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Physico-morphic factors imparting resistance in different Brinjal cultivars against sucking insect pest of Brinjal

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Abstract

Response of different brinjal cultivars against sucking pest like aphid, jassids, whitefly and thrip's was evaluated at research farm Arid Agriculture University, Rawalpindi, during 2013. The data regarding the sucking pest population revealed that Round Brinjal 86602 was the comparatively resistant cultivar with 0.136 nymphs, 0.049 adult, 0.073 adult and 0.060 adults per leaf respectively. Yield mean data shows that the Round Brinjal 86602 was the highest yielding among all the tested cultivars with the yield of 1.15 kg/plant which was highly significant. According to the physico-morphic characters number of hairs on fruit crown and hairs on leaf midrib were 14.49 and 71.49 hairs per cm². Correlation between sucking pest and abiotic factors the minimum, maximum and average temperature has a negative correlation with the aphid infestation on all the cultivars except Short purple with 0.058. Rainfall during the growing season has a positive correlation with the aphid infestation. The average temperature has negative correlation with jassid population on Round brinjal 86602, Round White Brinjal and singhnath 666 with -0.006, -0.058 and -0.541. Based on the sucking pest population, physic-morphic characters and correlation with abiotic factors the Round Brinjal 86602 proved to be comparatively resistant and Short Purpal is susceptible cultivar.

Keywords: Sucking pest, physico-morphic character and abiotic factors

1. Introduction

Brinjal (*Solanum melongena* L) belongs to the Solanaceae family holds significant importance as a vegetable crop in South Asia and South East Asia. Some of the local names of brinjal in different native languages across the globe are Aubergine, Melongene, Garden egg, Guinea squash, Egg plant and Baingan. Solanaceae family has 95 genera and more than 2450 species [1]. The area under brinjal cultivation is more than 0.678 million hectare, with the average production of 10.50 million tons in Pakistan, India and Bangladesh [2]. Large round, dwarf brinjal and long slender are three major cultivated species of genus *solanum* [3]. In Indian subcontinent brinjal were grown since last 40 centuries [4]. China is at the top in brinjal production followed by India and Iran throughout the world. Brinjal also have some medicinal importance like high potassium contents and low calories made it useful for hypertensive, obese and diabetes patients [5].

Primary infection caused by the insect pests facilitates the secondary pathogens to attack on the brinjal crop and made the fruits unmarketable. In the South East Asia the sucking pest caused 67% yield losses [6]. A number of biotic and abiotic factors are responsible for average production of brinjal. Environmental factors play a key role in seasonal fluctuation of yield losses in brinjal due to insect pests [7]. Among 53 insect pests that attack on brinjal crop the most important yield reducing insect pests are aphid, jassid, whitefly and thrips. Egg plant is under attack of these destructive sucking pests from nursery to harvesting stage [8]. In Asia sucking pests of brinjal such as aphid, jassid and whitefly attacks and damage the shoots and fruits of brinjal at all growing stages and drastically reduce the yield up to 70-92 percent [9]. In Pakistan major pests of brinjal are cotton jassid (*Amrasca biguttula biguttula*) (Ishida) and fruit borer (*Leucinodes orbonalis*) [10, 11, 6, 12]. Whitefly is the most serious insect pest of brinjal crop [13] not only attack on leaves, stems, buds, but also attack on flowers and reduced the crop yield [14]. To overcome the yield losses caused by the insect pests, integration of different control measures (host plant resistance, cultural, chemical, and biological) are applied in integrated pest management (IPM).

Host plant resistance is an efficient method for the management of insect pests of crops. Target pests can be controlled by developing resistance cultivars. Host plant resistance and IPM tactics both are helpful to reduce the pest population and also increase the yield of crop. Any inherited character of the host that limits the effect of pest attack defined as pest resistance [15]. Keeping in view the significance of eggplant, the current research work was conducted to access different brinjal cultivars against sucking insects (Whitefly, aphid, jassid and thrips). The current research work aim is to help farmer's community in Pakistan and to increase the yield of the brinjal crop.

2. Materials and Methods

To evaluate different brinjal cultivars against sucking pest like aphid, jassid, thrips and whitefly the following five different cultivars viz., Short Purple, Singhnath 666, Brinjal long 6275, Round Brinjal 86602, Round White Brinjal were grown for screening. The experiment was planned in Randomized Complete Block Design (RCBD) with five treatments and four replications at research farm of PMAS, Arid Agriculture University, Rawalpindi, during 2013.

