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Seasonal incidence of aphids and jassids on chilli at Konkan condition

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Abstract

The investigation on Seasonal incidence of aphids and jassids on Chilli, *Capsicum annum* L.” was undertaken at Vegetable Improvement Scheme, Central Experiment Station, Wakawali under Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli. The study showed that during 2023-24, the incidence of aphids was started from 50th SMW (1.10 aphids per 3 leaves per plant) which reached its peak in 8th SMW (11.70 aphids per 3 leaves per plant). Then the population of aphids declined gradually and sustained till 15th SMW (0.70 aphids per 3 leaves per plant). During 2024-25, aphid infestation started from 50th SMW (1.50 aphids per 3 leaves per plant), reached its peak in 5th SMW (13.10 aphids per 3 leaves per plant) and sustained till 15th SMW (0.50 aphids per 3 leaves per plant). The incidence of jassids started from 52nd SMW (1.20 jassids per 3 leaves per plant) which reached its peak in 5th SMW (4.30 jassids per 3 leaves per plant) during 2023-24 and sustained till 15th SMW (0.50 jassids per 3 leaves per plant). In next year, 2024-25, jassids incidence noticed from 51st SMW (0.20 jassids per 3 leaves per plant), reached its peak in 2nd SMW (5.80 jassids per 3 leaves per plant) and sustained till 15th SMW (0.10 jassids per 3 leaves per plant). During 2023-24, the aphid population showed significant negative correlation with minimum temperature ($r = -0.662^{**}$), evening relative humidity (R.H.-II) ($r = -0.752^{**}$) whereas, significant positive correlation with sunshine hours ($r = 0.601^{**}$). Whereas, during 2024-25, it showed significant negative correlation with minimum temperature ($r = -0.569^{*}$). While, the coefficient of determination (R^2) revealed that the weather parameters contributed 83 and 56 per cent of total variation in the population of aphids on chilli during 2023-24 and 2024-25, respectively. During 2023-24 and 2024-25, the jassid population showed significant negative correlation with minimum temperature ($r = -0.492^{*}$ and $r = -0.479^{*}$, respectively). Whereas, the weather parameters contributed 75 and 41 per cent of total variation in the population of jassid on chilli during 2023-24 and 2024-25, respectively. Weather parameters contributed 91 and 54 per cent of total variation in the population of thrips and 93 and 96 per cent of total variation in the population of mites on chilli during 2023-24 and 24-25, respectively.

Keywords: Aphids, jassids seasonal incidence, correlation and contribution, weather parameters

Introduction

Chilli (*Capsicum annum* L.; $2n = 2x = 24$) belongs to the genus *Capsicum* and the family Solanaceae. It is an important and widely cultivated spice crop valued for its characteristic pungency, which is primarily attributed to capsaicin, a bioactive compound responsible for its hot and pungent flavour. Chilli has been used by humans since the early stages of agriculture and has become an integral part of cuisines and traditional food systems worldwide. It is cultivated extensively for both domestic consumption and commercial purposes. In addition to its culinary importance, chilli has considerable economic value and serves as a source of bioactive compounds with diverse applications in the food, pharmaceutical, and nutraceutical industries.

A total of 57 insects, and mites pests were recorded damaging chilli (Reddy and Puttaswamy, 1984). Aphids and jassids are important sucking pests of chilli, and their infestation can cause substantial yield losses. Yield losses in chilli crops due to sucking pests like aphids and jassids are documented in agricultural research to range between 30 and 50 per cent, and can reach up to 60 to 75 per cent for major sucking pest complexes (Jatav *et al.*, 2021) [4]. Information on the seasonal incidence and the influence of various environmental factors on population fluctuations of chilli pests in the Konkan region is scarce.

Such information is essential for developing effective integrated pest management (IPM) strategies that maintain ecological sustainability and economic viability. Therefore, an attempt was made to study the seasonal incidence of important pests of chilli and to assess the influence of various environmental factors on their population fluctuations.

