

9365542

PD-ABA-240

LIMITED SCOPE GRANT PROJECT AGREEMENT

between the United States of America, acting through the Agency for International Development (AID)

64201

AND

John Woollard
Samuel Yeboah

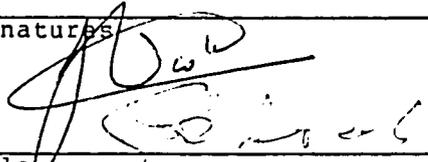
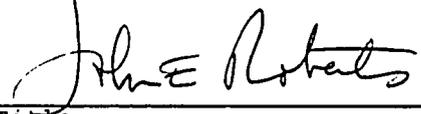
| | |
|--------------------------|------------------------|
| 1. Project Title | 2. AID Project Number: |
| NATURAL ANTI-FEEDANTS | 936-5542.09 |
| AGAINST THE CORN CRICKET | Proposal ID No.: 8.388 |
| HEMERODES PUPUS L. | |

The above-named parties hereby mutually agree to carry out the Project described in this Agreement in accordance with (1) the terms of this Agreement, including any annexes attached hereto, and (2) any general agreement between the two governments regarding economic or technical cooperation.

| | | |
|------------------------|--|---------------------------------------|
| 3. Amount of AID Grant | 4. Grantee Contribution to the Project | 5. Project Assistance Completion Date |
| <u>\$74,175</u> | <u>\$25,000 equivalent</u> | <u>6/30/92</u> |

6. This Agreement consists of this title page and the Basic Project Description; Estimated Budget (Annex 1); Payment Provisions (Annex 2); Project Procedures (Annex 3); Standard Provisions (Annex 4).

| | |
|--------------------------------|---|
| 7. For the Grantee | 8. For the Agency for International Development |
| Typed Name | Typed Name |
| SAMUEL YEBOAH JOHN WOOLLARD | JOHN ROBERTS |

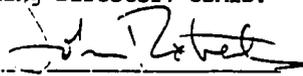
| | |
|---|--|
| Signatures | Signature |
|  |  |
| Title | Title |
| Principal Investigators | Acting Director |

| | |
|-----------|-------------|
| Date | Date |
| 5 June 89 | 5 June 1989 |

Appropriation: 72-1191021.6
BPC:DDSA-89-29633-KG11
(Allowance: 946-51-633-00-19-91)

Certified to be a true copy of the original signed 6/5/89 by Samuel Yeboah, John Wollard and John Roberts, Acting Director. USAID.

CONFORMED
COPY


John Roberts
Acting Director, USAID

TITLE PAGE

(revised May 1989)

Proposal for funding under USAID "Programme in Science and Technology
Co-operation"

Title: "Natural Anti-feedants against the Corn Cricket
Hetrodes pupus L."

Organisation: Department of Chemistry, University of Botswana.

Proposal ID No: 8.388

Investigators: Dr. J.McK.R. Woollard
Department of Chemistry
University of Botswana
P/Bag 0022, GABORONE, Botswana
Tel: 351151 Ext. 2132

Dr S.O. Yeboah
Department of Chemistry
University of Botswana
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Tel: 351151 Ext. 2135

Institutional Official . Prof. T. Tlou
Vice Chancellor
University of Botswana
P/Bag 0022, GABORONE, Botswana

Start date: July 1989

Duration: Two Years

Funds Requested: \$74 175

2. Aim and Objectives

The Corn-cricket, or Armoured Ground Cricket, Hetrodes pudus L. is a widespread pest of crops in Southern Africa, and can devastate the harvest in areas where food supplies are anyway limited owing to drought and poor soils. The aim of this project is to develop a preparation based on Rhus species that can be used as a simple and cheap anti-feedant by local farmers to protect their crops from the corn cricket, and to isolate and identify the chemical constituent(s) responsible for the unpalatability of Rhus.