2.1 Research Area

In Rawalpindi the winters are cold and dry with average maximum temperature of 24.4 °C and average minimum temperature of 3.4 °C while the summers are hot and rainy with average maximum and minimum temperature of 34.2 °C and 16.4 °C respectively. The Rawalpindi falls in high rainfall region with average annual rainfall of 1143mm. The different cultivars were collected for field experiment, for the screening of brinjal cultivars against sucking pest.

2.2 Screening of Aubergine Cultivars

The seedlings were raised within 52 days in glass house before transplanting them to field. The healthy plants were transplanted to research area. The land was prepared by ploughing, laddering and was fertilized with organic manure. The row to row and plant to plant 60 to 75 cm was maintained respectively. Irrigation was done when ever required.

2.3 Egg Population

The number of eggs of jassid, white fly and thrips were counted on weekly interval from the beginning of the crop after transplantation to the field up to the harvest of crop. The average numbers of the eggs per leaf was counted by the following formula.

$$\text{Average Number of Eggs per leaf} = \frac{\text{Total Number of eggs counted}}{\text{Total Number of leaves observed}}$$

2.4 Nymph Population

The nymphs of aphid, jassid, whitefly and thrips were counted on weekly interval soon after the transplantation of the plants. The average numbers of the nymphs per leaf was counted by the following formula.

$$\text{Average Number of nymphs per leaf} = \frac{\text{Total Number of nymphs counted}}{\text{Total Number of leaves observed}}$$

2.5 Adult Population

The adults of the aphids, jassid, nymphs and whitefly were counted early in the morning when the insect mobility is low on weekly basis from the five randomly selected plants. The average numbers of the adults per leaf was counted by the following formula.

$$\text{Average Number of adults per leaf} = \frac{\text{Total Number of adult counted}}{\text{Total Number of leaves observed}}$$

2.6 Correlations

The number of eggs, nymph and adult population was correlated with yield and abiotic factors. The physico-morphic characters were also correlated with pest's population dynamics. All the data were analyzed by using Co STAT software with simple correlation.

2.7 Statistical Analysis

The data were analyzed by using Co STAT version 6.311 software package and mean values were compared by using least significant difference (DMR) test at a level of 0.05.

3. Results and Discussion

3.1 Screening of Different Brinjal Cultivars against Aphid, Jassids, Whitefly and Thrips Population

3.2 Aphid's Nymph Population

The different brinjal cultivars were screened against aphid population in 2013. The data regarding the aphid nymph population revealed that the short purple was the most susceptible cultivar with 0.432 nymphs per leaf and Round Brinjal 86602 was the most resistant with 0.136 nymphs per leaf. The nymph per leaf population of Round Brinjal 86602 was significantly different from Brinjal Long 6275, Singhnath 666, Round White Brinjal and Short Purple with 0.299, 0.233, 0.263 and 0.432 nymphs per leaf (Table 1).

3.3 Aphid's Adult Population

The presence of adult aphid on different brinjal cultivars revealed that Round Brinjal 86602 was the most resistant and significantly different from all other cultivars with 0.296 adult aphid per leaf. Short Purple was found to be the most susceptible cultivar against aphid with the highest aphid population of 0.550 aphids per leaf. The other three cultivars Brinjal Long 6275, Round White Brinjal and Singhnath 666 aphid population per leaf with 0.451, 0.399 and 0.373 respectively (Table. 1). The data regarding aphid's population of the research are not similar to the findings of [16] who said that the minimum aphid population was observed in AB-09-19 and NDB 18 with 2.56 and 2.67 aphids/leaf respectively. The results may differed due to abiotic factors.

3.4 Jassids Eggs Population

The means of the jassid eggs population on all cultivars of brinjal was analyzed by DMR Test (0.05) and the results showed that the maximum number of eggs were recorded on Short Purple with 0.469 eggs per leaf and was significantly different from all other cultivars. The egg population on all other cultivars was not-significantly different from each other i.e., Round Brinjal 86602, Round White Brinjal and Singhnath 666 with 0.346, 0.333 and 0.331 and the least egg population was recorded on Brinjal Long 6275 with 0.318 eggs per leaf (Table.1).

3.5 Jassids Nymph Population

The Round Brinjal 86602 was found to be the most resistant cultivar on the basis of the jassid nymph population with the mean jassid nymph per leaf of 0.184 which was significantly different from all other cultivars, the Short Purple was recorded as the most susceptible cultivar with the mean jassid nymph population per leaf of 0.382. All other cultivars were non significantly different from each other and the nymph population on Brinjal Long 6275, Singhnath 666 and Round

White Brinjal with 0.271, 0.253 and 0.251 nymphs per leaf respectively (Table.1).

