

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

Sandeep Singh Panwar, Chandra Pal Singh

*Economic Entomology Laboratory*

*Department of Entomology, College of Agriculture*

*Govind Ballabh Pant University of Agriculture & Technology, Pantnagar- 263 145 (U.S. Nagar) Uttaranchal, INDIA*

*Email: cppc005@yahoo.co.in*

## 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 were indicate a reduction in nymph laying capacity of apterae per day and in the over all 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 bring 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 on 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 study the effect of this mortality to 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 compare 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  $22\pm 1^\circ\text{C}$  temperature,  $60\pm 5\%$  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.

**Table1 Shows the Nymph-Laying Pattern for 10 Populations of *Lipaphis erysimi***

Population Number	Field collected population			Laboratory acclimatized population		
	Nymph/apterae/day	ReproductivePeriod,(days)	fecundity	Nymph/apterae/day	ReproductivePeriod(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

- Sumati, 1985. Biology of *Lipaphis erysimi* (Kaltenbach) and field incidence of *Athalia proxima* Klug to effect of insecticides on germinations. Pantnagar, GBPUAT. 107p.
- Liu, T.X. and Yue, B. 2001. Comparison of some life history parameters between alate And apterous forms of turnip aphid (Homoptera: aphididae) On cabbage under constant temperatures. Florida Entomologist, 84(2): 239-242.
- Amjad, M., and D. C. Peters. 1992. Survival, development, and reproduction of turnip aphids (Homoptera:Aphididae) on oilseed *Brassica*. J. Econ.Entomol. 85: 2003-2007.