3. Relevance

Less Developed countries (LDC's) in Africa typically have food deficits, and for many, population growth and urban migration have combined to worsen the per caput food supply over the past twenty or thirty years, since such countries gained independence. Furthermore, LDC's suffer substantial losses of food supply through the effect of pests, a proportion sometimes put in excess of 25%. Thus control of pest damage offers an important way of increasing the amount of food available locally, so saving vital and scarce foreign exchange.

Thus in Botswana, both the population growth in the country, and the growth of the capital city, Gaborone, are among the highest in the world. The climate is semi-arid, and the soils are poor. Agriculture is carried out by farmers who have little education and few resources, and generally use oxen or donkeys for draught-power. In years of good rain, in the 1970's, it used to be said that they could provide just about enough cereal crops for feeding the country allowing for major losses by pests. Since then there has been a drain of labour from the rural areas to towns, the total population has grown fiercely, and farmers have had to face the frustrations of several successive years of drought. If Botswana is ever again to come even close to feeding itself, it is essential to reduce loss of grain in the fields to a minimum.

Although chemical pesticides are an obvious way of controlling pests, (thus carbaryl can be used against Hetrodes) they are not really suitable in LDC's like Botswana where agriculture is performed by subsistence farmers who are too poor to afford them and who lack the experience and education to use them properly. To these objections can be added the fact that pesticides have to be imported, so draining foreign exchange, and that they have to be distributed, requiring an efficient and effective supply network, which is often lacking.

A locally available, low cost, trouble-free method of pest control is thus very attractive. Rhus species appear to be unpalatable to corn-cricket, and four species are common and widely distributed in Botswana and neighbouring states in Southern Africa. If an effective method can be established for using one or more of these as an anti-feedant for Hetrodes, then we shall have a virtually cost-free way of eliminating one drain on the food supply, and it would be accessible to even the poorest farmer. Because the plants occur in other countries, the results could easily be applied there also.

4. Novelty

Effort at controlling crop pests in Botswana has been limited more-or-less to the red-billed quelea bird (Quelea quelea) and the migratory locust. Virtually nothing has been done on the problem of Hetrodes, beyond recommending control by carbaryl or picking off by hand!, neither of which are satisfactory in practice. The use of an anti-feedant, that could be prepared by the farmer himself from locally available plants has never been attempted in Botswana, and offers a most attractive prospect of increasing food supplies at negligible cost.

5. Background

The Corn Cricket (Setswana name "Setotojane") is in the genus Hetrodes (sub-family: Hetrodinae; family: Tettigoniidae; order: Orthoptera) and is a relative of the locusts. Four species have been described (1,2) but the differences are slight, and only H. pupus is referred to in subsequent literature, perhaps on the assumption that the differences are too slight to support speciation. The insect breeds prolifically in Southern Africa during the warm season (November-April) and reaches near epidemic proportion in some years. They have voracious appetites particularly favouring younger parts of plants, consuming tender growing twigs, flowering parts, and fruits, and their depredations can be devastating such that whole fields are destroyed by the insect (3). For example in 1971 in Makalamabedi, Botswana, "every sorghum head was bare and every maize cob eaten" (4). Other crops they eat include legumes such as cow-peas, and vegetables. Unlike grass-hoppers and crickets, they do not move fast or fly, so can in principle be controlled by picking off by hand but this is never undertaken in practice. When one considers the labour involved in daily attempting this over several acres under a blazing sun, in fields sown broadcast rather than in neat rows, one is not surprised. Moreover local peoples traditionally believe that if one kills or kicks the crickets, one will die (4) or fall ill (5). Control is possible using 5% Carbaryl dust (6), but this is expensive for subsistence farmers, and potentially very dangerous to the farmer if not applied correctly, so use of this is limited to commercial farmers and gardeners.

Although corn-crickets feed widely, it has been observed that they do not consume any part of Rhus plants, which have a distinctive aromatic smell. It thus seems very likely that the leaves and young stems contain compounds that render them unpalatable, that is, have anti-feedant properties. Since members of the genus Rhus are common and widespread in Southern Africa (7), this presents the possibility of developing a simple decoction or preparation from available Rhus species for application on growing crops as a protection against corn-crickets.