3.6 Jassids Adult's Population

The adult jassid population infestation on all the tested cultivars showed that there was non-significant difference between Brinjal Long 6275, Singhnath 666 and Round White Brinjal with the mean adult jassid population per leaf with 0.197, 0.175 and 0.177 (Table.1) respectively. It was recorded that the Round Brinjal 86602 with 0.049 was the most resistant cultivar with lowest adult jassid population per leaf. The Short purple with 0.329 was found to be the most susceptible cultivar with high adult jassid population per leaf (Table.1). Present research results are also similar to the findings of [17] who reported that jassids population speckled between 0.00 and 6.80 per leaf on different brinjal cultivars.

3.7 Whitefly Number of Eggs

The white fly population on the brinjal cultivars showed that the minimum number of eggs was recorded on Brinjal Long 6275 with a mean of eggs per leaf of 0.251 which is significantly different from Short Purple and Round White Brinjal cultivars i.e. 0.336 and 0.312 respectively. The Short Purple have the significantly high number of whitefly eggs per leaf from all cultivars except Round White Brinjal. All the other cultivars have non-significant difference as far as the whitefly egg population is concerned. The Singhnath 666 have the average egg population of 0.289 and Round Brinjal 86602 have 0.281 eggs per leaf (Table.1).

3.8 Whitefly Nymph Population

The whitefly nymph populations on the brinjal cultivars show that Brinjal Long 6275 was the most resistant cultivar with the average means nymph population of 0.170 nymphs per leaf which is significantly less than all others except Round Brinjal 86602 which have 0.178 nymphs per leaf. The other three cultivars are non-significantly different from each other with Short Purple as the most susceptible cultivar with the mean nymph population of 0.240 nymphs per leaf. Round White Brinjal has 0.214 nymphs per leaf and Singhnath 666 has 0.212 nymphs per leaf population (Table.1).

3.9 Whitefly Adult's Population

Round Brinjal 86602 was found to be the most resistant cultivar on the basis of whitefly adult population with the mean adult population of 0.073 which is significantly different from all other cultivars. The mean adult population of three cultivars Singhnath 666, Round White Brinjal and Brinjal Long 6275 were non-significantly different from each other with 0.112, 0.103 and 0.090 adults per leaf respectively. Short Purple was the most susceptible cultivar with a significantly high number of adult whitefly populations with 0.188 adults per leaf (Table.1). Present study has similar result as [18] who reported that adequate number of adults was not attracted on Brinjal cultivars.

3.10 Thrips Number of Eggs

The data of thrips population on the brinjal cultivars was analyzed. The analysis of variance of egg population in (Table.1) the data was compared by DMR Test (0.05). All the cultivars have non-significant difference except Short Purple with 0.334 egg population which is significantly high than all others. The Round Brinjal 86602 showed the lowest egg population of 0.236 eggs per leaf followed by Brinjal Long 6275, Singhnath 666 and Round White Brinjal with 0.255,

0.292 and 0.271 eggs per leaf respectively (Table.1).

3.11 Thrips Nymph Population

The nymph population of thrips on brinjal cultivars showed that Short Purple was the most susceptible against thrips with 0.255 nymph population which was significantly different from all other cultivars except Singhnath with 0.21 nymph population. The nymph population on all other cultivars were non-significantly different from each other. The least number of population was observed on Round Brinjal 86602 with 0.155 followed by Brinjal Long 6275 and Round White Brinjal with 0.177 and 0.179 nymphs population respectively (Table.1).

3.12 Thrips Adult's Population

Round Brinjal 86602 was found to be the resistant cultivar against the thrips adult infestation with 0.060 adults per leaf which is significantly different from all others except Brinjal Long 6275 and Round white brinjal with 0.090 and 0.098 adults per leaf respectively. The Short Purple was the most susceptible cultivar among all five with the thrips adult population with 0.192 adults per leaf which is significantly high than all other four cultivars. Singhnath 666 have the thrips adult population with 0.108 per leaf adults (Table.1). Development of varieties resistant to the insect pests is an important strategy of integrated pest management [19].