Materials and Methods

A field experiments was conducted at Vegetable Improvement Scheme, Central Experiment Station, Wakavali running under Dr. Blalsaheb Sawant Konkan Krishi Vidyapeeth, Dapoli to study the seasonal incidence of different pests infesting chilli during *Rabi*, 2023-24 and *Rabi*, 2024-25. Konkan Kirti cultivar was planted at spacing of 60 cm x 60 cm in 64.4 m² plot area of size of 36 m x 4.8 m in single replication. The crop was kept unsprayed throughout both the seasons to prevent any interventions in surviving pest population. The observations on surviving population of sucking pests viz., aphids and jassids were recorded at each standard meteorological week (SMW) during each cropping season. Ten plants were randomly selected for recording the observations from the experimental plot. The number of nymphs and adults of aphids and jassids were recorded from top, middle and bottom leaves of randomly selected plants. The average pests per three leaves per plant was calculated in each standard meteorological week (SMW). The average aphids and jassids per three leaves per plant of chilli were correlated with meteorological weather parameters in each standard meteorological week (SMW).

Result and Discussion
The data on the aphids and jassids during 2023-24, 2024-25 along with weather parameters of different Standard Meteorological Week (SMW) of are presented in Table 1.

1. Aphida, *Aphis gossypii* (Glover)

During 2023-24, the data revealed that the incidence of aphid population was noticed from 50th SMW (1.10 aphids per 3 leaves per plant) and reached its peak in 8th SMW (11.70 aphids per 3 leaves per plant) when the prevailing maximum temperature, minimum temperature, morning relative humidity (R.H.-I), evening relative humidity (R.H.-II), wind speed, sunshine hours and evaporation were 34.71°C, 13.09°C, 91.00 per cent, 38.00 per cent, 2.04 kmph, 9.11 hrs and 4.64 mm, respectively. Thereafter, the population of aphids declined gradually and sustained till 15th SMW (0.70 aphids per 3 leaves per plant). During 2024-25, the data revealed that the incidence of aphid population was noticed from 50th SMW (1.50 aphids per 3 leaves per plant) and reached its peak in 5th SMW (13.10 aphids per 3 leaves per plant) when the prevailing maximum temperature, minimum temperature, morning relative humidity (R.H.-I), evening relative humidity (R.H.-II), wind speed, sunshine hours and evaporation were 35.00°C, 13.90°C, 92.00 per cent, 53.00 per cent, 1.30 kmph, 8.10 hrs and 3.40 mm, respectively. Thereafter, the population of aphids declined gradually and sustained till 15th SMW (0.50 aphids per 3 leaves per plant).

Table 1: Seasonal incidence of aphids and jassids infesting chilli along with weather data during 2023-24, 2024-25

SM W	Period	Weekly weather (December 2023 to April 2024)								Weekly weather (December 2024 to April 2025)								Mean no. of pests per 3 leaves per plant			
		Temp . Max. °C	Temp . Min. °C	% R. H.		Wind Speed (kmph)	Sun shine hrs.	Evaporatio n (mm)	Rain Fall (mm)	Temp . Max. °C	Temp . Min. °C	% R. H.		Wind Spee d (kmph)	Sun shine hrs.	Evaporatio n (mm)	Rain Fall (mm)	Aphids		Jassids	
				I	I							I	I					2023 -24	2024 -25	2023 -24	2024 -25
50	10 Dec - 16 Dec	33.40	15.80	93.00	46.00	0.36	6.94	3.50	0.00	33.60	13.60	92.00	57.00	0.70	7.80	2.90	0.00	1.10	1.50	0.00	0.00
51	17 Dec - 23 Dec	33.10	16.60	91.00	43.00	0.25	5.41	2.51	0.00	32.40	12.50	94.00	56.00	0.90	6.80	2.60	0.00	2.80	7.00	0.00	0.20
52	24 Dec - 31 Dec	34.70	14.00	93.00	39.00	0.61	7.71	2.90	0.00	33.00	17.00	94.00	59.00	1.10	6.30	2.60	0.00	6.60	7.20	1.20	1.90
1	01 Jan - 07 Jan	33.80	15.97	92.00	39.00	1.08	6.81	2.97	0.00	34.10	12.50	92.00	52.00	0.90	7.70	3.00	0.00	6.60	6.60	2.80	2.50
2	08 Jan - 14 Jan	33.60	19.40	93.00	44.00	1.20	6.10	3.70	0.00	32.90	14.20	93.00	53.00	0.90	6.70	2.90	0.00	4.10	8.50	3.20	5.80
3	15 Jan - 21 Jan	31.60	12.94	91.00	40.00	1.35	8.24	3.66	7.40	34.80	15.50	93.00	54.00	1.20	7.20	3.30	0.00	5.70	7.50	1.60	4.00
4	22 Jan - 28 Jan	33.51	11.83	90.00	37.00	1.39	7.80	3.41	0.00	36.20	14.30	92.00	55.00	1.20	7.30	3.60	0.00	8.10	7.70	4.10	5.20
5	29 Jan	33.66	13.80	91.0	35.0	1.41	8.14	3.67	0.00	35.00	13.90	92.0	53.00	1.30	8.10	3.40	0.00	10.2	13.1	4.30	5.10