Four species of Rhus are particularly promising, having wide distributions, across several countries in Southern Africa, such that at least one is likely to be common in the wild bush near a field. These are Rhus lancea, R. leptodictya, R. pyroides, and R. tenuinervis. Rather little has been published on these trees. Their leaves are browsed by stock and game (8) the roots used infrequently in traditional medicine (9), and their wood used for furniture (10). No chemical data

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has been published on R. pyroides or R. tenuinervis, one paper has been published bi-flavonoids from the heartwood of R. leptodictya (11), and several such papers on R. lancea (12). Nothing has been reported on their biological activity.

There is thus an excellent opportunity of acquiring results that will be of great importance economically and of interest chemically.

References

1. Péringuey L., Ann. S. Afr. Mus., 1916, 15, 429.
2. Uvarov S., Ann. S. Afr. Mus., 1928, 25, 351.
3. Smit B., "Insects in Southern Africa", OUP, 1964.
4. Anon., Agric. News (Gaborone, Botswana), 10 May 1971, 12.
5. Personal information from Mrs Seduledi, near Thamaga, January 1987.
6. Roome R.E., "Crop Protection in Botswana 1969-71" p80. Publ. Min. of Agric. Div. of Agric. Research, Gaborone.
7. Palgrave K.C. "Trees of Southern Africa", Struik, Cape Town, 1977.
8. Fox F.W. and Young M.E.N. "Food from the Veld", Delta, Cape Town, 1983.
9. Gelfand M. et al., "The Traditional Medical Practitioner in Zimbabwe", Mambo Press, Harare, 1985.
10. Anon "Karee, Tree of the year 1983", Pamphlet 304, Directorate of Forestry, Pretoria 1983.
11. Roux D.G. et al., JCS Perkin I, 1983, 2555.
12. a) Roux D.G. et al., J. Chem. Soc. (D), 1971, 1257;
b) Young D.A., Amer. J. Bot., 1979, 66, 502;
c) Nair A.G.R. et al., Phytochem., 1983, 22, 318.

6. Work Plan

The insects in question only occur during the warm months, so a start date of November 1987-January 1988 would be ideal. Given the lag-time indicated in the PSTC information sheets, it would appear that the best we can hope for is November 1988.

Phase I: Collection of plant material: production of simple aqueous-extracts, and palatability trials in the laboratory. For example, leaf discs of known weight would be doused with fixed small volumes of acetone solutions of the various Rhus extracts, at varying concentrations, and when dry offered to corn crickets. The anti-feedant effect would be monitored both on a competitive basis with a choice of treated and untreated leaves, and on an absolute basis, to establish the concentration needed to utterly prevent feeding and whether all four Rhus species are equally effective. Partially eaten leaves would be weighed to gauge degree of unpalatability. The experiments would be done on batches of 30 or more individual insects, to cover individual variation, and on batches of insects selected for sex and age, to determine if these factors have any influence. These experiments are most amenable to quantification and statistical analysis. Similar experiments will be done using the aqueous extract, and ground dried plant material to emulate the more likely situation in the field. Ensuring an even application of material will be more difficult, and one would expect a greater experimental scatter in these results. Time: 4-5 Months.

Phase II: Once an approximate idea is gained of the concentration needed for effective anti-feedant activity in the laboratory, field trials can be started using small experimental stands, in areas with abundant corn-crickets. It should be possible to find these within a 80 mile radius of Gaborone, and hopefully a lot closer. No problem is foreseen in getting the co-operation of local farmers at this stage, since it neither costs them anything nor commits them to anything. A variety of methods of application can be tested, such as dusting the growing crops with ground dried plant, sprinkling them with the aqueous extracts, or even drenching the surrounding ground with the aqueous extract, again at varying concentration. The effect of rain and repeated application under field conditions will also be monitored. Time for this will be limited to the rest of the growing season. It is likely that a second season would be necessary to evaluate the methods on a wider scale, under different local conditions, and establish which Rhus species is/are best under practical situations.
Time: 3-4 months in 1988/89 and in 1989/90