3.13 Yield Comparison of Brinjal Cultivars

The yield per plant in kilograms was recorded and the mean data showed that the Round Brinjal 86602 was the highest yielding cultivar among all the tested cultivars with the yield mean of 1.15 kg/plant. Singhnath 666 was the second high yielding cultivar with the mean yield of 0.687 kg/plant and Round White Brinjal was the third in yield with the mean yield of 0.597 kg/plant. Short Purple and the Brinjal Long 6275 with 0.52 and 0.447 kg per plant was the lowest yielding cultivar. (Table.1). From the previous data of insect infestation (Table.1) it was noted that the Round Brinjal 86602 was the resistant cultivars against the sucking insects infestation and the Short Purple was the susceptible among all the tested cultivars. [20] also observed that the cultivars having less infestation of pests are high yielding. [21] Also observed the same results as of that the resistant and the least susceptible cultivars have highest yield.

3.14 Comparison of Mean Values for the Data Regarding Sucking Pest's Population And Physico-Morphic Character On Different Brinjal Cultivars During 2013.

3.14.1 Number of Hairs on Fruit Crown

The number of hairs per cm² on different cultivars of brinjal was counted under microscope and the data regarding the number of hairs on fruit crown showed that the Round Brinjal 86602 had the most number of hairs on fruit crown with 14.49 hairs per cm² which was significantly different from all other cultivars. The other cultivars were non-significantly different number of hairs on the fruit crown except Brinjal Long 6275 which had the least number of hairs on fruit crown i.e. 4.162 hairs per cm². The number of hairs on fruit crown on Short Purple, Singhnath 666 and Round White Brinjal with 11.99, 12.74 and 11.49 were non-significantly different from each other (Table.2). The present study has similarity with the finding of [22] which observed that the resistant genotypes had more hairs than the susceptible ones.

3.14.2 Number of Hairs on Leaf Midrib

On leaf midrib the most number of hairs per cm² was recorded on Round Brinjal 86602 with 71.49 hairs per cm² which was significantly high in number than all other cultivars. Brinjal Long 6275 and Round White Brinjal with 43.07 and 30.07 hairs per cm² were non-significantly different from each other while Singhnath 666 had 27.24 hairs per cm² and Short Purple had the least number of hairs per cm² i.e. 23.99 hairs per cm² (Table.2). The present result according to the number of hairs on leaf midrib are conformed by [23] reported that the high hair density on leaf and leaf midrib is an important morphological characteristics of the brinjal plant to have resistance against the sucking insect pests.

3.14.3 Number of Hairs on Leaf Lamina

The data regarding the number of hairs on leaf lamina showed that the leaf lamina had the highest number of hair density than leaf midrib and fruit crown. Among all the cultivars Brinjal Long 6275 with 263.16 hairs per cm² was highest hair density on leaf lamina followed by Round Brinjal 86602 with 254.16. The number of hairs on leaf lamina on Singhnath 666 and Round White Brinjal with 210 and 196.75 respectively. The Short Purple had the least number of hair density with 183 hairs per cm² (Table.2). In the present studies the hairs on different parts of the plant look to have important role towards non preference for fruit infestation which is in conformity with the findings of [24].

3.14.4 Height of Different Brinjal Cultivars.

The height of the brinjal cultivars was measured and the Analysis of variance was given in table (Table.2) respectively. The means data was compared by DMR Test at 0.05 P value. The Brinjal Long 6275 was significantly different from all other cultivars with the mean height of 24.58 cm. All the other cultivars were none significantly different from each other. Singhnath 666, Round Brinjal 86602, Round White Brinjal and Short Purple with 22.16, 21.41, 17.66 and 16.41 cm respectively (Table.2).

3.14.5 Stem Girth of Different Brinjal Cultivars.

All the cultivars were significantly different from each other except Short Purple and Round White Brinjal which had the mean stem girth with 4.45 cm and 4.23 cm respectively. Singhnath 666 with 5.92 cm had the thickest stem girth which was significantly different from others. Brinjal Long 6275 and Round Brinjal 86602 with 5.08 and 4.69 cm stem girth respectively (Table.2).

3.15 Correlation of Sucking Pests Infestation Population on Brinjal Cultivars with Different Weather Factors

3.15.1 Aphid population correlation with different weather factors on brinjal cultivars during 2013

Different weather factors were correlated with the aphid population on brinjal crop during the crop season and it was found that the minimum temperature showed negative correlation with the aphid infestation on all the cultivars except Short purple which showed positive correlation

between aphid population with a value of 0.058 and the minimum temperature during the season. Maximum temperature and average temperature also showed negative correlation with the adult aphid population. The average relative humidity showed positive correlation with the aphid population on brinjal cultivars except on Brinjal Long 6275 which showed negative correlation of -0.102 between aphid population and relative humidity. Rainfall during the growing season showed positive correlation with the aphid infestation (Table. 3(a)). The losses caused by brinjal pests varies from season to season depending upon environmental factors which conformity by [25].

