

PUBLICATIONS

plant height and number of tillers with army-worm population were worked out.

The data show (table 1) that all the 36 wheat varieties tested differed significantly in relation to the attack of army-worm. It has been found that varieties such as UP 2002 (1.24), Raj 1381 (1.38) and WL 1533 (1.38) harboured significantly low pupal population of army-worm per quadrat as compared to other varieties and these varieties may be graded as resistant. Similarly varieties namely WH 199, K 5435 and WL 903 had 3.90, 3.31 and 3.25 pupae per quadrat, respectively and these varieties were graded as susceptible. The overall performance of the remaining varieties was similar and these were graded as moderately susceptible. Out of all the 36 varieties tested none proved to be completely resistant to army-worm. The population of army-worm was found to be significantly correlated with the plant height ($r = -0.5034$) and with number of tillers ($r = +0.9695$). It is due to the more congenial micro environment created by dwarf varieties, which protected the larvae from unfavourable conditions as well as predators by denser shade and higher soil moisture as compared to taller varieties. These findings are in conformity⁴ showing that triple dwarf varieties with a length of 65 to 80 cm supported higher army-worm population than the dwarf varieties with 80 to 110 cm height.

Authors are thankful to Dr. H. S. Sukheja, Assistant Entomologist (Cotton) for going through the manuscript and to the Department of Plant Breeding for providing research facilities.

N. S. BUTTER
K. S. GILL
G. S. NANDA
G. S. MAHAL

Department of Plant Breeding,
Punjab Agricultural University,
Ludhiana, Punjab.

Received : 12 January, 1978.

¹ O. S. Bindra and J. Singh. 1970. Incidence of insect pests on wheat in the Punjab during 1969-70. Paper read at 9th All-India Wheat Research Workers' Workshop at Delhi on August 28, 1970 in session IV.

² O. S. Bindra and J. Singh, *Indian J. agric. Sci.* 43, 299-303, 1973.

³ T. S. Grewal and S. S. Bains, *Indian J. Ecol.* 2, 139-145, 1975.

⁴ A. N. Verma and A. D. Khurana, *Haryana Agril. Univ. J. Res.* 1, 20-23, 1973.

A new species of *Maluconothrus* and a few new records from other genera of soil oribatid mites (Acari) from the district of Cachar, Assam.

The soil oribatid mites of Assam are unknown and unexplored. Therefore, a survey for these mites was undertaken in the district of Cachar in Assam during the period between 1976 and 1977. Examination of a part of the collection reveals the occurrence of a new species, *Maluconothrus assamensis* and seven known species distributed over six genera under five families.

The materials of these species were collected by Miss Archana Roy Talukdar and are deposited in the Entomology Laboratory at Darjeeling Government College, Darjeeling.

1. *Maluconothrus assamensis* sp. nov. (Fig. 1)
Colour light brown; length of the body 456-475 μ ; width 242-228 μ .

Prodorsum broadly triangular, punctate; all prodorsal setae smooth; rostral setae 41-45 μ long, inserted at the anterolateral border of rostrum; lamellar setae 72-76 μ long, reaching far beyond the rostrum anteriorly; inter-lamellar setae slightly smaller than lamellar setae and shorter than their mutual distance; anterior exo-bothridial setae minute, inserted lateral to the inter-lamellar setae; lamellae faintly chitinised.

Notogaster subcylindrical, punctate, with two longitudinal ridges that converge at the posterior one fourth and ultimately unite to form a single median ridge, which joins a slightly arched transverse ridge above the setal bases of ps_1 ; two oblique ridges also proceed from the margins to unite with these longitudinal ridges at the points whence the longitudinal ridges tend to converge; notogastral setae thirteen pairs, simple, elongate, 30-76 μ long, setae c_1 , d_1 , e_1 , h_1 centro-dorsal, c_3 , cp , d_2 , e_2 and f_2 marginal, ps_1 , h_2 , and h_3 postero-lateral; distance c_1-c_2 two and a half times the distance c_2-c_3 ; mutual distance d_1-d_2 subequal to e_1-c_1 < c_1-c_2 ; distance c_3-cp nearly equal to d_3-cp ; two pairs of

Legs monodactylous, claws strong, sickle-shaped.

Holotype : Adult female, Rongpur, Silchar, Cachar (Assam), 24.X.1976, from humus with rotten leaves of *Mangifera indica*; paratypes : 5 adult females, same data as holotype; 4 adult females, Longai Road, Karimganj, Cachar (Assam), 25.II.1977, from humus and 3 adult females, Tesus, Cachar (Assam), 12.X.1976, from loose soil near a pond.

