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RESEARCH ARTICLE

SEASONAL DYNAMICS OF *Thrips tabaci* (Lindeman) AND THEIR CORRELATION WITH WEATHER PARAMETERS ON TRANSGENIC BT COTTON.

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Abstract

The first incidence of cotton thrips noted during mid July and peak activity during first fortnight of October when crop was in boll development stage. The population remains fluctuated and active throughout crop season. Maximum temperature exhibited significant positive correlation (r= 0.434) during first year and non significant positive correlation (r= 0.200) during second year while rainfall expressed significant negative correlation (r= -0.485) during first year and non significant negative correlation (r= -0.318) during second year.

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Introduction:-

Cotton is important commercial crop grown under diverse agro-climatic conditions around the world and vulnerable to attacked from several insect pests. In India with the introduction and successful implementation of transgenic Bt cotton not only solved the problem of bollworm complex but also cut down the number of insecticidal spray which probably leads sever incidence of sucking pest and occupied major pest status and cause considerable damage in traditional and Bt cotton in India at present. Among the cotton sucking pest, *Thrips tabaci* (Lindeman) is most important sucking pest of cotton (Wilson & Bauer, 1993) and known to damage young cotton seedlings, flowers and stems. Different weather factors found to have positive association with thrips population (Li et al., 1992) for their development and seasonal incidence. The knowledge about incidence of pest during cropping season and its possible dynamics helps in designing pest management strategies (Santhosh et al., 2009) hence present study on population dynamics of cotton thrips was undertaken during Kharif seasons of 2011 and 2012 to fulfill the objectives.

Materials and Methods:-

The experiment was conducted in farmer's field near major cotton growing area of Khargone, Madhya Pradesh, India, during 2011and 2012 cotton growing season. Single cotton hybrid Brahma BG II was grown in 300 sq meter (25m x 12m) at spacing of 120x45cm in isolated plot on 16th June on first year and 11th June during second year and applied 120:60:60 kg NPK/ha. The number of thrips were recorded from (six quadrates, 2.5m x 2.5m 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 thrips population and weather parameters.

Result and Discussion:-

The first incidence of thrips started with 1.97 thrips/3 leaves in 29th MSW in the year 2011 and 1.10 thrips/3 leaves in 27th MSW in 2012 when crop was in two to four true leave stage (Table 1). The thrips population reached its peak

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28.22 thrips/3 leaves in 41st MSW in first year and 18.31 thrips/3 leaves in 40th MSW in second year when crop was in boll development stage and all plants parts were present. The population reached lowest level 1.70 insects/3 leaves in previous year and 1.50 insects/3 leaves in consecutive year in 52nd MSW when crop was almost maturation stage. During both years, thrips population noted fluctuating and remained throughout crop season. Gupta *et al.*, (1997) and Panickar and Patel (2001) also reported peak population of thrips on cotton during the second fortnight of August and first fortnight of October. The present study faintly matches with the results of Khan and Ullah (1994) who reported the peak activity of *Thrips tabaci* on cotton in August and September. Soujanya *et al*., (2010) reported the peak incidence of thrips on 35th to 37th standard week.

The correlation studies of both the years revealed that maximum temperature exhibited significant positive correlation (r= 0.434) in first year and non significant positive correlation (r= 0.200) during second year of the experiment (Table 2). Minimum temperature, morning and evening humidity showed non significant positive correlation while wind velocity showed non significant negative correlation during both years. Rainfall expressed significant negative correlation (r= -0.485*) during first year and non significant negative correlation (r= -0.318) during second year. Shivanna *et al.*, (2009) reported that maximum temperature was positively correlated with thrips population. Soujanya *et al.*, (2010) and Shahid *et al.*, (2012) reported that thrips population showed significant positive correlation with maximum temperature, minimum temperature, evening relative humidity and rainfall.

Table 1;- Population dynamics of thrips during Kharif 2011 and 2012.

DAS	MSW	Period	Thrips/3 Leaves	
			Year 2011	Year 2012
20	27	2-8 July	0.00	1.10
27	28	9-15 July	0.00	2.12
34	29	16-22 July	1.97	2.20
41	30	23-29 July	1.31	0.50
48	31	30 July-5 Aug	3.10	5.50
55	32	6-12 Aug	4.13	5.11
62	33	13-19 Aug	5.25	4.79
69	34	20-26 Aug	3.80	4.15
76	35	27 Aug-2 Sept	12.30	3.11
83	36	3-9 Sept.	14.40	2.25
90	37	10-16 Sept	15.11	9.95
97	38	17-23 Sept	19.10	10.86
104	39	24-30 Sept	21.00	12.23
111	40	1-7 Oct	24.30	18.31
118	41	8-14 Oct	28.22	13.76
125	42	15-21 Oct	16.32	8.57
132	43	22-28 Oct	13.25	6.88
139	44	29 Oct-4 Nov	10.41	6.51
146	45	5-11Nov	12.21	6.25
153	46	12-18 Nov	7.10	4.88
160	47	19-25 Nov	5.51	3.32
167	48	26 Nov-2 Dec	4.10	3.87
174	49	3-9 Dec	2.63	2.58
181	50	11-16 Dec	2.97	2.35
188	51	17-23 Dec	2.19	1.11
195	52	24-31 Dec	1.70	1.50

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

Table 2:- Correlation coefficient between thrips population and weathers parameters.

Weather parameters	Year 2011	Year 2012
Maximum temperature (^{0}c)	0.434*	0.200
Minimum temperature (^{0}c)	0.118	0.127
Morning Humidity %	0.193	0.140
Evening Humidity %	0.200	0.128
Rainfall (mm)	-0.485*	-0.318
Wind velocity (km/h)	-0.047	-0.124

*Significant at 5% level

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