3.15.2 Jassid's population correlation with different weather factors on brinjal cultivars during 2013.

The minimum temperature was found to have a positive correlation with jassid population on all the cultivars except Round Brinjal 86602 and Round White Brinjal which showed negative correlation with -0.450 and -0.296 respectively. The maximum temperature showed positive correlation with jassid infestation in all cultivars except Round Brinjal 86602 which showed negative correlation with - 0.540. The average temperature showed negative correlation with jassid population on Round brinjal and Round White Brinjal but showed positive correlation on Brinjal Long 6275, Short Purple and Singhnath 666. The relative humidity showed negative correlation of - 0.649, - 0.530 and - 0.095 with the jassid infestation on Brinjal Long 6275, Short Purple and Round White Brinjal respectively. Relative humidity showed positive correlation with jassid population on Round Brinjal 86602 and Singhnath 666 (Table. 3 (a)).

3.15.3 Whitefly population correlation with different weather factors on brinjal cultivars during 2013.

Whitefly infestation showed negative correlation with minimum and maximum temperature on all cultivars. The average temperature also showed negative correlation on the whitefly infestation except Short Purple which was positive correlation of 0.386. The relative humidity and average rainfall during the growing season showed positive correlation with adult whitefly population on all cultivars except on Short Purple on which negative correlation of - 0.346 was found between relative humidity and whitefly population and a negative correlation of -0.118 between average rainfall and whitefly infestation (Table. 3(b)).

3.15.4 Thrip's population correlation with different weather factors on brinjal cultivars during 2013.

The Thrips population showed negative correlation with minimum, maximum and average temperature on all the cultivars but positive correlation was showed between relative humidity and thrips population. Round White Brinjal, Brinjal Long 6275, Round Brinjal 86602, Short Purple and Singhnath 666 with the value of 0.664, 0.582, 0.292, 0.176 and 0.681 relative humidity respectively. The average rainfall showed positive correlation on all cultivars with the adult thrips population (Table. 3(b)).

Table 1: Comparison of mean values for the data regarding aphids, jassids, thrips and whitefly population and yield (kg) on different aubergine cultivars during 2013.

Cultivars	Aphids		Jassid			Thrips			Whitefly			Yield in Kg
	Nymph population	Adult Population	Number of Eggs	Nymph population	Adult Population	Number of Eggs	Nymh population	Adult Population	Number of Eggs	Nymph population	Adult Population	
Short Purpal	0.432 a	0.550 a	0.469 a	0.382 a	0.329 a	0.334 a	0.255 a	0.192 a	0.336 a	0.240 a	0.188 a	0.52 c
Round White Brinjal	0.263 b	0.399 bc	0.333 b	0.251 b	0.177 b	0.271 bc	0.179 bc	0.098 bc	0.312 ab	0.214 b	0.103 b	0.597 bc
Singhnath 666	0.233 b	0.373 bc	0.331 b	0.253 b	0.175 b	0.292 ab	0.210 ab	0.108 b	0.289 bc	0.212 b	0.112 b	0.687 b
Brinjal Long 6275	0.299 b	0.451 b	0.318 b	0.271 b	0.197 b	0.255 bc	0.177 bc	0.090 bc	0.251 c	0.170 c	0.090 b	0.447 c
Round Brinjal 86602	0.136 c	0.296 c	0.346 b	0.184 c	0.049 c	0.236 c	0.155 c	0.060 c	0.281 bc	0.178 c	0.073 b	1.15 a
LSD	0.095	0.098	0.117	0.065	0.122	0.053	0.045	0.046	0.045	0.021	0.074	0.154
Analysis	F4, 179 =1.12 <i>p</i> <0.0357 ***	F4, 179 =1.08 <i>p</i> <0.012 ***	F4, 179 = 1.01 <i>p</i> <0.0001***	F4,179=1.47 <i>p</i> <0.0000 ***	F4,179=1.97 <i>p</i> <0.0000 ***	F4, 179 = 0.90 <i>p</i> <0.000***	F4,179 =1.01 <i>p</i> <0.0000 ***	F4,179 = 1.44 <i>p</i> <0.0047** *	F4,179 = 0.66 <i>p</i> <0.000***	F4,178 =1.24 <i>p</i> <0.0006 ***	F4,179 =1.55 <i>p</i> <0.0006 ***	F4, 19 =30.53 <i>p</i> <0.0 000 ***

Mean sharing similar letters are not significant different by LSD Test at *p*=0.05

Table 2: Comparison of Mean Values for Data Regarding Different Physico-morphic Characters on Brinjal Cultivars during 2013.