Remarks : All the known *Malaconothrus* species can be broadly divided into two groups, viz., one with translamella and the other without it. The former includes species like *M. translamellatus* Hammer, 1958, *M. robustus* Hammer, 1958, *M. peruensis* Hammer, 1961, *M. indifferens* Hammer, 1966 and *M. hexasetosus* Hammer, 1971 and in the latter are included species like *M. atuelanus* Hammer, 1958, *M. mollisetosus* Hammer, 1958, *M. conicus* Hammer, 1958, *M. angulatus* Hammer, 1958, *M. pulcher* Hammer, 1961, *H. keriensis* Hammer, 1966, *M. zealandicus* Hammer, 1966, *M. japonicus* Aoki, 1966, *M. pygmaeus* Aoki, 1969, *M. variotetosus* Hammer, 1971, *M. geninus* Hammer, 1972, *M. pachypilus* Hammer, 1972 and *M. cornutus* Hammer, 1973. This species falls in the latter group lacking translamella. Within this group no known species resembles the new species closely, though *Malaconothrus zealandicus* Hammer, 1966 resembles it to some extent, specially by the presence of punctate cerotegument, same number and position of exo-bothridial setae and arrangement of adanal fissure, *iad*. The new species can however, be distinguished from *zealandicus* by the presence of longer lamellar setae and in the arrangement of notogastral ridges. It lacks a small angular projection at the transition of prodorsum and notogaster and possesses five pairs of genital setae in contrast to four pairs in *zealandicus*.

2. *Hoplophorella africana* Wallwork, 1967, 2 adult females, Rongpur, Silchar, Cachar (Assam), 25.IX.1976, from loose soil under bamboo bush with decomposed cow-dung and rotten straw; 3 adult females, Dasgram, Karimganj (Assam), 26.IX.1976 from humus and 5 adult females, Tesua, Karimganj (Assam), 12.X.1976, from decaying leaves of *Colocasia* sp. and roots of *Polygonum* sp. and *Commelina bengalensis*.

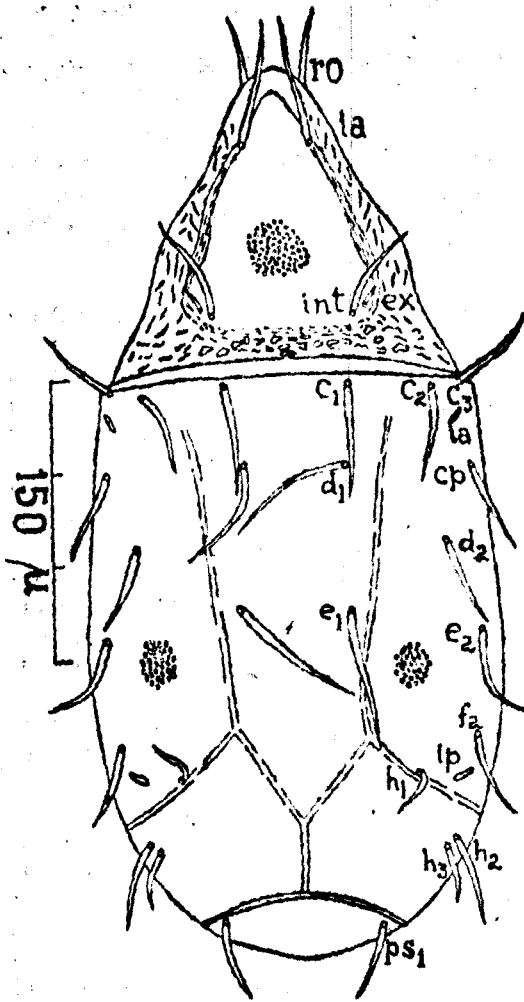


Fig. 1. *Malaconothrus assamensis* sp. nov. ro—rostral setae; la—lamellar setae; int—interlamellar setae; ex—exo-bothridial setae; c_1 , c_2 , c_3 cp, d_1 , d_2 , e_1 , e_2 , f_2 , h_1 , h_2 , h_3 and ps_1 —notogastral setae; ia and ip —notogastral fissures.

notogastral fissures discernible, *ia* in between c_3 and cp, *ip* in between h_1 and f_2 .

Anal plate longer than genital plate, with one pair of minute setae; adanal plate with three smooth setae 26-53 μ long, nearly equidistantly placed along the inner margin of adanal plate; *iad* an oblique slit located above the insertion of ad_3 ; genital plate more than twice as long as the maximum width at the anterior end, with five smooth setae 15-19 μ long, arranged along the inner margin of genital plate at its anterior half.

