), fruit breadth (cm), fruit weight (g), seed cavity area (cm), number of seeds per fruit, fruit firmness (kg/cm^2) and rind thickness (cm) are presented in Table 1.

Fruit length (cm)

Considerable variation was recorded in fruit length among the guava varieties evaluated. Maximum fruit length was observed in Taiwan white (8.00 cm) which was on par with Taiwan pink (7.80 cm) and Lucknow- 49 (7.50cm); whereas, minimum fruit length was recorded in variety Lalith (5.50 cm) which was on par with Allahabad safeda (6.50 cm).

Correlation of fruit length with number of maggots (r= 0.820 NS) and fruit infestation (r= 0.837 NS) revealed a non- significantly positive correlation. Larger fruits provided a greater surface area for oviposition and more pulp volume to support larval development.

Fruit breadth (cm)

As per the data presented, noticeable variation was observed in fruit breadth among the guava varieties screened. Maximum fruit breadth was recorded in Taiwan white (7.80 cm) which was on par with Taiwan pink (7.60 cm). Whereas, minimum fruit breadth was recorded in variety Lalith (5.30 cm) followed by Allahabad safeda (6.40 cm) and Lucknow- 49 (6.50 cm)

Non- significantly positive correlation was observed between fruit breadth with number of maggots and fruitfly infestation percentage (r= 0.807, r= 0.728), respectively. This indicated that the fruits with greater breadth were more attractive for oviposition and provides increased pulp content favorable for larval survival.

Fruit weight

The fruit weight was highest in Taiwan pink (195.00 g) which was on par Taiwan white (180.00 g). Lowest fruit weight was recorded in Lalith (150.00 g) which was followed by Allahabad safeda (165.00g) and Lucknow 49 (160.00g).

Fruit weight was highly significant and positively correlated with number of maggots and fruit infestation percent (r = 0.991, r = 0.953). Heavier fruits exhibited greater fruit infestation percentage compared to lighter fruits which could be attributed to the availability of sufficient food material in large and heavy fruits, affording opportunities for adequate feeding and survival of the maggots.

These findings are in line with earlier reports of de Oliveira *et al.* (2014) [8] Khan *et al*. (2019) [15] and Anilkumar (2023) [3] who reported that fruits with larger dimensions (length, breadth and overall size) are generally associated with higher fruit fly infestation.

Rind thickness (cm)

Rind thickness varied considerably among the different guava varieties screened. The variety Lalith exhibited maximum rind thickness (2.50 cm) which was on par with Lucknow- 49 (2.00 cm) followed by Allahabad safeda with (1.80 cm). Variety Taiwan pink recorded minimum rind thickness (1.20 cm) which was on par with variety Taiwan white (1.35 cm).

Correlation of rind thickness with number of maggots and fruitfly infestation is highly significant and negatively correlated (r= -0.967, r= -0.864). Larval development is observed in pulp of the fruit (seed cavity area). Thicker rind acts as a mechanical barrier for development of larva and also restricts penetration of female ovipositor, thereby contributing to the overall resistance of fruit. Conversely, fruits with thinner rinds are more easily penetrated and provide favourable conditions for oviposition and larval development.

Nath and Bhushan (2006) [18], Usha and Naidu (2011) [32], Patel *et al.* (2015) [21, 22], Devi *et al.* (2018) [9] and Anilkumar *et al.* (2024) [2] reported that thin-skinned Hissar Surkha and Banarasi Surkha cultivars of guava are highly susceptible and thick-skinned, Lalith was less susceptible to fruit fly, *B. dorsalis* infestation.

Seed cavity area (cm)

Seed cavity area was maximum in the variety Taiwan pink with (6.94 cm) which was on par with Taiwan white with 6.80 cm. Minimum seed cavity area was recorded in the variety Lalith with 5.58 cm which was on par with Allahabad safeda (6.50 cm) and Lucknow - 49 (6.42 cm).

Correlation of seed cavity area with number of maggots (r= 0.891) and fruitfly infestation (r= 0.967) revealed that correlation is significantly positive. This indicates that as the seed cavity area increases fruit fly infestation also increases, fruits with a larger seed cavity provide less fruit pulp volume for maggot feeding and survival.

Number of seeds per fruit

The variety Taiwan pink recorded minimum number of seeds with 200 seeds per fruit with which was on par with Taiwan white (220 seeds per fruit). The variety Lalith which possessed highest seed number (280 seeds per fruit) which was on par with Lucknow- 49 (265 seeds per fruit) followed by Allhabad safeda (250.00 seeds per fruit).

The correlation analysis of number of seeds/ fruit with number of maggots (r = - 0.983) and fruit fly infestation (r= - 0.900) is highly significant and negatively correlated. This suggests a possible inverse relationship between seed number and fruitfly infestation, where fruits with larger seed cavity and higher seed density may provide less fruit pulp volume for maggot feeding, thereby restricting maggot survival and development. On the other hand, fruits with fewer seeds tend to have more pulp, offering a favourable environment for maggot growth and resulting in higher infestation levels.