Cultivars	Physico-morphic Characters				
	Number of Hairs on Fruit Crown Per cm ²	Number of Hairs on Leaf Midrib Per cm ²	Number of Hairs on Leaf Lamina Per cm ²	Plant Height (cm)	Stem Girth (cm)
Short Purpal	11.99 b	23.99 c	183.0 b	16.41 c	4.45 d
Round White Brinjal	11.49 b	30.07bc	196.75 b	17.66 c	4.23 d
Singhnath 666	12.74 b	27.24 c	210.0 b	22.16 ab	5.92 a
Brinjal Long 6275	4.162 c	43.07 b	263.16 a	24.58 a	5.08 b
Round Brinjal 86602	14.49 a	71.49 a	254.16 a	21.41 b	4.69 c
LSD	1.404	14.05	31.11	3.02	0.22
Analysis	F4,19 =76.09 <i>p</i> <0.0000 ***	F4, 19=18.22 <i>p</i> <0. 0000 ***	F4, 19=12.34 <i>p</i> <0.0003***	F4, 19=11.70 <i>p</i> <0. 0004***	F4, 19=80.92 <i>p</i> <0.0000***

Mean sharing similar letters are not significant different by LSD Test at *p*=0.05

Table 3(a): Correlation of Aphids and Jassids Population on Brinjal Cultivars With Different Weather Factors During 2013.

Cultivars	Aphid Population					Jassid Population				
	Min Temp °C	Max Temp °C	Avg. Temp °C	Avg. R. H %	Avg. Rainfall (mm)	Min Temp °C	Max Temp °C	Avg. Temp. °C	Avg. R. H %	Avg. Rainfall (mm)
Brinjal long 6275	-0.346	-0.111	-0.219	-0.10	0.026	0.208	0.673	0.529	-0.649	-0.605
Round Brinjal 86602	-0.526	-0.654	-0.647	0.489	0.490	-0.450	-0.540	-0.541	0.481	0.624
Short purple	0.058	-0.135	-0.068	0.300	0.668	0.709	0.695	0.750	-0.530	-0.494
Round white brinjal	-0.282	-0.439	-0.409	0.465	0.460	-0.296	0.102	-0.058	-0.095	0.108
Singhnath 666	-0.409	-0.535	-0.523	0.612	0.315	0.017	-0.015	-0.006	0.108	0.450

ns = Non Significant at 0.05

* = Significant and

Table 3(b): Correlation of Whitefly and Thrips Population on Brinjal Cultivars With Different Weather Factors During 2013.

Cultivars	Whitefly Population					Thrips Population				
	Min. Temp. °C	Max. Temp. °C	Avg. Temp. °C	Avg. R. H %	Avg. Rainfall (mm)	Min. Temp. °C	Max. Temp. °C	Avg. Temp. °C	Avg. R. H %	Avg. Rainfall (mm)
Brinjal long 6275	-0.189	-0.565	-0.452	0.477	0.741	-0.456	-0.618	-0.597	0.582	0.893
Round Brinjal 86602	-0.533	-0.614	-0.622	0.490	0.274	-0.283	-0.466	-0.422	0.292	0.127
Short purple	0.314	0.386	0.381	-0.34	-0.12	-0.044	-0.039	-0.046	0.176	0.006
Round white brinjal	-0.460	-0.698	-0.652	0.729	0.897	-0.247	-0.695	-0.561	0.664	0.847
Singhnath 666	-0.080	-0.679	-0.478	0.730	0.271	-0.130	-0.682	-0.504	0.681	0.398

* = Significant and

ns = Non Significant at 0.05

4. Conclusion

It has been observed that the Round Brinjal 86602 is comparatively resistant cultivar as it has the lowest infestation of sucking insect pests i.e. aphid, jassid, whitefly and thrips and have the highest yield of 1.15 kg per plant among all the tested cultivars. The physico-morphic characters also showed Round Brinjal 86602 have the highest number of hair density per cm² and was the least susceptible. The short purple was noted as the most susceptible cultivar with the lowest yield and the highest number of pest infestation. On the basis of this research Round Brinjal 86602 has been recommended for the cultivation of Potohar region.

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