	- 04 Feb			0	0							0						0	0		
6	05 Feb - 11 Feb	36.43	15.11	89.0 0	32.0 0	1.50	8.71	4.13	0.00	36.40	15.50	88.0 0	50.00	1.50	7.80	4.00	0.00	11.4 0	12.2 0	3.20	4.20
7	12 Feb - 18 Feb	36.31	14.17	89.0 0	30.0 0	1.63	8.00	4.46	0.00	37.90	14.30	89.0 0	46.00	1.30	8.60	4.90	0.00	11.5 0	11.4 0	2.80	3.90
8	19 Feb - 25 Feb	34.71	13.09	91.0 0	38.0 0	2.04	9.11	4.64	0.00	38.30	14.70	90.0 0	46.00	1.50	8.20	4.70	0.00	11.7 0	9.10	2.60	3.50
9	26 Feb - 04 Mar	36.35	17.18	86.0 0	24.0 0	1.99	8.23	5.00	0.00	38.30	16.70	84.0 0	42.00	1.80	7.70	5.10	0.00	10.4 0	7.30	1.70	2.30
10	05 Mar - 11 Mar	36.77	13.83	79.0 0	29.0 0	2.09	8.43	5.81	0.00	39.30	15.10	86.0 0	37.00	1.70	7.90	5.40	0.00	9.50	6.40	1.50	2.00
11	12 Mar - 18 Mar	36.91	15.23	84.0 0	35.0 0	2.12	8.07	5.51	0.00	38.60	18.40	87.0 0	42.00	1.80	7.50	5.40	0.00	7.40	6.30	1.20	1.90
12	19 Mar - 25 Mar	37.77	17.69	84.0 0	40.0 0	2.23	7.77	5.63	0.00	36.90	16.40	89.0 0	43.00	1.90	7.90	5.50	0.00	3.20	2.10	1.50	2.30
13	26 Mar - 01 Apr	36.89	21.26	88.0 0	52.0 0	2.17	6.86	5.13	0.00	36.30	20.30	91.0 0	54.00	1.80	4.20	4.60	0.00	3.10	3.50	0.40	0.30
14	02 Apr - 08 Apr	38.51	19.49	79.0 0	42.0 0	2.25	7.72	5.40	0.00	37.60	20.60	90.0 0	56.00	1.90	5.80	4.60	0.00	1.00	0.30	0.70	0.20
15	09 Apr - 15 Apr	37.74	19.49	89.0 0	39.0 0	2.30	8.06	6.07	0.00	37.50	20.80	87.0 0	54.00	2.20	8.00	5.40	0.00	0.70	0.50	0.50	0.10

1.1. Correlation studies of aphids infesting chilli with weather parameters

The correlation coefficient was worked out between population of aphids and abiotic factors during 2023-24 and 2024-25 and presented in Table 2.

During 2023-24, the aphid population showed negative correlation with maximum temperature ($r = -0.089$), evaporation ($r = -0.062$), rainfall ($r = -0.045$) while positive correlation with morning relative humidity (R.H.-I) ($r = 0.026$), wind speed ($r = 0.123$). However, aphid population had highly significant and negative correlation with

minimum temperature ($r = -0.662^{**}$), evening relative humidity (R.H.-II) ($r = -0.752^{**}$) whereas, highly significant and positive correlation with sunshine hours ($r = 0.601^{**}$). However, during 2024-25, the aphid population showed negative correlation with maximum temperature ($r = -0.079$), evening relative humidity (R.H.-II) ($r = -0.164$), wind speed ($r = -0.358$), evaporation ($r = -0.256$) while positive correlation with morning relative humidity (R.H.-I) ($r = 0.101$), sunshine hours ($r = 0.358$). However, significant negative correlation observed between aphid population and minimum temperature ($r = -0.569^*$).

