

Observations on Parasitism of Eggs of Castor Semilooper *Achaea janata* L.*

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Achaea janata L. commonly known as castor semilooper is a serious pest of castor throughout India. It has also been recorded as fruit sucking moth damaging guava in Delhi (Bhattacharjee, 1969) and citrus in Gwalior (Rakshpal, 1945). The pest has been occasionally causing serious damage to castor in Vijapur taluka of north Gujarat while it has not been found to be so serious in central Gujarat. Since the pest intensity is judged by the larval population, which remains at low level in central Gujarat, it is likely that the egg and early larval parasites may be regulating the pest population at low levels. Surveys were therefore conducted in the castor growing areas of Anand, Kapadvanj and Vijapur talukas of Gujarat to rear and study the egg parasites of *A. janata* during 1974 and 1975 so as to explore the possibilities of promoting biological control of the pest with indigenous parasites. Thobbi *et al.* (1976) have been successful in controlling *A. janata* infestation in Andhra Pradesh by introducing an egg parasite, *Telenomus*

proditor (Hymenoptera: Scelionidae), which according to them has become established there and is naturally spreading.

A survey of literature on the parasites of *A. janata* shows the record of an unidentified Chalcid (Ayyar, 1944) and *Trichogramma* sp. (Khan, 1947). The eggs of *A. janata* were reported to be parasitized by *Trichogramma evanescens* Westw. and *T. minutum* Riley in Andhra Pradesh (Phalak and Raodeo, 1967) and by *Trichogramma achaeae* Nagaraja and Nagarkatti in Mysore (Nagaraja and Nagarkatti, 1969).

For conducting the survey, *A. janata* eggs laid on castor plants were collected and held individually in glass vials for emergence of parasites. To have a comparative picture of the infestation level, the egg collection has been represented as number of eggs collected per man hour search.

The following parasites have been reared from the *A. janata* eggs during the course of the present survey.

1. *Trichogramma australicum* Girault (Hymenoptera: Trichogrammatidae)
2. *T. achaeae* Nagaraja and Nagarkatti (Hymenoptera: Trichogrammatidae)
3. *Telenomus* sp. (Hymenoptera: Scelionidae)

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4. *Trissolcus* sp. (Hymenoptera: Scelionidae)

All these parasites are recorded for the first time from *A. janata* in Gujarat.

The data on natural parasitism are presented in Table 1. Since the species were not identified at the time of rearing, parasitism by individual species could not be ascertained and therefore combined parasitism has been given under each group.

It could be seen from the data that eggs of *A. janata* were being laid from August to October and they were parasitised by Trichogrammatids and Scelionids throughout this period. From the observations recorded at Kapadvanj, it is seen that the total parasitism ranged from 44.4 to 100.0 per cent during 1974 and from 25.9 to 92.0 per cent during 1975. Both Trichogrammatids

and Scelionids were active simultaneously. However, Scelionids were in larger proportion at the beginning of the season but were later dominated by *Trichogramma* and were not allowed to build up their population. This is evidenced by the data collected during October, 1974 when the parasitism by Scelionids declined after August while that by Trichogrammatids increased from 22 to 100 per cent. Kamath *et al.* (1972) studied the interspecific competition between *T. australicum* and an exotic Scelionid, *Telenomus alecto* and found that *T. australicum* was dominant over the Scelionid. Similarly, when *Achaea* eggs collected from Anand and Vijapur areas were examined, only *Trichogramma* emerged from them showing that the Scelionids were less important.

During October, 1974, the egg population was very scarce and therefore

TABLE 1
Natural egg parasitism of *Achaea janata* on castor.

Natural egg parasitism of <i>Achaea janata</i> on castor.					
Date of Collection		No. of eggs collected per man hour	% Parasitism by		Total % Parasitism
			Trichogrammatids	Scelionids	
			<i>T. australicum</i>	<i>Telenomus</i> sp.	
			+	+	
			<i>T. achaeae</i>	<i>Trissolcus</i> sp.	
Kapadvanj					
1974					
Sept.	3	22	22.0	63.3	85.3
Sept.	12	27	33.3	11.1	44.4
Oct.	3	18	72.2	0.0	72.2
Oct.	14	22	86.2	0.0	86.2
Oct.	21	1	100.0	0.0	100.0
1975					
Aug.	18	185	35.2	56.8	92.0
Aug.	22	46	50.0	21.7	71.7
Aug.	30	27	11.1	14.8	25.9
Anand					
Aug.	13	86	66.2	0.0	66.2
Aug.	20	124	100.0	0.0	100.0
Aug.	30	72	50.0	0.0	50.0
Vijapur					
Aug.	27	80	40.0	0.0	40.0

only one egg could be collected. This too was found to be parasitised. This shows the effectiveness of the parasites to search out the host even at low host densities. It was interesting to note that a large number of eggs of an unidentified pierid butterfly (whites) was laid on road side shrub (*Cassia tora*) around the castor fields in Kapadvanj during August, 1975. These eggs were also heavily parasitised by *Trichogramma* spp. which must have helped in building up *Trichogramma* population that resulted in high parasitism of *A. janata* eggs during that period.

While recording parasitism, it was observed that either as many as 9 adults of *Trichogramma* spp. or only one of Scelionid emerged from a single *A. janata* egg. In no case both these parasites emerged from the same egg.

In the present investigations, Trichogrammatids appear to be the dominant group and play an important role in regulating semilooper population in this area. Therefore, if *Trichogramma* populations are supplemented by inundative releases after studying the interspecific competition between *T. australicum* and *T. achaeae* during the early part of the cropping season, the pest can be prevented from building up its population and causing serious damage. It may be mentioned here that *T. australicum* has been recorded to be a dominant species over *T. achaeae* in attacking *Heliothis*

armigera on tomato and marigold in Mysore (Manjunath *et al.* 1970).

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