

STUDIES ON INSECT-PESTS OF CASTOR IN THE AGRO-ECOSYSTEM OF MANIPUR

A.K. SARMA, M.P. SINGH and K.I. SINGH

Department of Entomology, Central Agricultural University, Imphal-795 004, Manipur,

ABSTRACT: A field study was conducted on the incidence of insect-pests on two varieties of castor viz. 48-1 and Local Red petiole for three consecutive years (2001-2003) under the rainfed condition in Manipur. More than 20 species of insect were found associated with castor, but many of them are highly irregular in occurrence over years, distributed in patches with low population causing no remarkable damage to the crop. Only 10 species belonging to Lepidoptera, Hemiptera, Orthoptera and Thysanoptera showed variable economic importance and of them, 5 species were found regular with high degree of severity (Moderate to Serious) as major pest. Most of the insect-pests are either defoliators or sucking pests. Moreover, few insects viz. *Empoasca flavescens*, *Trialeurodes ricini*, *Retithrips syriacus* and *Amsacta moorei* have achieved the pest status in the state in recent years.

Keywords: Castor, *Ricinus communis*, *Samia cynthia ricini*, *Empoasca flavescens*

Castor, *Ricinus communis* L. is an important oilseed crop as well as the primary food-plant of Eri silkworm, *Samia cynthia ricini* Boisduval. India accounts for nearly 68% of the world's castor area and 76% of world's castor production and ranks first in both area and production in the world (ANONYMOUS, 2003). However, castor is more popular as food-plant of eri silkworm than as an oilseed crop in the north-eastern states of India, particularly in traditional belt of ericulture in Assam and Manipur. We studied insect-pests of castor and economic importance under the agro-ecological conditions of Manipur, during 2001, 2002 and 2003, in five locations of Imphal East and West districts of Manipur under rainfed condition.

Two castor varieties, one high yielding (48-1) and other local (Red petiole), were grown under improved agronomic package of practices. The seeds were sown at a spacing of 90 x 45 cm in the plot of 20 x 10 m for each variety with a fertilizer supplement of NPK @ 60:40:20 kg/ha. Cultural leaf management practices such as flower bud removal, nipping etc. were practised. The data on incidence of insect-pests were recorded from 30 days onwards after sowing at weekly interval. Three plants, two from the two ends and one from the middle, of each row selected randomly and tagged for observations. Every alternate weekly-observations were taken in the morning (9:00 A.M. onwards) and other alternate weekly-observations in the afternoon (3:00 P.M. onwards). The severity of insect-pests was measured on the basis of their mean population/plant, period of their continuous occurrence and extent of damage to the crop. The period with four consecutive observations showing the highest mean population/plant was considered as the peak period of activity of the insect-pest. Each observation was taken on both varieties for consistency of the results.

More than 20 species of insect were associated with castor, many of them highly irregular in occurrence over the years, distributed in patches with low population and caused no remarkable damage to the crop to designate them as pest. Only 10 species from 4 orders were of variable economic importance and of them, only 5 species were regular (Moderate to Serious) and major pest (Table).

Table. Insect-pests of castor in the agro-ecosystem of Manipur.

Insect-Pest	Severity	Period of activity (Peak Activity)
(A) Defoliator		
1. Castor semilooper, <i>Achaea janata</i> L. (Noctuidae : Lepidoptera)	Moderate - Serious	July – October (September - October)
2. Bihar hairy caterpillar, <i>Spilosoma obliqua</i> Walk. (Noctuidae : Lepidoptera)	Moderate - Serious	May – August (June-July)
3. Tobacco caterpillar, <i>Spodoptera litura</i> Fabr. (Noctuidae : Lepidoptera)	Moderate - Serious	July – October (October)
4. Spiny caterpillar, <i>Ergolis merione</i> (Cramer) (Nymphalidae : Lepidoptera)	Mild - Moderate	June – September (August)
5. Castor shoot and capsule borer, <i>Conogethes</i> <i>(Dichocrosis) punciferalis</i> Guen. (Pyalidae : Lepidoptera)	Mild - Moderate	July – October (August – September)
6. Surface grasshopper, <i>Chrotogonus robertsoni</i> B (Acrididae : Orthoptera)	Mild	June – October (September)
7. Red hairy caterpillar, <i>Amascta moorei</i> Butler (Arctiidae : Lepidoptera :)	Moderate - Serious	June – September (August – September)
(B) Sucking pest		
1. White fly, <i>Trialeurodes ricini</i> (Misra) (Aleyrodidae : Hemiptera)	Moderate - Serious	March-July (May-June)
2. Jassid, <i>Empoasca flavescens</i> (Fabr) (Cicadellidae : Hemiptera)	Mild - Moderate	Aug. - November (September-October)
3. Thrips, <i>Retithrips syriacus</i> (Mayet) (Thripidae : Thysanoptera)	Mild	July – September (August-September)

* Data of three consecutive years (2001-03) in five locations on two varieties of castor.

Most of the insect-pests were either defoliators or sucking-pests posing threat to sericulture to variable extents as earlier reported in ANONYMOUS (2003). However, a few insect-pests have undergone changes in relation to their severity, pest status and period of activity as recorded by RAM *et al.* (1981). Moreover, insects like *Empoasca flavescens*, *Trialeurodes ricini*, *Retithrips syriacus* and *Amsacta moorei* have also attained the pest status which were not mentioned in the earlier report. This might be due to the changing climatologic parameters affecting the agro-ecosystem of Manipur for more than two decades from the last report of RAM *et al.* (1981). The period of activity of *Achaea janata* was almost similar to the report (ANONYMOUS, 2003 and LAKSHMINARAYANA, 2003). Further, the activity and multiplication of *E. flavescens* increased during winter season showing similarity with the observations of JAYARAJ *et al.* (1964).

REFERENCES

- ANONYMOUS, 2003. Castor in India, *Directorate of Oilseeds Research, Hyderabad*. pp 1-62
- JAYARAJ, S. and BASHEER, M. 1964. Biological observations on the castor leaf- hopper, *Empoasca flavescens* (F) (Jassidae: Homoptera). *Madras Agric. J.* 51 : 89-90
- LAKSHMINARAYANA, M. 2003. Management of defoliator to castor : *Frontier Areas of Entomological Research. Proc. Natl. Sym. 5-7 November. 2003. IARI, New Delhi.* pp.62-63
- RAM, S., SACHAN J. N. and PATHAK, K.A. 1981. Insect Pests of crops in Manipur. *ICAR Complex for NEH Region, Manipur Centre, Imphal.* pp. 55-56