9311038-(2)
PD-AAA6-227-B1

and 9311038 00 1501
9311038 00 1701
(see [illegible])

CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Physiology and Ecology of Ticks	931-1038	DS/AGR/L

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 80-35 3/18/80

☐ REGULAR EVALUATION ☒ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 78	B. Final Obligation Expected FY 81	C. Final Input Delivery FY 81	A. Total $ $366,000 B. U.S. $	From (month/yr.) 9-29-78 To (month/yr.) 9-29-79 Date of Evaluation Review Jan. 14 Thru 17, 1980

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
The review team documented that significant progress had been made on the physiology and ecology of ticks. The work plan and budget proposed for the project's second year appear sound. Based on these findings, the review team recommended approval and funding for a third year of project activities.	Dr. John W. Walker, Project Manager	Sept. 30, 1980

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☒ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☒ Other (Specify) PAF
- ☐ Other (Specify)

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☒ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Dr. John W. Walker JWW
DS/AGR/L, Proj. Manager

Mary Mozynski MCM 3/7/80
DS/AGR/D

K. Byergo
Deputy Director (Acting), DS/AGR

12. Mission/AID/W Office Director Approval

Signature

Typed Name Tony Babb

Date 3-18-80

AID 1330-15 (3-78)

PROJECT EVALUATION SUMMARY (PES)
PART II

#13 - Summary

The stated objective of this research project is to investigate the ecology and physiology of cattle ticks with the goal of developing environmentally sound and economically feasible control technologies for ticks and tick borne diseases. The review team determined that the project was being implemented in a manner consistent with the stated objective and also with recognized scientific research methodology. The review team documented that significant progress had been made and that the work plan and budget proposed for year two (FY80) were sound and should contribute to further accomplishments. Based on these findings, project funding for a third year (FY81) was recommended.

#14 - Evaluation Methodology

At the time of the project's approval, the Research Advisory Committee (RAC) stipulated that an evaluation be performed by a review team on or about the first anniversary of the commencing of project work. The team's in-depth evaluation of the project's first year and the proposed work plan and budget would serve as a basis for a set of recommendations determining whether the project should be terminated at the end of two years or funded for a third.

The evaluation consisted of a presentation of project progress data by scientists from the International Center for Insect Physiology and Ecology (ICIPE) to an external review team consisting of three recognized livestock scientists. The AID project manager (a veterinarian) and two Agency agriculturalists (a veterinarian and an agricultural economist) were in attendance at all evaluation sessions. All questions raised with respect to experimental design, implementation, and progress were answered by ICIPE staff to the satisfaction of the review team members. A list of the review presented here:

RAC Review Team;

Dr. David Pimentel
Professor of Entomology
Cornell University

Dr. John George
Tick Physiologist and Ecologist
USDA

Dr. J.J. Doyle
Parasitologist
Int'l Laboratory for Research on
Animal Diseases

AID Participants;
Dr. John W. Walker, DVM
Project Manager, DS/AGR/L

T.J. O'Hare
Agricultural Economist,
DS/AGR/L

Dr. Douglas Butchart, DVM
Veterinary Advisor, AFR-DR-ARD

ICIPE Staff:
Dr. A.S. Tahori
Deputy Director of Research

Dr. M. Cunningham
Programme Leader

Dr. Robin Newsom
Ecology

Dr. Fred Oberchain
Physiology

Dr. Mary Binta
Tick Resistance

Dr. S. Wallade
Sensory Physiology

Dr. C. Mango
Tick Physiology

Dr. J. Chiera
Ecology and Zoology

Dr. D. Dunyua
Ecology

Mr. A. Mongi
Immunology-Tick Resistance

Others;
Dr. A. Allison
Director ILRAD

Dr. K. Cowan
USDA

Dr. T. Dolan
Kenya Agriculture
Research Institute

#15-External Factors

As indicated in the project paper and other documents, cattle ticks and tick borne diseases, like East Coast Fever, are a major constraint to the development of a strong livestock sub-sector in the East African region. Milk and meat production is adversely affected by the mortality and morbidity that accompany tick borne diseases. Beef and dairy farmers are denied potential income and consumers do not have the opportunity to purchase the relatively inexpensive meat and dairy products that would otherwise be supplied by a healthy and stable livestock sub-sector. Agriculture's potential contribution to the national income goes unrealized when export opportunities are foregone as a result of losses incurred by tick infestations. Tick infestations not only prevent the full development of indigineous cattle populations; they also prevent the successful importation of exotic breeds, which have comparative advantages in production potentials, but lack the essential tick

immunities. Much of the overgrazing and pasture degradation that is prevalent in many parts of east Africa can be attributed to the fact that in much of the region the movement of cattle into new grazing areas is excluded because of widespread tick infestation. While the economic losses associated with tick borne diseases are high, their social costs also have important impacts on east African societies. In fact, cattle represent personal wealth and prosperity and as such are very important to the east African family and marriage system. It was in this problem setting that the Tick Physiology and Ecology Project was designed and is being implemented.

