

Comparative study of reproductive potential of *Lipaphis erysimi* (Kaltenbach) between field collected and laboratory acclimatized populations

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Abstract

When field populations bring to the laboratory it faces a great deal of mortality. Studies were conducted to know the effect of this mortality on the fecundity of *Lipaphis erysimi*. Results indicate a reduction in nymph laying capacity of apterae per day and in the overall fecundity. In case of laboratory acclimatized population the reproductive period was also increased considerably in comparison to the clones of same population collected from field.

Introduction

Field populations of *Lipaphis erysimi* experienced severe loss of individuals when brought to the laboratory conditions because of changes in environmental resistance which differs in laboratory in comparison to field. The dead individuals do not contribute their share to the next generation and thus changed the genetic structure of future laboratory reared population depending on the level of mortality. Because every individual is unique in its developmental individuality, these changes have inherent effect on biological attributes and hence selected population and transform the result accordingly. Therefore, there is a need of excessive experimentation to study these variations in different biological attributes of population to simulate laboratory results to field condition in extension programs.

Here we have studied the effect of this mortality on reproductive potential of *Lipaphis erysimi* population. Fecundity data are available for laboratory reared populations of *Lipaphis erysimi* (Sumati, 1985; Amjad & Peters 1992; Liu & Yue, 2001), but there is no information on nymph-laying capacity from field populations in India. This paper compares nymph-laying data between field collected and laboratory acclimatized apterae of *Lipaphis erysimi* from Pantnagar, North India.

Materials and method

Fourth instar apterae were collected from the field from CRC, Pantnagar and reared individually on pod at room temperatures. The apterae which started producing nymph on the same day were selected for further study. Laboratory acclimatized populations were obtained by rearing individuals for one generation in incubator at $22\pm1^\circ\text{C}$ temperature, $60\pm5\%$ r.h. and 12D: 12L photoperiod. The F_1 generation apterae were used for experimentation. The 10 finally selected apterae were grouped in each Petri dish. One treatment was characterized by one population. Each treatment had 5 replications. A total of 10 populations were studied.

Table 1 Shows the Nymph-Laying Pattern for 10 Populations of *Lipaphis erysimi*

Population Number	Field collected population			Laboratory acclimatized population		
	Nymph/apterae/day	Reproductive Period (days)	fecundity	Nymph/apterae/day	Reproductive Period (days)	fecundity
1	19.24	4.31	82.94	4.08	6.82	27.83
2	10.74	4.62	49.63	5.65	8.73	49.33
3	9.96	5.25	52.30	5.85	6.65	38.87
4	12.91	4.93	63.65	5.61	8.78	49.23
5	11.76	4.38	51.50	5.58	6.59	36.75
6	17.50	4.51	78.90	5.28	6.83	36.05
7	17.11	4.06	69.45	5.61	6.26	35.12
8	18.91	4.14	78.28	6.02	5.87	35.34
9	9.35	5.42	50.65	5.33	5.44	28.97
10	14.28	4.31	61.56	5.69	6.97	39.64

Results and discussion

The present study shows that fecundity of *Lipaphis erysimi* is a very much superior in field collected population than in laboratory acclimatized population, and that this species, therefore has a high inherent ability to increase in numbers under

field conditions as previously reported by Sumati (1985). Also, field collected individuals lays a relatively large number of nymphs over a short time range. These facts need to be considered when developing practical pest management strategies for nymph and adults of *Lipaphis erysimi* on agricultural crops.

Conclusion

The reproductive period for the laboratory acclimatized population was also increased considerably in comparison to the clones of same population collected from field.

References

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