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RESEARCH NOTE

Seasonal abundance of jassid and whitefly on brinjal (*Solanum melongena* L.) in relation to major abiotic factors

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ABSTRACT

Studies were carried out on seasonal abundance of jassid and whitefly on brinjal (*Solanum melongena* L.) at Regional Horticultural Research Station Farm, NAU, Navsari during 2011-12. The results revealed that incidence of sucking pests *viz.,* jassid (*Amrasca biguttula biguttula* Ishida) started from November (3.20 jassids/three leaves) and reached to a peak level (22.46 jassids/three leaves) during December, whereas whitefly (*Bemisia tabaci* Gennadius) started from November (7.27 whiteflies/three leaves) and reached to a peak level (25.73 whiteflies/three leaves) during January. Among various weather parameters, maximum, minimum and average temperature had highly significant negative influence on jassid and whitefly population.

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Brinjal or Eggplant or Aubergine is an important vegetable crop in tropical and sub-tropical countries particularly in India, Japan, Indonesia, Bulgaria, Italy, France, USA and several African countries. Among sucking pests, jassid and whitefly are the major pests of brinjal. Jassids attacks the brinjal crop from the initial stage of crop growth. In case of severe infestation, typical "hopper burn" symptons are seen on leaves (Gaikwad *et al.,* 1991). As per the report of Ratanpara *et al.* (1994), the jassid (*A. biguttula biguttula*) was regularly occurring insect pest of brinjal in Gujarat and was found throughout the year. From Gujarat the brinjal crop was free from infestation of *Besisia tabaci* in July-August, while the pest was active during colder months *i.e.* November to January. The studies on incidence and seasonal abundance of jassid and whitefly were conducted during the year 2011-12 on brinjal variety '*Surti Ravaiya*" at Regional Horticultural Research Station Farm, NAU, Navsari. The incidence of jassid and whitefly was recorded at seven days intervals from the second week after transplanting the brinjal crop and continued till the harvesting of the crop. For this purpose, three leaves (top, middle and bottom) of fifteen randomly selected plants were observed for recording the number of nymphs of jassids and adults of whiteflies and statistically correlated with the meteorological conditions.

The population of jassid started from the second week after transplanting (WAT) *i.e.* the last week of November (3.20 jassid/three leaf). Initially the incidence of this pest was increased slowly and reached the peak level (22.46 jassids/ three leaf) at 5th WAT coinciding with 4th week of December. Thereafter, population was steadily declined and reached to a low level of 1.60 jassid/three leaf at 13 SMW *i.e.,* last week of March (Table 1). The correlation co-efficient between jassid population and weather parameters revealed that maximum temperature (r=-0.68), minimum temperature (r=-0.69) and average temperature (r=-0.71) had significant negative correlation while morning relative humidity (0.14%), evening relative humidity (0.31%) and average relative humidity (0.30%) had positive non-significant correlation whereas, sunshine hours (r=-0.29) and wind velocity (r=-0.22) had negative non-significant correlation (Table 2).

The results showed that the population of whitefly started from second WAT *i.e.* the last week of November (7.27 whiteflies/three leaves) and reached to a peak level (25.73 whiteflies/three leaves) during 10th WAT coinciding with second week of January. Thereafter, the whitefly population was gradually declined and reached to low level (2.40 whiteflies/three leaves) during March 21st WAT (Table 1). The results showed that the maximum temperature (r=-0.75), minimum temperature (r=-0.65) and average temperature (r=-0.73) had significant negative correlation while evening relative humidity (0.72%) and average relative humidity (0.64%) had significant positive correlation. Whereas, morning relative humidity (0.21%), sunshine hours (0.02%) and wind velocity (0.17%) had positive non-significant correlation with whitefly population on brinjal (Table 2).

The result are similar to those reported by Mathur *et al.* (2012). The incidence of jassid (*A. biguttula biguttula*) and whitefly (*B. tabaci*) were maximum during December, 2nd standard week (SMW) and minimum during March (12th SMW) and showed significant negative correlation with both maximum and minimum temperature and wind speed while a positive correlation was revealed with mean relative humidity and total rainfall. Thus, the results of present investigation are in close confirmation with past reports.

Overall it can be concluded that incidence of jassid (*A. biguttula biguttula*) started from November (3.20 jassids/three leaves) and reached to a peak level (22.46 jassids/three leaves) during December, whereas whitefly (*Bemisia tabaci* Gennadius) started from November (7.27 whiteflies/three leaves) and reached to a peak level (25.73 whiteflies/three leaves) during January. Among various weather parameters, maximum, minimum and average temperature had highly significant negative influence on jassid and whitefly population.

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Table 1: Seasonal abundance of jassids and whitefly on brinjal during 2011-2012

WAT	SMW	Jassids/three leaves	Whitefly/three leaves
3	47	3.20	7.27
4	48	3.40	3.40
5	49	6.34	3.60
6	50	8.40	3.82
7	51	22.46	4.87
8	52	22.40	14.20
9	1	20.46	20.26
10	2	18.53	25.73
11	3	14.47	23.33
12	4	11.86	19.53
13	5	11.13	17.06
14	6	9.86	6.80
15	7	9.60	5.20
16	8	7.93	4.00
17	9	6.46	3.80
18	10	2.53	2.26
19	11	2.06	1.73
20	12	1.93	1.80
21	13	1.60	2.40

SMD- Standard meteorological week
WAT- Week after transplanting

Table 2 : Correlation matrix of the relationship between weather parameters and population of jassid and whitefly of brinjal during *Rabi* 2011-12

Insect pests	Temperature (ºC)			Relative humidity (%)			Sunshine hours	Wind velocity (Km/hr)
	Max.	Min.	Ave.	Morning	Evening	Ave.		
Jassid	-0.68*	-0.69*	-0.71*	0.14	0.31	0.30	-0.29	-0.22
Whitefly	-0.75*	-0.65*	-0.73*	0.21	0.72*	0.64*	0.02	0.17

* indicate significance of values at P=0.05, respectively

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