



POPULATION DYNAMICS OF WHITEFLY, *BEMISIA TABACI* (HOMOPTERA : ALEYRODIDAE) IN URD BEAN [*VIGNA MUNGO* (L.) HEPPER] AND THEIR CORRELATION WITH ABIOTIC FACTORS

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Abstract

A field experiment was conducted during *Kharif* 2013 population of whitefly associated with urd bean [*Vigna mungo* (L.) Hepper]. Maximum population of white fly 22.43/plant were recorded in 37th standard week at a minimum temperature 24.8°C, maximum temperature 34.1°C, relative humidity 74.5 per cent and rainfall 42.00 mm. The influence of weather parameters on whitefly population showed the minimum temperature, maximum temperature and rainfall showed positive correlation, whereas, relative humidity showed negative correlation.

Key words : Whitefly, *Bemisia tabaci*, population dynamics.

Introduction

Blackgram (*Vigna phaseolus mungo* L. Hepper) commonly known as urdbean, belongs to family Leguminosae, sub family Papilionaceae. These grain legumes contain about 25 per cent protein and richest in phosphoric acid among pulses, and established itself as a highly valuable with ability to improve the soil by fixing atmospheric nitrogen. The area under urdbean cultivation in India is about 3.30 m ha with production of 1.83 m tonnes and productivity 555 kg per ha during the year 2011-12. The area in U.P. under urdbean is 524224 ha and production is about 347341 m.tones with an average yield of 663 kg/ha (Anonymous, 2012). Black gram is attacked by more than twenty insect pest species in India. (Nayer *et al.*, 1976). Keeping this in view, the present study was under taken to know the population dynamics of Whitefly and their correlation with abiotic factors.

Materials and Methods

A field experiment was conducted at was at farmer's field and student's instructional farm of Narendra Deva University of Agriculture & Technology, Kumarganj, Faizabad (U.P.), India; during 2013 in *Kharif* season. The trials were conducted on urd bean cv. Pant urd-1 and sown first week of August in the year 2013. The experiment was laidout in RBD having 5x4M2 plot size,

30x10 cm distance between row to row with three replications. Recommended agronomical practices were done to raise a good crop. Meteorological data were collected from the Meteorology Department of this University. To carry out the population dynamics of whitefly. Observations were recorded at weekly interval starting with 20 DAS at 3 farmer's field. The population was taken in terms of number of whitefly per plant by using rectangular cage 45cm long, 30cm wide and 90cm high. The rectangular cage was formed by ply wood and fibre glass. The plywood plate was cut according to required size and made it in rectangular form by folding them. Its inner side was painted black to induce darkness inside. Front side of the cage was covered with a transparent fiber glass, while bottom remained open. To record the whitefly population cage was placed on plant. The flies congregated on the inner surface of fiber glass screen due to its photo tactic behavior, which enables to count them very easily.

Results and Discussion

Table 1 reveals that the mean populations at above periods of observations were 1.80/ plant at all three villages. Its population increase suddenly about more than five times (10.03/plant) in 35th standard week at a minimum temperature of 25.0°C, maximum temperature

Table 1 : Population dynamics of whitefly in Urdbean during *Kharif*, 2013.

S. no.	SW	Mean population of whitefly/5 plants at different farmer's field			Mean population of white fly	Abiotic factors			
		1	2	3		Temp. °C		RH%	Rain fall (mm)
						Min	Max		
1	34	1.6	2.0	1.8	1.8	26.4	34.0	75.0	20.10
2	35	8.6	12.0	9.5	10.0	25.0	31.7	81.0	24.00
3	36	16.0	18.5	24.0	19.5	25.7	35.0	69.9	0.00
4	37	23.0	22.0	23.5	22.8	24.8	34.1	74.5	42.00
5	38	16.5	20.0	18.0	18.1	24.9	33.8	73.7	8.40
6	39	12.0	20.0	22.5	18.1	25.3	33.1	75.0	74.0
7	40	6.6	8.0	8.0	7.5	23.5	29.8	77.0	3.60
8	41	2.2	6.0	2.0	3.4	23.5	30.6	80.3	3.10
9	42	1.2	1.0	2.0	1.4	21.6	28.9	82.3	0.00

Table 2 : Correlation coefficient between meteorological parameters and whitefly population attacking urdbean during *Kharif* season, 2013.

Correlation variables (Abiotic factors)	Temperature °C		Relative humidity (%)	Rainfall (mm)
	Minimum	Maximum		
Whitefly	0.4352	0.6892	-0.6985	0.4635

of 31.7°C, relative humidity 81.0 per cent and rainfall 24.00 mm. The population of whitefly showed increasing trend and reached to maximum population of 22.43/plant in 37th standard week at a minimum temperature 24.8°C, maximum temperature 34.1°C, relative humidity 74.5 per cent and rainfall 42.00 mm (Kumawat *et al.*, 2000). The decreasing trend was observed and reached its minimum population in 42nd standard week (1.40/plant) at a minimum temperature 21.6°C, maximum temperature 28.9°C, relative humidity 82.3 per cent and the rainfall 0.00 mm. Table 2 reveals that the minimum temperature, maximum temperature and rainfall showed positive correlation, whereas, relative humidity showed negative correlation with the population of whitefly.

Conclusion

This study concludes that the maximum population of white flies 22.43/plant in 37th standard week at a

minimum temperature 24.8°C, maximum temperature 34.1°C, relative humidity 74.5 per cent and rainfall 42.00 mm. Minimum temperature, maximum temperature and rainfall showed positive correlation whereas relative humidity showed negative correlation with the population of whitefly.

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