All epimeres complete with a gap between epimera II and III; epimeral setal formula 3-1-3-3.

3. *Allonothrus russeolus* Wallwork, 1960, 2 adult females, Latu, Karimganj, Cachar (Assam), 8.X.1976, from loose sandy soil with decomposed leaves of *Bambusa* sp. and 4 adult females, Mahishashan Karimganj (Assam), 12.X.1976, from loose litter.

4. *Archegozetes longisetosus* Aoki, 1965, 3 adult females, Balitara, Karimganj (Assam), 12.X.1976, from loose humus with decomposed leaves of *Eclipta alba* and roots of *Eichhornia crassipes* and 2 adult females, Mahishashan, Karimganj (Assam), 21.X.1976, from humus with decomposed straw.

5. *Dolicheremaeus brunetiensis* Aoki, 1967, 3 adult females. 20.X.1976. from decomposed roots of *Colocasia antiquorum* and *Alstonia scholaris* and 2 adult females, Katigora, Cachar (Assam), 25.X.1976, from loose humus with rotten leaves of *Eclipta alba*.

6. *Oppia yodai* Aoki, 1965, 3 adult females, Rongpur, Silchar, Cachar (Assam), 25.IX.1976, from loose humus; 3 adult females, Dasgram, Karimganj (Assam), 26.IX.1976, from humus and 5 adult females, U. C. Dutta Lane, Karimganj, Cachar (Assam), 25.II.1977, from decomposed vegetables in a compost heap.

7. *Scheloribates huancayensis* Hammer, 1961, 16 adult females, Balitara, Cachar (Assam), 12.X.1976, from humus with rotten leaves of *Bambusa* sp; 5 adult females, Kalian, Cachar (Assam), 8.X.1976, from loose humus with rotten leaves of *Thea assamica* and 3 adult females, Badarpur, Cachar (Assam), 11.X.1976, from humus and decaying leaves of *Mangifera indica*.

8. *Scheloribates parvus* Pletzen, 1963, 7 adult females, Balitara, Cachar (Assam), 12.X.1976, from humus and decomposed leaves of *Eclipta alba* and *Cassia nodosa* and 16 adult females, Katigora, Cachar (Assam), 12.X.1976, from humus and decaying trunk of *Musa paradisiaca*.

The authors are grateful to Professor Subhas Chandra Santra of the department of Botany, Darjeeling Government College for identifying the plant species. Dr. B. Dasgupta, Principal and Dr. S. K. Dasgupta, Head of the Department of Zoology

of Darjeeling Government College are thanked for providing laboratory facilities.

D. K. CHAKRABARTI
A. ROY TALUKDAR

Entomology Laboratory,
Post-graduate Department of Zoology,
Darjeeling Government College,
Darjeeling, West Bengal.

Received : 30 December, 1977.

Revised : 10 May, 1978.

- 1 M. Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 10 (1), 27-31, 1958.
- 2 M. Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 13 (1), 91-94, 1961.
- 3 M. Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 15 (2), 21-23, 1966.
- 4 M. Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 16 (6), 8-9, 1971.
- 5 J. Aoki, *Annot. Zool. Japan*, 39 (3), 169-172, 1966.
- 6 J. Aoki, *Bull. Nat. Sci. Mus. Tokyo*, 12 (1), 123-124, 1969.
- 7 M. Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 19 (3), 20-22, 1972.
- 8 M. Hammer, *Biol. Skr. Dan. Vid. Selsk.*, 20 (3), 15-16, 1973.
- 9 J. A. Wallwork, *Rev. Zool. Bot. Afr.*, 75, 36, 1967.
- 10 J. A. Wallwork, *Acarologia*, 2, 571, 1960.
- 11 J. Aoki, *Nat. Life Southeast Asia*, 4, 147-169, 1965.
- 12 J. Aoki, *Bull. Nat. Sci. Mus. Tokyo*, 10, 342, 1967.
- 13 R. van Pletzen, *Acarologia*, 5, 701, 1963.

Radiation genetic studies in garden pea. VI. Interaction of two early mutant genes

From a 5 Kr X-irradiated population of Bonneville variety of garden pea, Kaul (2,3) isolated two early flowering and ripening mutants (EM₁, EM₂) producing fully fertile normal flowers. Hybridisation between these two mutants and between their backcrossed heterozygotes indicated that the genes inducing earliness in them are nonallelic. These genes not only influence some phenotypic traits significantly², but they also affect the seed protein content significantly (Table 1). Thus while in EM₁ the mean seed protein content is 19.17, in EM₂ it is 24.37. Furthermore, the grain yield and size of EM₁ is significantly better