PD-AAX-206

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Progress Report of Work Done for the Period
June 30th 1984 to January 15th 1985.

1) Study of Beanfly (Ophiomyia phaseoli) Populations.

This is an ongoing study in which bean seeds of the variety Top crop were planted at biweekly intervals, uprooted about 3 weeks after planting and placed in test tubes for the emergence of adults. (This process has been adequately described in the previous report) Along with the emerging adults any suspected parasitoids were collected. Some specimens of the adult bean fly and parasitoids were sent to the Commonwealth institute of Entomology for identification. A count was maintained of bean fly emergence from these plants.

Results - Although subjected to considerable fluctuations there was a considerable population of insects throughout the period under study. The maximum number of adults obtained in 100 seedlings was 913 while the minimum was 83. The population fluctuations are given in the annexed graph, along with rainfall patterns in the period under study. It appears that bean fly populations are low at the time of heavy rainfall and builds up after the rainy period.

Identifications.

The Bean fly specimens sent were found to be very similar to Ophiomyia phaseoli , but had a strongly projecting frons, probably because they were teneral. The C.I.E. requested older adults for a positive identification.

The following species of suspected parasitoids were identified
Teleopterus sp. (Eulophidae)
Plutarchia indefensa (Walk) (Eurytomidae)
Halticoptera propinqua (Wat) } (Pteromelidae)
Sphegigaster brunneicornis (Ferr) }

2) Study of Cabbage Caterpillars

Studies of Cabbage Caterpillar populations was conducted in plots which were isolated and untreated with insecticides and treated and untreated plots adjacent to each other. In all cases no

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parasitoids were obtained. The dominant species of caterpillar in all the plots was firstly Prodenia litura and then Crocidolomia binotalis. The species Plutella xylostella, Hellula undalis and Plusia eriosoma were of minor importance.

A chi squared analysis of the different populations was made.

Results - Plutella xylostella populations were significantly higher in untreated plots adjacant to treated areas in comparison to treated and untreated isolated plots.

Prodenia and Crocidolomia populations were significantly higher in untreated isolated plots in comparison to treated and untreated adjacent plots.

Visit of foreign consultant Dr.M.J.Chacko.

Dr.M.J.Chacko of the Commonwealth Institute of Biological Control Station at Bangalore visited Sri Lanka to advice on the organization of the project.

As the project was mainly concerned with the introduction of exotic parasitoids for the control of pests, the most important need was identified as an insectary and quarantine facilities for such introductions. The consultant provided, details for the modification of existing structures into these facilities. Work on this is in progress.

Dr. Chacko also outlined the directions along which work should proceed. For the control of cabbage caterpillars, he suggested that the introduction of a virus would be suitable. He agreed that the introduction of Opius phaseoli and O. importatus would be suitable for the control of the bean fly. For the control of the Brinjal borer Leucinodes orbonalis and the cucurbit fruit fly Dacus cucurbitae, it was decided to get special advice from the C.I.B.C. in the U.K.

In field surveys conducted in the Marassana vegetable growing area a very high degree of control of the diamond backed moth Plutella xylostella by the parasitoid Apanteles plutellae (Kar) (identified by the C.I.E.) was observed.

