PD-AAW-704

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

DATE: 10/13/87

MEMORANDUM

TO: AID/PPC/CDIE/DI, room 209 SA-18

FROM: AID/SCI, Victoria Ose

SUBJECT: Transmittal of AID/SCI Progress Report(s)

Attached for permanent retention/proper disposition is the following:

AID/SCI Progress Report No. 4 417

Semi-annual #3 rec'd 10/7/87

Attachment

2 cys

4. 417

SEMI-ANNUAL REPORT No.3

Project Title: The Development of Biological Control Strategies for *Anopheles* Mosquitoes Breeding in Rice Fields in Liberia.

Principal Investigator: Dr. Milan Trpis, Professor.
Department of Immunology and Infectious Diseases, School of Hygiene and Public Health, The Johns Hopkins University.

Project No.: PDCO-5542-G-SS-5053-00.

Project Duration: 1 November 1985 - 31 October 1987.

Reporting Period: 1 November 1986 - 30 April 1987.

I. GENERAL:

A. Staff:

Dr. Milan Trpis, P.I.

Fatorma Bolay - Doctoral Student

Momo Boakai - Field/Laboratory Assistant

Fofi Sanoh - Field/Laboratory Assistant

Rosevelt Smith - Driver / Field Assistant

B. Objectives for the reporting period:

1) To assess the potential efficacy of *Bti* against mosquito larvae in different phases of rice growth;

2) To determine the effect of *Tilapia nilotica* fish on control of mosquito larvae on rice field in Suakoko, Liberia;

Rec'd in C... OCT 7 1987

cy sent to Margaret: FY.

On 18 November 1986 six of 12 plots of the experimental rice field at Suakoko were stocked with Tilapia nilotica fish at density of 1 fingerling per 1 m^2. On the first three plots fish alone was used as a biological control agent. On the second 3 plots a combination of fish and Bti was used. On the third three plots Bti was used alone, and the last three plots were not treated (control plots).

Mosquito larvae were sampled before plots were stocked with fish and sampling continued on weekly basis during the treatment period to determine changes in their density. Bti application was done also on weekly intervals until harvest on 3 February 1987. At the time of harvest T. nilotica counted from all stocked plots to determine their mortality.

Changes in population density of An. gambiae was completed and is given in graph 1. Full analysis of the population dynamics of all species of mosquito larvae was not completed at the time of writing this report.

Conclusions from the first control trial:

Bti used alone has a profound effect on population of An. gambiae. Twenty four hrs after the treatment the total larval population dropped on the 3 plots from 14,00 to 6,000, than increased to 9,00 and after the next treatment it dropped to zero, and remained at the zero or close to zero level until the

end of the cultivation period. In plots where fish was used alone Anopheles population decreased from 30,00 to 7,500, to 3,00 to 1,000 and reached 0 after 56 days. In the plots treated with Bti larval population gradually increased until the next treatment but did not reach the previous density level. After the treatment it dropped to almost zero and stayed at that level until the end of the rice cultivation period. In the plots where fish was used in combination with Bti larval population gradually decreased from 12,000 to 5,000, then increased to 5,900 and subsequently dropped to zero at day 49.

It is interesting to note that after about 50 days of rice growth population of An. gambiae decreases to very low levels due to rice height and density. At that time An. gambiae females avoid rice fields and lay their eggs into more open habitats. Therefore control of breeding of An. gambiae on rice fields can be limited to maximum 2 months. After 2 months of rice growth An. gambia avoids rice fields as breading habitats.