Table 2: Correlation coefficient (r) of aphids infesting chilli with weather parameters (2023-24 and 2024-25)

Weather parameters	Correlation coefficient (r)	
	2023-24	2024-25
Temp. Max.(°C)	-0.089	-0.079
Temp. Min. (°C)	-0.662**	-0.569*
RH-I (%)	0.026	0.101
RH-II (%)	-0.752**	-0.164
Wind Speed (kmph)	0.123	-0.358
Sunshine Hours	0.601**	0.358
Evaporation (mm)	-0.062	-0.256
Rain Fall (mm)	-0.045	-

Pearson Critical Value ($P=0.05$): 0.468; Pearson Critical Value ($P=0.01$): 0.590; 0.00*: Significant at $P=0.05$; 0.00**: Significant at $P=0.01$

1.2. Multiple linear regression studies between aphids infesting chilli and weather parameters

The multiple regression between weather parameters and aphid population during 2023-24 and 2024-25 are presented in Table 3 and multiple linear regression equations fitted with weather parameters in order to predict aphid population on chilli is as below.

2023-24 (R^2 : 83%):
$$Y = 20.455 - 0.274 X_1 - 0.363 X_2 + 0.122 X_3 - 0.307 X_4 + 4.483 X_5 + 0.763 X_6 - 2.382 X_7 - 0.520 X_8$$

2024-25 (R^2 : 56 %):
$$Y = -41.323 + 1.715 X_1 - 0.537 X_2 + 0.322 X_3 - 0.394 X_4 + 7.606 X_5 + 0.594 X_6 - 7.227 X_7 - 0.000 X_8$$

The coefficient of determination (R^2) represents the proportion of common variation in the two variables. The present investigations revealed that the weather parameters contributed 83 and 56 per cent, respectively of total variation in the population of aphids on chilli during 2023-24 and 2024-25 indicating that the predictions of the aphid population by using weather parameters is more reliable. The present investigation is in agreement with the findings of Jayewar *et al.* in 2019^b [5] exhibited that aphid populations varied from 1.20 to 9.98 in a seasonal incidence studies initiated from 32nd SMW up to harvest of the crop in 4th SMW had shown positive significant correlation with bright

sunshine hours ($r = 0.711^*$), negative significant correlation with minimum temperature ($r = -0.672^*$), evening RH ($r = -0.773^*$) and rainfall ($r = -0.644^*$). Khadse *et al.* (2023) [6] who documented that activity of aphid in season first and second was observed from second week of December (50th SMW) and first week of December (49th SMW), respectively, reached its peak during third week of February (7th SMW) and second week of February (6th SMW) and remains active till harvest. Bhatt and Karnatak, 2020 [1] who reported appearance of aphids at 43rd SMW and attend the peak in at 6th SMW and Aphids was positively correlated with mean temperature ($r = 0.503^*$), mean relative humidity ($r = 0.218$) and rainfall ($r = 0.296$). Pathipati *et al.* (2020) [8] observed that aphid incidence was initiated at 42th SMW (1.51 leaf⁻¹) and remain till 9th STW (1.25) with a peak at 50th STW (46.72). Significant positive correlation was observed between morning relative humidity ($r = 0.08^{**}$), evening relative humidity ($r = 0.53^*$) and minimum temperature ($r = 0.66^{**}$) whereas negative significant correlation was observed with maximum temperature ($r = -0.24^{**}$) and rainy fall ($r = -0.55^{**}$) with aphid population. Aphid populations generally show a negative correlation with maximum temperature and a positive correlation with minimum temperature, indicating that moderate and cooler conditions are more favourable for their population growth than extreme heat. The current results are more or less similar to the evidence cited.