Phase III: This will be started with Phase II but will be able to continue throughout the winter months, and consists of the chemical isolation and purification of the active principle(s). Here conventional methods on the whole will be used, including solvent extraction, liquid chromatography using a variety of stationary phases, and possibly HPLC. Monitoring of the progress of isolation will be done using insects as in Phase I to identify the fractions with greatest anti-feedant activity. Once a pure compound is isolated, it will be characterised, and, if new, its structure deduced. This will involve use primarily of spectroscopic methods, such as i.r., u.v., MS, and especially PMR and CMR. Ultimately X-ray work may also be necessary. The project period should be sufficient to cover at least a substantial part of the work encompassed by the four chosen species but exact rate of progress will depend on the difficulty of the separation, the natural concentration of the active components, and their structural complexity, so it could be quicker.

Phase IV: Assuming a successful outcome to the phases I and II, the logical next step would be to introduce the method to farmers on a wider scale. This would be done through the extension and education work of the Ministry of Agriculture, and other bodies such as the non-profit-making Non-Governmental Organisation "Thusano Lefatsheng". No funds are being sought for this stage.

7. Staff and Resources

- a) Curriculum vitae and publication lists: enclosed
- b) Departmental Resources

The Chemistry Department possesses 2 x ir, 2 x uv, HPLC, 60 MHz C-W PMR, a variety of pumps, columns, detectors and fraction collector for liquid chromatography, and a reasonable range of chemicals, reagents, standard glassware, and apparatus, such as rotary evaporators, heating mantles, and vacuum pumps. These would all be available for use in the project.

The University has a fine undergraduate library and although the range of scientific journals taken is small the Inter-library Loans service is fairly good. The Faculty has good Secretarial Staff and reprographic services. It should also be added that a major building programme is being planned to give larger new laboratories for all the sciences, with a projected occupation date of October 1990. An Agriculture Faculty will start functioning in 1987/88.

9. Collaboration

No major collaboration is envisaged with other institutions. However, it can be noted that the University of Botswana does not possess CMR, MS, or X-ray crystallographic facilities. It is proposed to use either commercial laboratories in, for example, the UK or RSA for these services, or informal personal links with other scientists in, for example, Addis Ababa, or Australia, where we have had offers of help for such spectra.

9. Social Concerns

The question could be raised of what effect the successful outcome of the project might have on the environment. Specifically, would demand for these species as anti-feedants lead to their eradication? To a certain extent this will depend on the concentration of extract needed, and on the density of the Rhus trees in a specific location. However, three factors seem to suggest the danger initially is not great. In the first place it is proposed to use only the leaves and young twigs so the bulk of the tree should remain unharmed, and the effect will be more like a trimming or pruning encouraging re-growth. Secondly, the plants do grow rather quickly, so they can recover from such trimming: For example, the stems of R. lancea can grow three or more feet a year. Thirdly, the trees are rather common, and one or more species can be found in almost any habitat. Nevertheless, at the field trial phase, projected usage will be calculated, and the effect on the local bush assessed. Ideally, the useage should not impose any stress on the environment. Further monitoring over subsequent years would be necessary to confirm or modify these projections.

