CORRELATION OF MORPHOLOGICAL CHARACTERS OF BRINJAL WITH SHOOT INFESTATION, FRUIT INFESTATION AND NATURAL ENEMIES

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ABSTRACT

A field experimentswereconducted at Instructional Farm, College of Agriculture, J.A.U., Junagadh during Rabi 2011 and 2012 to study the correlation morphological characters of brinjal with shoot infestation, fruit infestation and natural enemies.The result indicated that plant height, number of leaves per plant, number of flowers per plant and number of fruits per plant exhibited the negative correlation with the shoot infestation, fruit infestation on number and weight basis. All the above studied morphological characters showed positive correlation with natural enemies.

KEY WORDS :Brinjal, correlation, infestation, morphological character, natural enemies

INTRODUCTION

Brinjal, *Solanum melongena* Linnaeus, commonly known as egg plant is an important vegetable crop cultivated since ages. It is widely grown all over the globe including India for its immature tender fruits. Besides India, it is also grown in Southern Europe, France, and Italy and holds an important place in Japan, China and Philippines (Salunkhe*et al*., 1987).Being a vegetable, brinjal is quite rich in certain nutritive elements like 4.0 per cent carbohydrate, 1.4 per cent protein, 0.3 per cent fat, 0.047 per cent phosphorus, 0.018 per cent calcium, 0.009 per cent iron and many other vitamins with 92.7 per cent moisture (Aykroyd, 1963).

This crop is grown in the several states of India including Gujarat. In Gujarat, the crop is cultivated in almost all the districts occupying an area of about 62,563 hectareswith production of about 10.46 lakh metric tones. In Junagadh, the area under cultivation of brinjal is about 0.082 lakh hectares with production of about 1.16 lakhmetric tones (Anonymous, 2009).

A major constraint in vegetable production is poor and inadequate control of pests and diseases, which cause high yield losses (Tindall, 1983).Brinjal shoot and fruit borer is the major pest infesting brinjal in Junagadh conditions of Gujarat State, which hinders its successful cultivation. Shoot and fruit borer, *L.*

orbonalis (Lepidoptera: Pyralidae) is the key pest throughout Asia (Purohit and Khatri, 1973; Kuppuswamy and Balasubramanian, 1980; Allam*et al*., 1982). In India, this pest has a countrywide distribution and has been categorized as the most destructive and the most serious pest causing huge amount of losses of brinjal (Patil, 1990).

MATERIALS AND METHODS

A field trials were carried in brinjal cv. JBGR-1 during *Rabi* 2011 and 2012, at the Instructional Farm of Junagadh Agricultural University, Junagadh to assess the correlationship between pest infestation and natural enemies with morphological characters of brinjal. The experiment was laid out in Randomized Block Design with three replications with twelve treatments. The plot size was3.6 x 3.0 m with spacing of 90 x 60 cm between rows and plants, respectively. To study the correlation ship between shoot and fruit infestation with shoot and fruit borer, *L. orbonalis*, and natural enemies with morphological characters of brinjal in different treatment combinations, some growth parameters such as plant height, number of leaves per plant, numbers of flowers per plant and number of fruit per plant were measured at weekly interval, starting from one month after sowing to harvest of the crop. The observations like numbers of fruits per plant were recorded at each picking. The simple correlation was worked out to study the relationship between brinjal shoot and fruit borer infestation, natural enemies with morphological characters of brinjal.

RESULTS AND DISCUSSION

A simple correlation was worked out to study the relationship between pest infestation as well as natural enemieswith morphological characters of brinjal. The results are presented in the Table 1.

Shoot infestation

The pooled data on shoot infestation by shoot and fruit borer showed that all the morphological characters studied inbrinjal*viz*., plant height (-0.2054), number of leaves per plant (-0.2626), number of flowers per plant (-0.2754) and number of fruits per plant (-0.2906) were negatively correlated with the shoot infestation.

Fruit infestation

The pooled results revealed that morphological characters of brinjal*viz*., plant height (-0.2072), number of leaves per plant (-0.2689), number of flowers per plant (-0.2786) and number of fruits per plant (-0.2945) were negatively correlated with the fruit infestation on number basis. Similarly, the result on weight basis also revealed the similar results. The morphological characters of brinjal*viz*., plant height (-0.2106), number of leaves per plant (-0.2663), number of flowers per plant (-0.3020) and number of fruits per plant (-0.3168) were negatively correlated with the fruit infestation.

Natural enemies

The correlation study of selected morphological characters of brinjal*viz*., plant height (0.3236), number of leaves per plant (0.3655), number of flowers per plant (0.3185) and number of fruits per plant (0.3367) were positively correlated with the population of natural enemies.

The results of present investigation are in accordance with the results of Price *et al*. (1980),whoreported that the host plant quality can affect several life history characteristics of their herbivores, by impairing growth, lowering resistance to disease and reducing fecundity. Also, Patil*et al*. (1996) found that the plant height of okra significantly

contributed to divergence for fruit borer resistance.

CONCLUSION

From the present investigation, it can be concluded that plant height, number of leaves per plant, number of flowers per plant and number of fruits per plant exhibited the negative correlation with the shoot infestation and fruit infestation on number and weight basis. All the above studied morphological characters showed positive correlation with natural enemies.

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Table 1: Correlation of morphological characters of brinjal with shoot infestation, fruit infestation and natural enemies

Sr. No.	Character	Season	Shoot Infestation	Fruit Infestation		Natural Enemies
				On Number Basis	On Weight Basis	
1	Plant height	2011	-0.1862	-0.1875	-0.1977	0.2867
		2012	-0.2241	-0.2262	-0.2218	0.3621
		Pooled	-0.2054	-0.2072	-0.2106	0.3236
2	Number of leaves per plant	2011	-0.2584	-0.2625	-0.2698	0.2369
		2012	-0.2671	-0.2750	-0.2624	0.2965
		Pooled	-0.2626	-0.2689	-0.2663	0.3655
3	Number of flowers per plant	2011	-0.2630	-0.2662	-0.2955	0.2953
		2012	-0.2883	-0.2909	-0.3074	0.3842
		Pooled	-0.2754	-0.2786	-0.3020	0.3185
4	Number of fruits per plant	2011	-0.2740	-0.2775	-0.3065	0.3072
		2012	-0.3068	-0.3108	-0.3252	0.4058
		Pooled	-0.2906	-0.2945	-0.3168	0.3367

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