## Population dynamics of sawfly (Athalia lugens proxima (Klug)) in relation to weather parameters in radish crop

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Radish (Raphanus sativus Linnaeus), an important vegetable crop suffers heavily due to the attack by sawfly, Athalia lugens proxima (Klug) (Hymenoptera Tenthredinidae). The larvae feed on leaves, flower buds, flowers and green pods. Sometimes due to severe infestation resowing becomes necessary (Patel, 1967; Rohilla and Kumar, 1991). For developing effective control measures, information on population dynamics in relation to weather is not available for A, proxima in radish crop. Therefore, the present study was undertaken at College farm of B. A. College of Agriculture, Gujarat Agricultural University, Anand.

Seedling of radish, cultivar Pusa Rashmi sown in third week of July, 1994 were raised following 30cm x 7.5cm spacing in a seedbed plot of 5m x 6m. The seedling were transplanted during last week of October, 1994 for seed production following 60cm x 30 cm spacing in a plot of 44m x 15m. Twenty five randomly selected plants were observed to record number of larvae per plant at weekly interval starting from one week after transplanting in the seed production plot. The data on larval population were correlated and regressed stepwise with the meteorological data

recorded in the meteorological observatory located about 100 m away from the experimental plot.

In this seedbed plot, the larval population started building up after 2nd week of germination (IV week of July), increased gradually (Figure 1), reached the peak after 9 weeks of germination (II week of September) and then decreased gradually. Thus, the population of A. proxima larvae was higher in the later stage (September - October) of the seedlings.

In transplanted crop, the population appeared first after 2nd week of transplating (I week of November), increased gradually, persisted for a short period and disappeared abruptly in the later period of crop. Thus, the larval population remained higher and for a longer period in seedling stage as compared to that in transplanted crop. Similar observations were reported by Shah(1940) in the Punjab, Tripathi (1963) in Utter Pradesh, Patel (1967) in Gujarat and Shirke et al. (1968) in Madhya Pradesh.

The larval population (Y) has significant negative correlation (Table 1) with bright sunshine hours  $(X_{10})$  and significant positive correlation with rest of the weather parameters except maximum temperature  $(X_2)$  and wind speed  $(X_{12})$ .

Table 1: Correlation and regression value of A.proxima with respect to weather parameters

Sr. N	No	Weather parameters	Correlation co-efficient	Regression co-efficient
1 (	(X,)	Minimun temperature (°C)	0.677*	0.000
2 (	(X,)	Maximumtemperature (°C)	0.213	4 (3.0)
3 (	$(X_i)$	Mean temperature (°C)	0.604*	
4 (	$(X_4)$	Morning vapour pressure (mm)	0.707*	0.295
	(X,)	Evening vapour pressure (mm)	0.621*	
	$(X_{\epsilon})$	Mean vapour pressure (mm)	0.672*	manhor W. Lalland
	(X,)	Morning relative humidity (%)	0.444*	AND THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TO PERSON NAMED IN COLUMN T
8 (	(X,)	Evening relative humidity (%)	0.524*	0.091
	$(X_u)$	Mean relative humidity (%)	0.531*	L CONTROL BUILDING
	(X <sub>10</sub> )	Bright sunshine hours (hrs day-1)	-0.379	0.801
11 (	$(X_{ij})$	Rainfall (mm)	0.402*	and the community of the
	(X,)	Wind spee (km hours-1)	0.133	CIDWOIL COND TOWN
13	to iles	A value	101 hunted there	-12.95
14		R <sup>2</sup> show III) materiment to a look	or Land Tracelland	0.674

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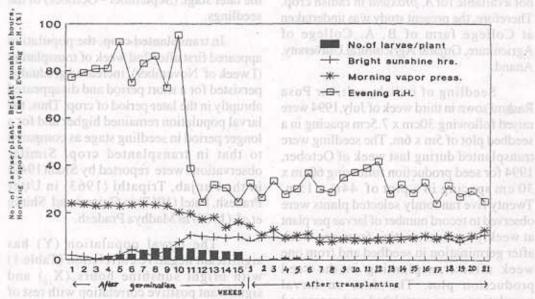


Fig. 1: Population dynamics of A. proxima in relation to weather parameters having significant regression.

The regression equation fitted to the data taking sawfly larval population (Y) as a dependent variable and meteorological parameters having significant correlation coefficient values as independent variables was:

$$Y = -12.956 + 0.295 X_4 + 0.091 X_8 + 0.801 X_{10}$$
 (R<sup>2</sup>=0.674)

As much as 67 % variation in the population of A. proxima was a attributable to the effect of above three parameters viz., Morning vapour pressure (X<sub>4</sub>), evening relative humidity (X<sub>8</sub>) and bright sunshine hours (X<sub>10</sub>). During higher activity of the pest this ranged respectively between 20 to 23 mm, 55 to 85 % and 1 to 5 hours, while during lower activity this ranged between 7 to 20 mm, 24 to 55 % and 7 to 10 hours. Shah (1940) reported higher activity of A. proxima on cauliflower plants in nursery towars the close of rainy season, which closely tallies with present report.

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