Table 3: Multiple linear regression between aphids and weather parameters

Sr. No.	Weather parameters	Regression coefficient (b)	S.E. (b)	't' values
2023-24				
(X ₁)	Temp. Max.(°C)	-0.274	0.881	-0.311
(X ₂)	Temp. Min. (°C)	-0.363	0.517	-0.703
(X ₃)	RH-I (%)	0.122	0.252	0.484
(X ₄)	RH-II (%)	-0.307	0.113	-2.709
(X ₅)	Wind Speed (kmph)	4.483	2.220	2.020
(X ₆)	Sunshine Hours	0.763	1.570	0.486
(X ₇)	Evaporation (mm)	-2.382	1.509	-1.579
(X ₈)	Rain Fall (mm)	-0.520	0.458	-1.137
Intercept (a) = 20.455, N=18, F value = 5.75, R ² = 0.83				
2024-25				
(X ₁)	Temp. Max.(°C)	1.715	1.140	1.504
(X ₂)	Temp. Min. (°C)	-0.537	1.107	-0.486
(X ₃)	RH-I (%)	0.322	0.735	0.437
(X ₄)	RH-II (%)	-0.394	0.390	-1.010
(X ₅)	Wind Speed (kmph)	7.606	7.305	1.041
(X ₆)	Sunshine Hours	0.594	1.409	0.422
(X ₇)	Evaporation (mm)	-7.227	3.896	-1.855
(X ₈)	Rain Fall (mm)	0.000	0.000	65535
Intercept (a) = -41.323, N=18, F value = 1.44, R ² = 0.56				

2. Jassids, Amrasca biguttula biguttula (Ishida)

During 2023-24, the data revealed that the incidence of jassids was started from 52nd SMW (1.20 jassids per 3 leaves per plant) and reached its peak in 5th SMW (4.30 jassids per 3 leaves per plant) when the prevailing maximum temperature, minimum temperature, morning relative humidity (R.H.-I), evening relative humidity (R.H.-II), wind speed, sunshine hours and evaporation were 33.66°C, 13.80°C, 91.00 per cent, 35.00 per cent, 1.41 kmph, 8.14 hrs and 3.67 mm, respectively. Thereafter, the population of jassids declined gradually and sustained till 15th SMW (0.50 jassids per 3 leaves per plant). Whereas, during 2024-25, the data revealed that the incidence of jassids was noticed from 51st SMW (0.20 jassids per 3 leaves per plant) and reached

its peak in 2nd SMW (5.80 jassids per 3 leaves per plant) when the prevailing maximum temperature, minimum temperature, morning relative humidity (R.H.-I), evening relative humidity (R.H.-II), wind speed, sunshine hours and evaporation were 32.90°C, 14.20°C, 93.00 per cent, 53.00 per cent, 0.90 kmph, 6.70 hrs and 2.90 mm, respectively. Thereafter, the population of jassids declined gradually and sustained till 15th SMW (0.10 jassids per 3 leaves per plant).

2.1. Correlation studies of jassids infesting chilli with weather parameters

The correlation coefficient was worked out between population of jassids and abiotic factors during 2023-24 and 2024-25 and presented in Table 4.

Table 4: Correlation coefficient (r) of jassids infesting chilli with weather parameters (2023-24 and 2024-25)

Weather parameters	Correlation coefficient (r)	
	2023-24	2024-25
Temp. Max. (°C)	-0.282	-0.059
Temp. Min. (°C)	-0.492*	-0.479*
RH-I (%)	0.246	0.147
RH-II (%)	-0.407	-0.134
Wind Speed (kmph)	0.030	-0.292
Sunshine Hours	0.315	0.354
Evaporation (mm)	-0.252	-0.194
Rain Fall (mm)	-0.047	-

Pearson Critical Value ($P=0.05$): 0.468; Pearson Critical Value ($P=0.01$): 0.590; 0.00*: Significant at $P=0.05$; 0.00**: Significant at $P=0.01$

During 2023-24, the jassid population showed negative correlation with maximum temperature ($r = -0.282$), evening relative humidity (R.H.-II) ($r = -0.407$), evaporation ($r = -0.252$), rainfall ($r = -0.047$) while positive correlation with morning relative humidity (R.H.-I) ($r = 0.246$), wind speed ($r = 0.030$), sunshine hours ($r = 0.315$). However, jassid population showed significant and negative correlation with minimum temperature ($r = -0.492^*$). However, during 2024-25, the jassid population showed negative correlation with maximum temperature ($r = -0.059$), evening relative humidity (R.H.-II) ($r = -0.134$), wind speed ($r = -0.292$), evaporation ($r = -0.194$) while positive correlation with morning relative humidity (R.H.-I) ($r = 0.147$), sunshine hours ($r = 0.354$). However, significant negative correlation observed between jassid population and minimum temperature ($r = -0.479^*$).

2.2. Multiple linear regression studies between jassids infesting chilli and weather parameters

The multiple regression between weather parameters and jassids population during 2023-24 and 2024.25 are presented in **Table 5**. The multiple linear regression equation fitted with weather parameters in order to predict jassid population on chilli is as below.