A second question to be asked is whether the users, the subsistence farmers, could be endangered in any way. The possibility could arise that the extract or powdered plant has allergenic properties, especially given that they are related to the "poison ivy" R. toxicodendron and to R. vernicifera for which some allergenic activity has been reported. However, these Rhus species have a long history of being used for furniture-making, fencing, etc without any reports of ill effects, thus this fear would seem fairly unimportant. Notwithstanding this, care will be taken to look out for any rashes or other ill-effects

August 1987

John Woollard

Schedule (2)

CASH ADVANCE ANALYSIS

FOR THE PERIOD _____ THROUGH _____

| | |
|--|-------|
| A. Advances Received from USAID | _____ |
| Prior to this Period | _____ |
| During this Period | _____ |
| Total Advances Received | _____ |
| B. Advances Accounted for | _____ |
| Prior to this Period | _____ |
| During this Period | _____ |
| Total Expenditures Reported | _____ |
| C. Cash Balance - End of Period (A - B) | _____ |
| D. Estimated Expenditures - Next 30 days | _____ |
| E. Additional Advance Requested or Cash Returned to USAID (D - C) | _____ |

Schedule (1)

QUARTERLY EXPENDITURES BY BUDGET LINE ITEM
FOR THE PERIOD _____ THROUGH _____

| | TOTAL AMOUNT <u>BUDGETED</u> | <u>EXPENDITURES THIS PERIOD</u> | <u>CUMULATIVE EXPENDITURES</u> |
|-------------------------|------------------------------------|-------------------------------------|------------------------------------|
| A. Salaries | \$ 36,500 | _____ | _____ |
| B. Equipment | 2,300 | _____ | _____ |
| C. Materials & Supplies | 12,000 | _____ | _____ |
| D. Training | --- | _____ | _____ |
| E. Consultation | 4,700 | _____ | _____ |
| F. Travel | 4,700 | _____ | _____ |
| G. Overheads | 4,300 | _____ | _____ |
| H. Indirect Costs | 9,675 | _____ | _____ |
| Net Expenditure | <u> </u> | <u> </u> | <u> </u> |
| <hr/> | | | |
| Total Budget: | \$ 74,175 | | |

| <u>Budget</u> (US \$) | Year 1 1989/90 | Year 2 1990/91 |
|--|-------------------|-------------------|
| a) Salaries: Technician: recruited for project | 7 000 | 8,000 |
| ii) Research Assistant | 10 000 | 11,500 |
| iii) Research leaders (Drs. Woollard and Yeboan are salaried as members of UB staff: 10% of time available) | — | — |
| b) Equipment: items for collecting plant specimens and insects, and maintaining them | 2 300 | — |
| c) Materials and supplies: solvents, chromatographic stationary phases, special reagents and glassware | 5 500 | 6 500 |
| d) Training: No specific plans are in hand at this stage for training, but it is possible that consultation or advice may be needed with scientists in say Addis Ababa, where there is an excellent Natural Products research group:..... | | |
| e) Consultation: | 2 200 | 2 500 |
| f) Travel: Collection of plant material, insects, organising and monitoring field trials. Assume 4 plots at average distance of 50 miles, and weekly visits for 3 months, plus collecting:- | 2 200 | 2,500 |
| Say 6000 miles at 37c/mile:then 42c/mile; UB has a vehicle fleet, and one of these will be used. | | |
| g) Overheads: Running of spectra elsewhere, cost of inter library loans, casual labour in collecting plants, repairs and breakages | 2 000 | 2 300 |
| h) Indirect costs: administration of programme | 4 680 | 4 995 |
| | Total | \$35 880 |
| | Total | \$38 295 |
| | | \$74,175 |
| | | ===== |

11'

Payment Provisions

1. Upon signature of this Grant Agreement, USAID will request an advance payable to the Grantee for the Pula equivalent of U.S. \$15,000 (approx. 1/5 of Grant total). As often as is necessary, but not less than once each calendar quarter, the Grantee will submit to the Controller of USAID reports on expenditures under the Grant and on the status of advances and the Grantee's estimated cash needs for Grant related activities during the next 30 days. Such reports shall be presented in the format shown in the attached Schedules, Number (1) and Number (2), and will be the basis for any further one-third of Grant advances.

2. Within 90 days of the expiration of the Grant, the Grantee will submit a final report showing total disbursements, total advances received, and any cash remaining on hand, which will be refunded to USAID.

