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Seasonal Incidence of Cotton JASSID, *Amrasca Biguttula Biguttula* (Ishida) on Trasgenic BT Cotton and Their Correlation with Weather Parameters

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***Abstract* – The first appearance of jassid noted during mid July when cotton crop was 27 days old. The highest population 4.34 jassid/3 leaves noted in 38 MSW in 2011 and 8.34 jassids/3 leaves in 43 MSW in 2012. The jassid population was active throughout crop season but during September and October noted highly active. Maximum temperature found non significant positive correlation for population buildup of cotton jassid while morning humidity and rainfall noted significant negative correlation with jassid population.**

***Keywords* – Correlation, ETL, Jassid, MSW, Population.**

I. INTRODUCTION

Cotton is one of the important cash crops and the most important raw material for the textile industry. The insect pest constitute one of the major limiting factors in the production as the crop is vulnerable to attack by about 162 species of insects and mites [1] and infestation occurs from seedlings to matured crop and some time the population of insect pest is so enormous that it becomes havoc to the crop and badly affects the economy of our country. Jassid, *Amrasca biguttula biguttula* (Ishida) is one of the most serious sucking pests of cotton in India causing reduction in yield to an extent of 20 percent [2]. Nymphs and adults suck sap from the under surface of the leaves and causing downward curling, yellowing and reddening of leaf lamina which results later in hopper burn and in severe cases leaves dry and drop down. A good cotton crop with minimal pest attack brings prosperity, while severe incidence brings misery. Thus pest is an important determinant of the prosperity of the farmers. The knowledge about incidence of pest during the cropping season and its possible dynamics help in designing pest management strategies [3]. Hence the present study on population dynamics of cotton jassid was undertaken during Kharif seasons of 2011 and 2012 to find out seasonal incidence and best forecast to mange this pest.

II. MATERIALS AND METHODS

The experiment was conducted in farmer's field near major cotton growing area of Khargone (Nimar region) Madhya Pradesh, India during kharif season of 2011and 2012. Single cotton hybrid Brahma BG II was grown in 300 sq meter (25mx12m) at spacing of 120x45cm in isolated plot on 16th June on fist year and 11th June during second year and applied 120:60:60 kg NPK/ha. The number of jassids were recorded from (six quadrates, 2.5mx2.5m and from each quadrants five plants) three leaves (top, middle and bottom). The weekly weather parameters obtained from Zonal Agriculture Research Station, Khargone, Madhya Pradesh, India and correlation coefficient work out between jassid population and weather parameters.

III. RESULTS AND DISCUSSION

The first presence of jassid noted in 28th MSW (Metrological Standard Week) with 0.30 jassid/3 leaves in the year 2011 and 0.50 jassid/3 leaves during year 2012 (table 1). The population reached its peak 4.34 jassids/3 leaves in 38th MSW during first year and 8.34 jassids/3 leaves in 43rd MSW in second year and after that the population showed almost fluctuating and reached the lowest level, 1.97 jassids/3 leaves in previous year and 0.84 jassid/3 leaves in consecutive year in 52nd MSW. The obtained results corroborated the findings of [4], [5] and [6] where they reported jassids on cotton was peak in 1st fortnight of October and then after population started declined. The present study also noticed the peak activity of jassid during September and October month on cotton.

For population buildup of jassid, maximum temperature recorded non significant positive correlation (table 2) while morning humidity (r= -0.407) showed significant negative correlation in first year and non significant negative relation in consecutive year. Rainfall (r= -0.638) showed highly significant negative correlation in first year while second year found non significant negative correlation(r= -0.371). Minimum temperature, evening humidity and wind velocity were non significant negatively correlated with jassid population in both the years. The present findings are agreement with [7] where significant positive correlation recorded between jassid population and maximum temperature (r = 0.76) and sunshine hours

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(r=0.82). The similar work also reported by [8] where maximum temperature was positively correlated and minimum temperature was non significantly correlated with jassid population in both the years while morning humidity and evening humidity was non significantly negatively correlated with jassid population in second year. The present findings also matches with [9], [10] and [11] where jassid population was positively correlated with temperature while negatively correlated with relative humidity.

Table 1. Population dynamics of jassid during Kharif 2011 and 2012

DAS	MSW	Period	Jassid/3 Leaves	
			Year 2011	Year 2012
20	27	2-8 July	0	0
27	28	9-15 July	0.3	0.5
34	29	16-22 July	0.9	0.2
41	30	23-29 July	1.42	0.2
48	31	30 July-5 Aug	1.51	2.97
55	32	6-12 Aug	2.1	3.18
62	33	13-19 Aug	1.98	4.44
69	34	20-26 Aug	3.2	3.14
76	35	27 Aug-2 Sept	2.5	2.23
83	36	3-9 Sept.	3.11	2.11
90	37	10-16 Sept	3.78	5.12
97	38	17-23 Sept	4.34	6.22
104	39	24-30 Sept	3.33	6.55
111	40	1-7 Oct	4.3	8.14
118	41	8-14 Oct	3.33	5.07
125	42	15-21 Oct	2.11	7.02
132	43	22-28 Oct	1.98	8.34
139	44	29 Oct-4 Nov	3.12	5.44
146	45	5-11Nov	3.75	4.53
153	46	12-18 Nov	3.88	3.79
160	47	19-25 Nov	4.01	3.45
167	48	26 Nov-2 Dec	3.02	2.12
174	49	3-9 Dec	2.67	2.8
181	50	11-16 Dec	3.21	2.72
188	51	17-23 Dec	2.11	3.05
195	52	24-31 Dec	1.97	0.84

DAS (Days After Sowing), MSW (Metrological Standard Week)

Table 2. Correlation coefficient between jassid population and abiotic factors

Weather parameters	Year 2011	Year 2012
Maximum temperature (^{0}c)	0.302	0.192
Minimum temperature (^{0}c)	-0.245	-0.129
Morning Humidity %	-0.407*	-0.077
Evening Humidity %	-0.107	-0.123
Rainfall (mm)	-0.638**	-0.371
Wind velocity (km/h)	-0.096	-0.2

*Significant at 5% level, ** Significant at 1% level

IV. Conclusion

The jassid is most notorious sucking pest of cotton and remains throughout crop season. The maximum activity recorded in the month of September-October where maximum temperature favors the activity of jassid population while minimum temperature, humidity, rainfall and wind velocity do not favors the population buildup of jassid. The present findings will help to warn the farmers about the population buildup during different months and will be helpful for devising pre-planned management strategies against this pest.

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