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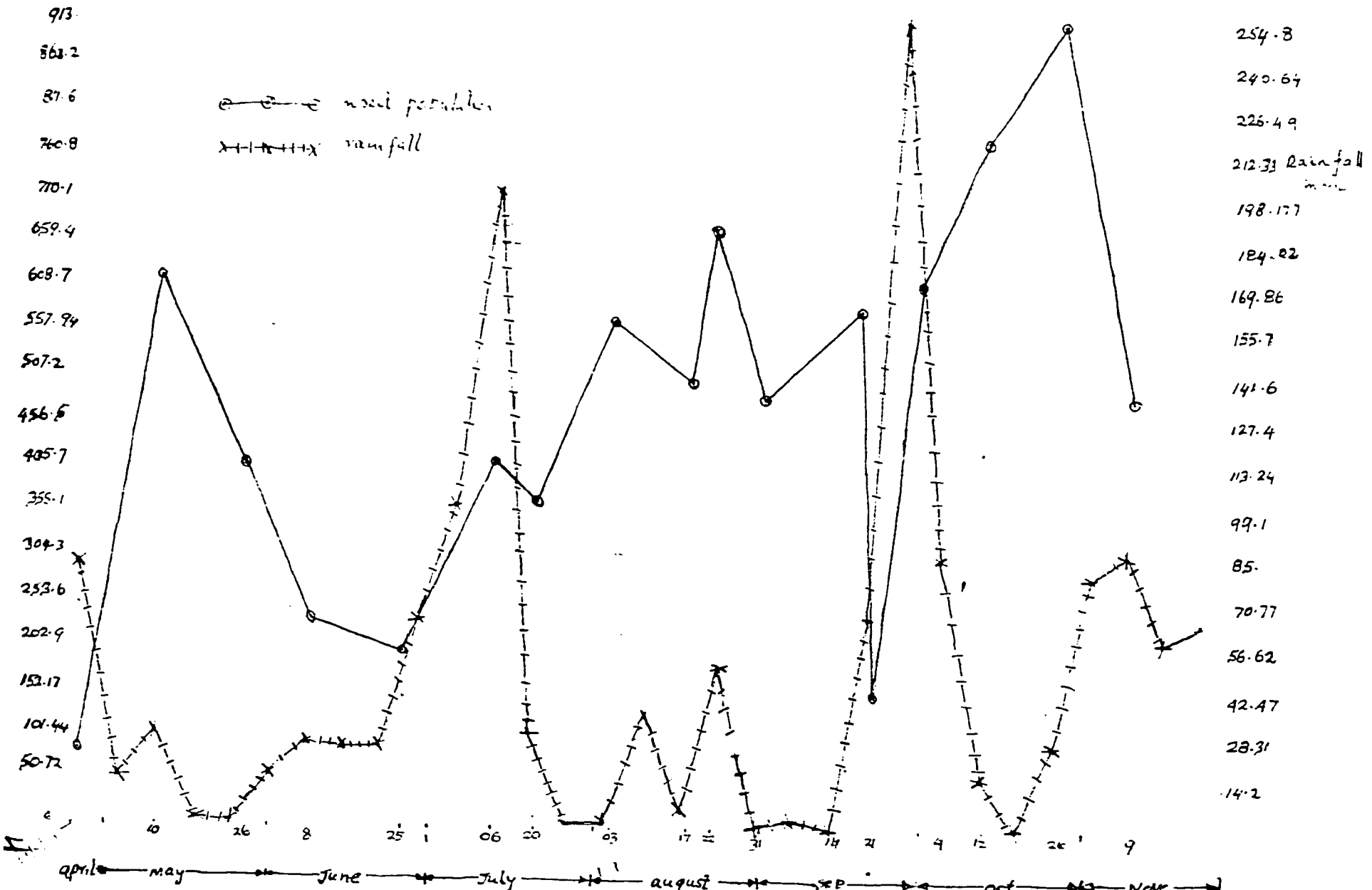
Dr.M.J.Chacko has submitted a detailed report of his visit during the period August 23 - Sept. 28, 1984.

Contact was also established with Dr. George Y. Funasaki Chief, Biocontrol Section of the Hawaiian Dept. of Agriculture. He said he would be able to supply both species of Opius for bean fly control and provided technical literature on breeding etc. Contact was also made with the authorities at Riverside and Berkeley for the proposed training envisaged in the project.

In a survey of available literature, it was also found that Opius phaseoli is available in North India. (Singh 1982) We have also received information from the C.I.B.C. that they are willing to undertake work on virus introduction for cabbage pests.

Literature cited

Singhe, Santokh (1982) Ecology of the Agromyzidae (Diptera) Associated with Leguminous Crops in India Memoirs of the School of Entomology No-8 Agra.


913
862.2
87.6
760.8
770.1
659.4
608.7
557.94
507.2
456.6
405.7
355.1
304.3
253.6
202.9
152.17
101.44
50.72
254.8
240.64
226.49
212.33 Rainfall in mm
198.177
184.02
169.86
155.7
141.6
127.4
113.24
99.1
85.
70.77
56.62
42.47
28.31
14.2
10
26
8
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