PROJECT PROCEDURES

- A) Life of Project Costs: The funds in the grant represent the maximum that AID/SCI will contribute to the project.
- B) For this proposal the estimated project completion date is June 30, 1992. This adds several additional months to the project and should cover start up and close out time often not anticipated by investigators but which later results in numerous requests for extensions to recapture lost time. Generally AID/SCI considers no-cost extensions when well justified. These should be executed by the Project Officer at least 180 days prior to expiration. The approved proposal consists of the revised proposal submitted September 22, 1987, and principal investigator's (Dr. Woollard) response to provisos of the AID external panel as well as Dr. Woollard's final revised proposal, dated May 15, 1989.
- C) Cost-Sharing: In addition to any amounts stated in the approved budget that the recipient institution proposes to contribute, the recipient institution should understand that it, in effect, assumes responsibility to secure any additional resources that may be required to complete specific objectives. This point is a logical extension of the statement in Para A that the AID/SCI funds approved constitute the maximum AID/SCI contribution.
- D) Progress Reports: Interim progress reports are required every six months except for the last six month period which will be pre-empted by the final report. One copy each should be sent to following addressees: AID/SCI, Room 320 SA-18- Washington, D.C. 20523; Ms. Wendy White, BOSTID, National Academy of Sciences, 2101 Constitution Ave., N.W., Washington, D.C. 20418; AID Reference Center, PPC/CDIE/DI, Room 105 SA-18 Washington D.C. 20523; and technical backstop office: S&T/AGR, Carroll Collier, Room 420-F, SA-18, Washington, D.C. 20523.
- Since the research schedule often is not updated until after the funds are obligated, the first report should contain revisions in any key dates based on the revised research schedule. Substantive scientific input should be included when there is something significant to report. Interim reports are due within 30 days following each six month period.
- E) Final Report: The principal investigators should submit the final report no later than six months after the completion date of the project which currently is estimated as June 30, 1992. Please forward three copies to AID/SCI, one to AID Reference Center, and one to the technical backstop office. The report should be sufficiently detailed to substantiate findings and to permit scientific evaluation of research. The principal investigators are encouraged to share the draft report with the AID Project Officer for comment prior to formal final submission.

A. Reference to 'this Agreement' means the original Project Agreement as modified by any revisions which have entered into effect. Reference to 'cooperating country' means the country or territory of the Grantee.

B. (1) AID will make available the amount specified in Block 3, of this Agreement, as necessary for the Project, as may be further described in Annex A.

(2) The Grantee will make available the amount specified in Block 4 of this Agreement, as necessary for the Project, as may further be described in Annex A. The Grantee will also make, or arrange to have made, additional contributions of property, services, facilities and funds required for carrying out the Project as specified in Annex A.

C. AID and the Grantee may obtain the assistance of other public and private agencies in carrying out their respective obligations under this Agreement. The two parties may agree to accept contributions of property, services, facilities and funds for purposes of this Agreement from other public and private agencies, and may agree upon the participation of any such third party in carrying out activities under this Agreement.

D. Except as otherwise specified herein or subsequently agreed by the parties, all contributions of the parties pursuant to this Agreement shall be made on or before the Project Assistance Completion Date, or amended date. A contribution of goods or services shall be considered to have been made when the services have been performed and the goods furnished as contemplated in this Agreement. Disbursement of funds may take place after final contributions have been made, but AID shall not be required to disburse funds hereunder after the expiration of nine months following the estimated Project Assistance Completion Date (Block 5 of this Agreement) or any amended Project Assistance Completion Date specified.

E. The procurement of commodities and services to be financed in whole or in part by AID may (where so required by AID procedures) be undertaken only pursuant to Project Implementation Orders (PIOs) issued by AID.

F. Unless otherwise specified in the applicable PIO or Project Implementation Letter (PIL), the procurement of commodities imported specifically for the Project and financed with the AID contribution referred to in Block 3 of this Agreement shall be subject to the provisions of AID Regulation I.