2023-24 (R^2 : 75%):

$$Y = 14.827 - 0.363 X_1 - 0.044 X_2 + 0.041 X_3 - 0.062 X_4 + 3.035 X_5 + 0.137 X_6 - 1.459 X_7 - 0.309 X_8$$

2024-25 (R^2 : 41%):

$$Y = -50.55 + 0.744 X_1 - 0.072 X_2 + 0.447 X_3 - 0.210 X_4 + 3.095 X_5 + 0.644 X_6 - 2.770 X_7 + 0.000 X_8$$

The coefficient of determination (R^2) represents the proportion of common variation in the two variables. The present investigations revealed that the weather parameters contributed 75 and 41 per cent, respectively of total variation in the population of jassids on chilli during 2023-24 and 2024-25 indicating that the predictions of the jassids population by using weather parameters is more reliable.

The present investigation is in the agreement of the findings of Jatav *et al.* (2021) ^[4] who found highest jassid population (3.87) at the third week of August (38th SMW) when the temperature and humidity were at their highest and lowest, respectively. Subhashree *et al.* (2018) ^[9] reported that jassids (1.45) per plant was in 20th standard meteorological week. Kumawat *et al.* in 2015 ^[7] reported seasonal incidence of jassids on chilli initiated during 32nd SMW, reached its peak (12.67/plant) during 41st SMW. Chintkuntlawar *et al.* in 2015 ^[3] reported that jassid population appeared at 7 days after transplanting and remained active till onset of reproductive stage. Borgohain *et al.* (2024) ^[2] showed that jassids had a negative correlation with minimum temperature ($r = -0.701^*$) which supports present investigation that showed significant negative correlation ($r = -0.492^*$ and -0.479^*) in both seasons.

Table 5: Multiple linear regression between jassids and weather parameters

Sr. No.	Weather parameters	Regression coefficient (b)	S.E. (b)	't' values
2023-24				
(X ₁)	Temp. Max. (°C)	-0.363	0.377	-0.962
(X ₂)	Temp. Min. (°C)	-0.044	0.221	-0.199
(X ₃)	RH-I (%)	0.041	0.108	0.377
(X ₄)	RH-II (%)	-0.062	0.049	-1.280
(X ₅)	Wind Speed (kmph)	3.035	0.951	3.193
(X ₆)	Sunshine Hours	0.137	0.672	0.204
(X ₇)	Evaporation (mm)	-1.459	0.646	-2.259
(X ₈)	Rain Fall (mm)	-0.309	0.196	-1.578
Intercept (a) = 14.827, N=18, F value = 3.38, $R^2 = 0.75$				
2024-25				
(X ₁)	Temp. Max. (°C)	0.744	0.665	1.119
(X ₂)	Temp. Min. (°C)	-0.072	0.645	-0.111
(X ₃)	RH-I (%)	0.447	0.429	1.042
(X ₄)	RH-II (%)	-0.210	0.228	-0.923
(X ₅)	Wind Speed (kmph)	3.095	4.260	0.727
(X ₆)	Sunshine Hours	0.644	0.821	0.784
(X ₇)	Evaporation (mm)	-2.770	2.272	-1.219
(X ₈)	Rain Fall (mm)	0.000	0.000	65535.000
Intercept (a) = -50.557, N=18, F value = 0.79, $R^2 = 0.41$				

Conclusion

It is concluded from the findings of seasonal incidence study that aphid incidence started at 50th SMW (1.10 and 1.50) in both years which reached its peak at 8th and 5th SMW (11.70 and 13.10) and sustained up to 15th SMW (0.70 and 0.50 aphids per 3 leaves per plant) in both years, respectively. Jassid incidence started at 52nd and 51st SMW (1.20 and 0.20) which reached its peak at 2nd and 5th SMW (4.30 and 5.80) and sustained up to 15th SMW (0.20 and 0.30 jassids per 3 leaves per plant) in both years, respectively. The weather parameters such as maximum temperature, minimum temperature, morning relative humidity, evening relative humidity, bright sunshine, wind speed, evaporation and rainfall play an important role and contributed 83 and 56 per cent for aphids and 75 and 41 per cent for jassids during 2023-24 and 2024-25 in abundance and occurrence studied sucking pests.

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