Similar results have been reported by Jhala *et al.* (2014) [13] and Singh and Sharma (2018) [30] and Kaur and Sohal (2019) [14] who observed that guava varieties with higher seed density generally exhibited reduced fruit fly infestation compared to varieties with fewer seeds. Similarly, Patel *et al*. (2021) [23] reported a significant positive correlation between seed cavity size and fruit fly infestation in guava, emphasizing that morphological features strongly influence host preference and pest colonization.

Fruit firmness (kg/cm²)

Variation in fruit firmness was evident among the guava varieties under study. The maximum firmness was recorded in Lalith (4.45 kg/cm²) followed by Lucknow- 49 with (3.61 kg/cm²) and Allahabad safeda (3.89 kg/cm²). Minimum fruit firmness was observed in Taiwan pink (2.00 kg/cm²) which was on par with Taiwan white (2.12 kg/cm²).

The correlation analysis of fruit firmness with number of maggots (r = - 0.981) and fruit fly infestation (r= - 0.918), is highly significant and negatively correlated which indicates that with increase in fruit firmness there is decrease in infestation percentage.

Similar observations were reported by Follett (2009) [10] who observed that infestation rate increased with decreasing fruit firmness. Louzeiro *et al.* (2020) [16] found that firmness of infested fruits was lower in comparison to non-infested fruits. Aarti *et al.* (2023) [1] also reported negative correlations with fruit firmness (r = -0.992) in guava.

Biochemical composition of fruits of different guava varieties against fruitfly infestation

Different biochemical parameters of fruits *viz.*, total soluble sugars, reducing and non- reducing sugars, phenols, TSS, acidity, moisture content, chlorophyll content and ascorbic acid were analyzed and data is presented in the table 1. The biochemical compositions of the fruits were correlated with fruitfly population and fruit infestation.

Total sugars (%)

The total sugar content of guava fruits varied significantly among the tested varieties. Highest sugar content was recorded in the variety Taiwan pink (10.00%) which was on par with Taiwan white (9.60%). Lowest total sugars were recorded in Lalith (6.40%) whih was on par with Allahabad safeda (8.90%) and Lucknow-49 (8.30%).

Correlation studies between total sugars with mean number of maggots (r= +0.910) and fruit infestation percentage (r= +0.985) showed highly significant and positive correlation. The varieties with higher sugar levels *viz.*, Taiwan pink and Taiwan white are strongly associated with a higher percentage of fruit infestation.

Reducing sugars (%)

Reducing sugar content of guava fruits varied among the varieties. The highest reducing sugar content was observed in Taiwan pink (4.80%) which was on par with Taiwan white (4.50%). Whereas lowest reducing sugar content was recorded in Lalith (3.10%) which was on par with Allahabad Safeda (4.20%) and Lucknow-49 (4.00%).

Correlation studies between reducing sugars with mean number of maggots (r= + 0.914) and fruit infestation percentage (r= + 0.978) were highly significant and positive correlated. The varieties with higher reducing sugar levels are strongly associated with a higher percentage of fruit infestation.

Non-Reducing sugars (%)

The highest non-reducing sugar content was recorded in Taiwan pink (4.00%) which was on par with Taiwan white (3.80%). Whereas, lowest non- reducing sugars was observed in Lalith (2.30%) which was on par with Allahabad safeda (3.60%) and Lucknow-49 (3.50%).

Correlation studies between non- reducing sugars with mean number of maggots (r= +0.825) and fruit infestation percentage (r= +0.932) showed highly significant and positive correlation values**.** The varieties having higher non-reducing sugars are strongly associated with a higher percentage of fruit infestation.

Reddy and Vasugi (2008) [27]; Aarti *et al.* (2023) [1] and Anil kumar *et al.* (2024) reported that fruits with higher sugars tended to harbor a greater larval density, rendering them highly susceptible to attacks by *Bactrocera dorsalis*.

Pectin content (mg/g)

Among five guava varieties screened, pectin content was highest in the variety Lalith (0.80 mg/g) which was on par with Lucknow-49 (0.67 mg/g) and Allahabad safeda (0.64 mg/g). Lowest pectin content was recorded in the variety Taiwan pink with (0.45 mg/g) which was on par with Taiwan white (0.50 mg/g).

From correlation studies between pectin content with number of maggots (r= -0.987) and fruitfly infestation (r= -0.984) was highly significant and negatively correlated, indicating that with an increase in pectin content there will be decrease in number of maggots and fruitfly infestation percentage.