G. Unless otherwise agreed by the parties or otherwise specified in the applicable PIO, title to all property procured through financing by AID pursuant to Block 3 of this Agreement shall be in the Grantee, or such public or private agency as it may authorize.

AID 1330-17D (5-79)

H. (1) Any property furnished to either party through financing by the other party pursuant to this Agreement shall, unless otherwise agreed by the party which financed the procurement, be used effectively for the purposes of the project in accordance with this Agreement, and upon completion of the project, will be used so as to further the objectives sought in carrying out the project. Either party shall offer to return to the other, or to reimburse the other for, any property which it obtains through financing by the other party pursuant to this Agreement which is not used in accordance with the preceding sentence.

(2) Any funds provided to either party pursuant to this Agreement which are not used in accordance with this Agreement, shall be refunded to the party providing the funds.

(3) Any interest or other earnings on funds provided by AID to the Grantee under this Agreement will be returned to AID by the Grantee.

I. (1) If AID and any public or private organization furnishing commodities through AID financing for operations hereunder in the cooperating country is, under the laws, regulations or administrative procedures of the cooperating country, liable for customs, duties and import taxes on commodities imported into the cooperating country for purposes of carrying out this Agreement, the Grantee will pay such duties and taxes unless exemption is otherwise provided by any applicable international agreement.

(2) If any personnel (other than citizens and residents of the cooperating country), whether United States Government employees, or employees of public or private organizations under contract with, or individuals under contract with AID, the Grantee or any agency authorized by the Grantee who are present in the cooperating country to provide services which AID has agreed to furnish or finance under this Agreement are under the laws, regulations or administrative procedures of the cooperating country, liable for income and social security taxes with respect to income which they are obligated to pay income or social security taxes to the Government of the United States of America, for property taxes on personal property intended for their own use, or for the payment of any tariff or duty upon personal or household goods brought into the cooperating country for the personal use of themselves and members of their families (not including such personal or household goods as may be sold by any such personnel in the cooperating country) or if any firm, not normally resident in the cooperating country, is liable for income, receipts, or other taxes on work financed by AID hereunder, the grantee will pay such taxes, tariffs, or duty unless exemption is otherwise provided by any applicable international agreement.

J. If funds provided by AID are introduced into the cooperating country by AID or any public or private agency for purposes of carrying out obligations of AID hereunder, the

Grantee will make such arrangements as may be necessary so that such funds shall be convertible into currency of the cooperating country at the highest rate which, at the time the conversion is made, is not unlawful in the cooperating country.

K. AID shall expend funds and carry on operations pursuant to this Agreement only in accordance with the applicable laws and regulations of the United States Government.

L. The two parties shall have the right at any time to observe operations carried out under this Agreement. Either party during the term of the project and for three years after the completion of the project shall further have the right (1) to examine any property procured through financing by that party under this Agreement, wherever such property is located, and (2) to inspect and audit any records and accounts with respect to funds provided by, or any properties and contract services procured through financing by, that party under this Agreement, wherever such records may be located and maintained. Each party, in arranging for any disposition of any property procured through financing by the other party under this Agreement, shall assure that the rights of examination, inspection and audit described in the preceding sentence are reserved to the party which did the financing.

M. AID and the Grantee shall each furnish the other with such information as may be needed to determine the nature and scope of operations under this Agreement and to evaluate the effectiveness of such operations.

N. The present Agreement shall enter into force when signed. Either party may terminate this Agreement by giving the other party thirty (30) days written notice of intention to terminate it. Termination of this Agreement shall terminate any obligations of the two parties to make contributions pursuant to Blocks 3 and 4 of this Agreement, except for payments which they are committed to make pursuant to noncancellable commitments entered into with third parties prior to the termination of the Agreement. It is expressly understood that the obligations under paragraph II relating to the use of property or funds shall remain in force after such termination. In addition, upon such termination AID may, at AID's expense, direct that title to goods financed under the Grant be transferred to AID if the goods are from a source outside the Grantee's country, are in a deliverable state and have not been offloaded in ports of entry of the Grantee's country.

