PN-AAE-912
ISN 72

Central Agricultural Research
Institute,
P.O. Box 11,
Peradeniya.

3. A-51

20th October, 1987.

Director General,
NARESA,
47/5, Maitland Place,
Colombo - 07.

Dear Sir,

Research Grant No. RG/AID/03
Progress Report for January
to June, 1987.

Reference above I am submitting herewith the report for first half of 1987.

Regret very much for the delay.

Thank you.

Yours sincerely,

(Dr.M.H.J.P.Fernando)
Guarantee,
RG/AID/03.

Copy to: Mr. Oswin Silva,
US AID.

Rec'd in SC NOV 27 1987

Progress Report of Work done for the Period January to July 1987 Under the US AID Grant RG/AID/03.

1. Studies done on beanfly

(a) As discussed in the previous reports the culture of beanfly was maintained in the plant house successfully. It was possible to do so independant of field collection of insects.

(b) Then the emphasis was taken to build up this population in number to get enough host population for future experiments which will depend on maintaining parasitoids cultures. For this, the collection of beanflies were done in following ways.

I. Collection of beanfly infested plant material from different localities of bean growing areas in the country and rared them in the laboratory for emergence of beanflies. These flies were released on to the culture.

II. Legumes were grown at CARI fields, and they were allowed to infest naturally. The infested plants were kept in the laboratory for the flies to emerge. These were used to build up the culture.

III. Bean plants were exposed to beanflies collected directly from the field. The insects emerged were used to build up the culture.

Above methods are still being continued. Hopping to get enough host population by April 1988, as it has been decided to import parasitoids of beanfly after this period.

(c) Mean while the duration of each life stages of beanfly was studied, at the same environmental condition given to the culture. This will be important when infesting them with parasitoids.

Method

The bean seedlings at two leaves stage were infested by keeping them in the culture for a period of one day. Then they were removed from it and daily observations were made. The silver colour leaf mines indicated the movement of larval and the starting of the leaf mines gave an indication of hatching of eggs. The first appearance of leaf mines were noted. Then the time of pupation was observed by looking through soft stems and by disecting some stems. Finally the day of adult emergence was noted. This has been done for 3 setsof plants each consisted of 8 bean seedlings.

Results

The egg period of this insect varied from 3 - 6 days. Larval period varied from 4 - 7 days and pupal period varied from 10 - 13 days. In this experiment adult longivity was not observed.

2. Brinjal pod borer Leucinodes orbonalis and the tomato fruit borer Heliothis armigera.

A survey was carried out to find available parasitoids in different localities of brinjal and tomato growing areas in the country for the above 2 pests.

The areas surveyed are Gannoruwa, Matale, Dambulla, Bandarawela, Marassana, Hangurankethe area. The infested material of 2 crops were collected and kept in cages and glass jars until the pest or parasitoid emerged.

Results

Five species of parasitoids from L.orbonalis already been bred out. Three of them were predominant and the samples were sent for identification.

This will be continued for a period of one year. This survey was suggested by CIBC because they don't have enough information regarding bio control of this insect pest.

No parasitoids were bred from H. armigera.

3. Fruit fly Dacus cucurbitae

The above study mentioned for brinjal pod borer also was carried out for this pest . It was observed that the parasitoids of this pest is very rare in farmers fields, only one specimen of a parasite species was obtained. However two parasite species were bred from unsprayed field of snake guard maintained at Gannoruwa for this purpose. During January, February and again June, July period one of this species was found in abundant. The other psecies was found occationally. Though these samples have been sent for identification earlier, no reply has been received yet.

4. (DBM) Diamond back moth *Plutella xylostella*

(a) To find out the available parasitoids of DBM in different localities of cabbage growing areas and determination of percentage parasitism.

Diamond back moth infested samples were collected from differant areas and they were counted and provided with enough clean food material. Daily counts were made for emergence of parasitoids. Finally the percentage parasitism was calculated.

Results

Date	Area	Parasitoids	% Parasitism
04.06.87	Nuwara Eliya	*Apanteles plutellae*,	33
		Ichneumonids.	5
17.06.87	Nuwara Eliya	*Apanteles plutellae*,	2.63
		Ichneumonids	0.33
25.06.87	Bindunuwewa (Bandarawela)	*Apanteles plutellae*	23.34
		Tetrastichus sp.	2.1
07.07.87	Padiyapelella	*Apanteles plutellae*	20.88
		Ichneumonids	4.4
		Tetrastichus sp	5.5
08.07.87	Nuwara Eliya	*Apanteles plutellae*	13.0
		Ichneumonids	3.23
		Tetrastichus sp.	3.2

Date	Area	Parasitoids	% Parasitism
21.07.87	Kolabissa	Apanteles plutellae	22
		Tetrastichus sp.	0.8
23.07.87	Welimada	Apanteles plutellae	23.2
		Tetrastichus sp.	2.2

Two species of hyper parasites of A. plutellae are also found. This will be continued for a period of one year.

(b) Laboratory culture of Plutella Xylostella

Attempts were made to culture this insect in the laboratory. This is needed for the supplement of P.xylostella eggs for future egg parasite breeding work.

The method now in use is same as for the beanfly culture (feeding with honey and water) and the host plant was cabbage.

This will be tested for a few months and if this methods fails to build up the culture and other suitable method of breeding this insect will be developed.

Emphasis will be taken to breed Tricogramma sp. and to find the potential of this parasite to control P. xylostella with the help of Bacillus thuringiensis also.

On the instructions of Dr.M.J.Chako, the consultant for this project, the samples of beanfly were sent to C.I.E. obtaining the exact identity of this pest. This is for obtaining the specific parasitoids (Opius importatus) from Hawaii, which is reported to have successfully controlled the beanfly (Ophiomya phaseoli) in that country.

Once the identity is received orders will be placed for the import of this parasitoid and in the meantime the cultures of the beanfly will be maintained for infestation and field release.

M.H.J.P FERNANDO
GUARANTEE
RG/AID/03.