These findings suggest that pectin acts as a structural barrier, imparting firmness and resistance to guava fruits, thereby making them less susceptible to fruit fly oviposition and maggot development. Similar results were reported by Usha and Naidu (2011) [32] and Patel *et al.* (2015) [21, 22] who observed significant negative correlation between pectin content and fruit fly incidence in guava.

Total phenols (mg/g)

The total phenolic content of guava fruits exhibited distinct varietal differences ranging from 3.00- 2.85 mg/g. Highest phenol content was recorded in the variety Lalith with 3.00 which was on par with Lucknow- 49 (2.70) followed by Allahabad safeda (2.50). Lowest phenol content was recorded in variety Taiwan pink (2.85) which was on par with Taiwan white (2.20).

Correlation analysis between total phenol content with number of maggots (r= -0.977) and fruitfly infestation (r= -0.954) revealed that total phenol content was highly significant and negatively correlated, indicating that with an increase in the phenol content there will be a decrease number of maggots an fruitfly infestation percentage.

Phenolic compounds might contribute to host plant resistance by functioning as feeding deterrents, oviposition inhibitors and oxidative enzymes precursors. Their defensive role against fruit flies has been documented in several crops, where higher phenolic content correlated negatively with pest infestation (Patel *et al.*, 2015; Usha and Naidu, 2011; Aarti *et al.*, 2023) [21, 22, 32, 1]. Verghese *et al.* (2012) [33] an d Pagadala *et al.* (2015) [20] reported higher levels of phenolic compounds in resistant mango varieties compared to susceptible ones.

Moisture content (%)

The moisture content of guava fruits varied considerably among the screened varieties. Highest moisture content was recorded in the variety Taiwan pink (88.00%) which was on par with Taiwan white (84.00%). Lowest moisture content was recorded in variety Lalith with (72.00%) followed by Lucknow- 49 (81.00%) and Allahabad safeda (80.00%).

Correlation between moisture content with number of maggots (r= +0.920) and fruit infestation (r= +0.943) is significantly positive. Fruits with lower moisture content are less preferred by the pest, likely due to reduced pulp succulence and harder tissue consistency, which act as deterrents to larval penetration and feeding.

Similar findings were earlier reported by Singh *et al.* (2010) [31] and Nath and Bhushan (2006) [18] in guava and mango, where higher moisture levels were positively correlated with fruit fly infestation, while lower-moisture varieties exhibited a degree of natural resistance.

Titrable acidity (%)

Tritrable acidity was highest in the variety Taiwan pink (0.40%) which was on par with Taiwan white (0.42%) and Allahabad safeda with (0.45%). Tritrable acidity was recorded lowest in the variety Lalith with (0.60%) which was followed by Lucknow- 49 (0.50%).

Correlation between tritrable acidity with number of maggots (r= -0.905) and fruit infestation (r= -0.987) highly significant and negative. This indicates that with increase in titrable acidity there is decrease in pest infestation percentage.

Present findings are in line with Nehra *et al.* (2019) [19] and Aarti *et al.* (2023) [1] who reported a negative correlation with fruitfly infestation and acidity (r = -0.987). Galli *et al.* (2017) supported the present result as their calculation of the multivariate analysis suggested that fruit infestation was inversely related to skin colour, firmness, soluble solids and titrable acidity of guava fruits.

Vitamin C (mg/g)

Among the different guava varieties screened for vitamin C, highest vitamin C was found in the variety Taiwan pink with (1.60 mg/g) which was on par with Taiwan white (1.70 mg/g). Vitamin C was lowest in the variety Lalith with (2.40 mg/g) which was on par with Allahabad safeda with (1.80 mg/g) and Lucknow- 49 (2.20 mg/g).

Correlation between vitamin C content with number of maggots (r= -0.905) and fruit infestation (r= -0.949) highly significant and negative. The results indicated a negative relationship between Vitamin C and infestation. From this it was observed that higher vitamin C was associated with lower fruit fly infestation.

Nehra *et al.* (2019) [19] reported that correlation with per cent fruit fly infestation and vitamin C content was negatively correlated. Choudhary *et al.* (2018) [7] indicated that ascorbic acid, flavonoids and total phenols found abundantly in the pulp and peel of resistant varieties and played a defensive role against *B. dorsalis* infestation in mangoes.

Total soluble solids (TSS) (ºBrix)

Among the five varieties screened values of TSS varied significantly. Highest TSS was recorded in variety Taiwan pink with 13.00 ºBrix which was on par with Taiwan white (12.00). Lowest TSS was recorded in the variety Lalith with (8.30 ºbrix) which was on par with Lucknow-49 (9.60 ºbrix) and Allahabad safeda (11.50 ºbrix)

Correlation between TSS with number of maggots (r= +0.212) and fruit infestation (r= +0.228) significantly positive. Higher TSS values were associated with increased fruit infestation. Choudhary *et al.* (2018) [7] indicated higher levels of total soluble solids found in susceptible varieties. Nehra *et al.* (2019) [19] and Aarti *et al.* (2023) [1] reported total soluble solids showed a positive correlation with fruitfly infestation in mango and guava, respectively.