O. To assist in the implementation of the Project, AID, from time to time, may issue PIIs that will furnish additional information about matters stated in this Agreement. The parties may also use jointly agreed-upon PIIs to confirm and record their mutual understanding on aspects of the implementation of this Agreement.

AID 1330-173 (5-79)

3. The Grantee agrees, upon request, to execute an assignment to AID of any cause of action which may accrue to the Grantee in connection with or arising out of the contractual performance or breach of performance by a party to a direct U.S. Dollar contract with AID financed in whole or in part out of funds granted by AID under this Agreement.

AID 1330-17D (5-79)

ACTION: A I D-2 INFO AMB DCM ECON-REF (6)

A I D

VZCZCOROSEB
PP RUEEOR
DE RUEEC #4167 1530151
ZNR UUUUU ZZH
P 020149Z JUN 89
FM SECSTATE WASHDC
TO AMEMBASSY GABORONE PRIORITY 9209
BT
UNCLAS STATE 174167

LOC: 114 784
02 JUN 89 0503
CN: 00246
CERG: AID
DIST: AIDE

AIDAC PLEASE PASS TO SCIENCE OFFICER

I.O. 12356: N/A

TAGS:

SUBJECT: SDA ALLOWANCE: AID/SCI RESEARCH PROPOSAL (8.388), "NATURAL ANTI-FEEDANTS AGAINST THE CORN CRICKET HETRODES PUPUS L.," DR. J. MCK R WOOLARD, PRINCIPAL INVESTIGATOR, UNIVERSITY OF BOTSWANA, GABORONE, BOTSWANA.

REF: (A) STATE 109871 (APRIL 08, 1989); AND (B) GABORONE 02712 (MAY 12, 1989)

1. APPROPRIATION 72-1191021.6, BUDGET PLAN CODE DDSA-89-29633-7G11 (ALLOWANCE 946-51-633-00-19-91) INCREASED BY DOLLARS 14,490 FOR PROJECT 936-5542.094TD. PROVIDE ADDITIONAL FUNDING FOR SUBJECT RESEARCH PROPOSAL PER REF (B). (NEW ALLOWANCE TOTAL: DOLLARS 74,175.)

2. CONGRESSIONAL NOTIFICATION PERIOD FOR THESE FUNDS EXPIRED APRIL 4, 1989. PLEASE OBLIGATE FUNDS NO LATER THAN JUNE 30, 1989, SOONER IF PRACTICAL. AUTHORIZATION FOR THIS INCREASE WAS SIGNED ON MAY 19, 1989 BY THE SCIENCE ADVISOR (COPY BEING POUCHED).

WE ARE COUNTING ON THIS OBLIGATION TO MEET OUR CURRENT FY OBLIGATION TARGETS. AID/SCI HAS COMPLETELY SEPARATE

OYB FROM OTHER AID BUREAUS/OFFICES, MAKING IT ESSENTIAL THAT OUR OBLIGATION TARGETS ARE MET. SCI HAS NO FLEXIBILITY FOR SHIFTING FUNDS TO OTHER ACCOUNTS.

3. IN ORDER FOR SCI AND S AND T BUREAU BE INFORMED ON TIMELY BASIS STATUS OF OBLIGATION OF THESE FUNDS, PLEASE ADD SCI AND ST/PO TO INFO DISTRIBUTION OF U 102 FLASH CABLE AND PROJECT FLASH CABLE. PLEASE REFERENCE PROJECT 936-5542.09 ON ALL CORRESPONDENCE THIS SUBJECT.

4. ADVICE OF BUDGET ALLOWANCE AMENDMENT ONE FOLLOWS SEPARATELY. EAGLEBURGER

BT
#4167

ACTION

CONTROL No. *S-827*

DATE *6/2*

REF'D TO *WE*

DUE DATE *6/9*

ACTION BY *LSEA*

W. H. H.

OL

5 June 1989

JRC

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