#16-Inputs

The Physiology and Ecology of Ticks Project commenced as scheduled in PIO/T No. 931-1038.11 and work under the project continues in an expeditious manner. As a research effort, the project's principal inputs are the technical services of ICIPE's scientific staff; which, as indicated in the review, has been supplied in a timely, professional, and concientious way. During the initial year of implementation project demands placed a financial burden on ICIPE's operation. That situation was relieved in late December, 1979 when the Center received a $122,000 reimbursement for project incurred costs from A.I.D. The review team suggested that ICIPE submit reimbursement requests on quarterly basis so as to avoid project related cash flow problems in the future.

#17-Outputs

As stated in the Research Project Statement, the project's outputs will be a set of graduated experiments investigating the physiology and ecology of East African ticks. These experiments will provide a scientific foundation for tick control methodologies resulting from induced tick resistance in cattle.

ICIPE experiments on cattle ticks address three areas of scientific concern; ecology, physiology, and immunology. The physiology and ecology components are supported with Project 931-1038 funds. Support for the immunology studies is the responsibility of ICIPE.

During the first year of the project, ICIPE researchers investigated cattle tick population fluctuations which led to the initial conclusion that infestation was a function of paddock size. Research into tick persistence in infested pastures and tick survival on previously exposed cattle was initiated under the ecology compenent. In the former study reduction in tick populations was attributed to the development of resistance on the part of exposed cattle. The latter study suggested a type of "acquired resistance" to tick attack develops in cattle after intense feeding exposure. The survival of ticks in pastures without cattle is under investigation. Here tick activity is being measured as a function of temperature, soil moisture, and relative humidity. Laboratory studies of tick feeding are in progress to investigate the effect of sequential feeding of larvae, nymphal, and adult ticks on tick exposed cattle under

controlled conditions.

The project's physiology component has concentrated its activities on: the evaluation of certain insect hormones and antihormones as tick control agents; identification of tick endocrine secretions and the analysis of their contribution to growth, development, and reproduction; and the study of their influence on clustering and mating behavior.

The Center's immunological studies have shown that mammalian antibodies ingested in the blood meal of ticks pass unchanged through the gut wall of the tick into its haemo-lymph. If antibodies produced in mammalian hosts against tick antigens are ingested by feeding ticks, it is possible that an antigen/antibody reaction may occur which would produce a negative effect in the ticks. Also during the project's first year the immunology unit developed an experimental skin test to indentify and measure host cattle resistance to tick infestation. Work continues on the evaluation and refinement of this test.

#18-Purpose

The approved project purpose is to research the potential use of hormones and pheromones as tick control agents. In keeping with this purpose, the above mentioned physiology, ecology, and immunology studies are being performed in a coordinated way to produce an immune response in cattle which could reduce the numbers of feeding ticks and arrest the development of those that reach the feeding stage. The outputs described in #17 above are consistent with the approved project purpose and while the review team was able to document significant progress toward the achievement of the approved purpose, it is much too early to predict a date when purpose would be achieved.

#19-Goal-Subgoal

As stated in the log frame that accompanied the Research Project Statement for the Physiology and Ecology of Ticks Project, the approved goal is "to develop improved methods of control of ticks". With a project goal varying only slightly from the approved project purpose, it is fair to conclude that those comments made relevant to the achievement of project purpose would also be appropriate to the project's goal.

#20-Beneficiaries

The project's direct and immediate beneficiaries are the ICIPE scientists who have received support for their scientific endeavors through project funding. In a similar way, the project is contributing to ICIPE's institution building process through its support of two of the Center's principal research components, tick physiology and ecology. Regardless of the end of project status, the project has and will provide the Center and its scientists an

opportunity to expand their scientific expertise, research an important animal science problem, and enhance the body of scientific knowledge relative to it.

As the Center develops effective and economical biological tick control methodologies, LDC farmers, especially those of East Africa, will be the beneficiaries of a stream of benefits generated by the utilization of the project's outputs. The appropriate application of project generated tick control methodologies will result in increased beef and milk production as tick borne cattle diseases are reduced to more tolerable levels. Among other benefits, farmers, both large and small, will not be so dependent on expensive and labor intensive acaricides dips. Not only will there be an expected increase in farmer incomes as livestock production increases, but consumers will also benefit from increased supplies and stable prices.

#21-Unplanned Effects

At the time of the evaluation the project had not encountered any unanticipated social, health, environmental, technical, or economic constraints that would necessitate any modification in the project's design or implementation plan.

#22-Lessons Learned

There are several aspects of the implemented Tick Ecology and Physiology project that taken as a whole would serve as a model for other projects researching development constraints. The Center's highly competent staff of scientists were successful in the development of an appropriate experimental design for the project. Following that, a work plan was drawn up and all indications are that every reasonable effort has been made to adhere to it. Most impressive of all has been the ability of project management to enter into collaborative and complementary interactions with scientists from other institutions like the International Laboratory for Research on Animal Diseases and the Kenyan Agricultural Research Institute. This cooperation has manifested itself in the sharing of equipment, knowledge, and facilities and to a very large degree has been responsible for the progress made under this project.

#23-Special Comments

As was indicated above, ICIPE has made a definite commitment to the research and development of an immunological tick control methodology. The immunological approaches are not a project component as funded by the Agency. In the near future, however, ICIPE will submit to the Livestock Division of the Development Support Bureau a proposal to expand the immunological studies now on going at the Center. The review team recommended that the

proposal be given consideration.

Attachments:	Pages
RAC Review Team Report with Project Budget and Funding	17