Table 1: Influence of biophysical characteristics of different Guava cultivars against fruitfly

Name of the cultivar	Fruit length (cm)	Fruit breadth (cm)	Fruit weight (g)	Seed cavity area (cm)	Number of seeds per fruit	Fruit firmness (kg/cm^2)	Rind thickness (cm)	Number of maggots/fruit	Fruit infestation (%)
Taiwan Pink	7.80 (2.88)	7.65 (2.75)	195.30	16.48 (2.63)	150.50	2.00 (1.41)	1.20 (1.49)	32.25 (5.76)	100 (90.00)
Taiwan White	8.00 (2.92)	7.82 (2.79)	180.25	16.07 (2.60)	135.20	2.12 (1.45)	1.35 (1.62)	30.48 (5.67)	100 (90.00)
Allahabad Safeda	6.16 (2.32)	6.55 (2.25)	160.52	8.00 (2.53)	255.00	3.61 (1.90)	2.00 (1.41)	12.20 (3.49)	35.30 (35.20)
Lucknow-49	6.50 (2.33)	6.44 (2.23)	165.24	8.50 (2.35)	240.80	3.89 (1.97)	1.80 (1.24)	15.13 (3.99)	38.25 (40.0)
Lalith	6.54 (2.00)	6.30 (1.90)	150.50	7.58 (2.36)	260.40	4.45 (2.11)	2.30 (1.41)	10.73 (3.40)	18.47 (23.21)
SE(m)±	0.15	0.14		0.06		0.14	0.06		
CD	0.45	0.42		0.19		0.10	0.18		
Correlation with no. of maggots	0.82 NS	0.807 NS	0.991**	0.891*	-0.983**	-0.981**	-0.967**		
Correlation with fruit infestation	0.837 NS	0.728 NS	0.953*	0.967**	-0.975*	-0.918	-0.864**		

* Significant at 5% level (p<0.05)
** Significant at 1% level (p<0.01)
NS- Non significant

Table 2: Influence of biochemical characteristics of fruits on different guava cultivars against fruitfly

Varieties	Total sugars (%)	Reducing sugars (%)	Non - reducing sugars (%)	Pectin content (mg/g)	Total phenols (mg/g)	Moisture content (%)	Titrable acidity (%)	Vit. C (mg/g)	TSS	pH	Number of maggots/fruit	Fruit infestation (%)
Taiwan Pink	10.00 (3.16)	4.80 (2.19)	4.00 (2.0)	0.45 (0.67)	2.85 (1.71)	88.00 (9.38)	0.40 (0.65)	1.60 (1.24)	13.00 (3.60)	5.20 (2.28)	32.25	100
Taiwan White	9.60 (3.09)	4.50 (2.12)	3.80 (1.66)	0.50 (0.70)	2.20 (1.69)	84.00 (9.26)	0.42 (0.63)	1.70 (1.30)	12.00 (3.58)	5.00 (2.23)	30.48	100
Allahabad Safeda	8.30 (2.88)	4.00 (2.0)	3.50 (1.87)	0.67 (0.81)	2.70 (1.64)	81.00 (9.0)	0.50 (0.70)	2.20 (1.48)	9.60 (3.09)	4.60 (2.14)	12.20	35.30
Lucknow-49	8.90 (2.49)	4.20 (2.54)	3.60 (1.59)	0.64 (0.8)	2.50 (1.60)	80.00 (8.94)	0.45 (0.71)	1.80 (1.38)	11.50 (3.39)	4.50 (2.0)	15.13	38.25
Lalith	6.40 (2.53)	3.10 (2.26)	2.30 (1.51)	0.80 (0.86)	3.00 (1.65)	72.00 (8.72)	0.60 (0.74)	2.40 (1.49)	8.30 (3.23)	4.00 (1.9)	10.73	18.47
Mean	8.64	4.12	3.44	0.61	2.65	81.0	0.47	1.94	10.88	4.66		
SE (m)±	0.21	0.11	0.10	0.03	0.02	0.11	0.01	0.02	0.06	0.07		
CD	0.63	0.33	0.30	0.07	0.08	0.30	0.04	0.07	0.18	0.21		
Correlation with no. of maggots	+0.91**	+0.914**	+0.825*	-0.987 **	-0.977**	+0.92 *	-0.906 *	-0.905 *	+0.212	+0.963		
Correlation with fruit infestation	+0.985**	+0.978**	+0.932*	-0.984**	-0.954*	+0.943*	-0.987**	-0.949*	+0.228	+0.956*		

* Significant at 5% level (p<0.05)
** Significant at 1% level (p<0.01)

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