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February 14, 1995

Agency for International Development  
AID, PPC/CDIE/DI  
Washington, DC 20523-1802

SUBJECT: Grant Number DAN-5053-G-00-1064-00

Dear Sir:

We are transmitting to your office two (2) copies of the Final Technical Report for Grant Number DAN-5053-G-00-1064-00. Dr. James I. McNitt is the project director.

If there are any questions, please contact Mrs. Sharon Harrel, Preaward/Post Award Specialist at (504) 771-2809.

Sincerely,

Rose Glee, Ph.D.  
Director

/g

Enclosures

USE OF SPANISH NEEDLE (BIDENS PILOSA) AS A DIET FOR TWO BREEDS OF  
RABBIT IN JAMAICA

Grant Number DAN-5053-G-00-1064-00

FINAL REPORT

Copies of the annual workplans, quarterly reports and annual reports are attached as Appendix I.

This was a very ambitious project that relied on a number of sequential steps. If each step was carried out as planned, the program would have moved forward on schedule. However a number of problems arose which created delays. Several of these arose because the project called for several types of international transfers of funds and materials that had not been previously done from Southern University.

The first problem involved the mechanism for transfer of construction funds from Southern University to the Ministry of Education in Culture in Jamaica and for accounting for those funds once the transfer was effected. It was 18 months after the start of the project before the money was carried to Jamaica and construction of the unit could commence.

The supplies for cage construction and equipping the rabbitry were purchased early in the project and stored at Southern University. Questions of property ownership and international shipment of goods purchased with state funds involved a number of administrative entities on the Southern University campus as well as the Division of Administration. This was especially a problem with materials that were placed on inventory although they were intended for shipment to Jamaica and, by terms of the grant, to remain there at the end of the project. It took over two years to get a determination on this so the materials could finally be shipped. We were never able to work out a mechanism for purchasing a pick-up truck to be used in Jamaica for the project.

A prolonged delay by USAID in responding to the request for the first extension resulted in a five month period (September 1993 - February 1994) when no action could be taken because the grant had effectively expired.

Mr. Ruel Service, our primary Jamaican counterpart, was promoted to the Ministry of Education and Culture upon his return to Jamaica and was no longer based at Elim Agricultural School. While this made telephone communications possible with him, he also was not able to oversee the day-to-day operations at the construction site. Mr. Lloyd Bailey, the other Jamaican counterpart, was subsequently reassigned to the College of

Agriculture some distance from the school and was unable to participate at the level that was originally planned.

Although all of the objectives of the project were not met, we feel at least some sense of accomplishment in that an equipped rabbitry will be available for use at Elim Agricultural School. Studies of the growth habit of Bidens pilosa continue and, despite the cessation of support by USAID, there is potential for continued work on the project by the Jamaican counterparts. There is also potential for future international programs utilizing the facilities that are available.

It is our feeling that the facilities and research support we were able to provide have been positive factors and will be useful in further development of research programs in Jamaica. It is our hope that construction of the rabbitry will lead to increased research in Jamaica regarding the feasibility of establishing rabbit meat as an important inexpensive source of protein for Jamaica citizens. Furthermore, the problems we encountered will make future projects easier for Southern University scientists carrying out international projects.

## APPENDIX I

### USE OF SPANISH NEEDLE (BIDENS PILOSA) AS A DIET FOR TWO BREEDS OF RABBIT IN JAMAICA

Grant Number DAN-5053-G-00-1064-00

#### 1E.2.(b) Annual Workplans

WORKPLAN - September 12, 1991- September 11, 1992

#### ACTIVITIES AND EXPECTED TIMES OF ACCOMPLISHMENT

1. November 1991 - Opening of account and beginning of purchase of materials to equip rabbitry.
2. January 1992 - Dr. Bandele to visit Jamaica to:
  - a. Transfer funds and set up accounts for construction of rabbitry;
  - b. Lay out plots and begin studies of B. pilosa growth.
3. March 1992 - Ship rabbitry equipment and supplies to Jamaica.
4. June 1992 -
  - a. Ship rabbits to Jamaica, install in rabbitry;
  - b. Start second crop of Spanish needle.
5. July 1992 - McNitt and Service attend Vth World Rabbit Congress, Corvallis, OR.
6. August 1992 - Begin rabbit breeding program and data collection.

#### RELATION OF ACTIVITIES TO RESEARCH PRIORITIES

Most of these activities (items 1, 2a, 3, and 4a) are related to getting the rabbitry constructed and the research project started. The rabbitry will be constructed and the cages assembled by the Jamaican counterparts. The wire for the cages, other equipment for the rabbitry and the breeding stock will be purchased in the U.S. and shipped to Jamaica for installation.

Item 2b relates to establishment of the test plots for assessing the growth habit of B. pilosa. The program calls for a split plot design with plant density and application or no application of rabbit manure as treatments. The plots are to be established and harvesting of the plots is to be carried out over the course of a year to determine the re-growth potential of the plants as well as determining the annual yield of plant material which can be

expected. Thus, the planting made in January 1992 will be studied until January 1993. A second planting will be made in June 1992 (Item 4b) which will be studied until June 1993.

Item 5. The World Rabbit Congress is sponsored every four years by the World Rabbit Science Association. The program includes a great deal of scientific information on rabbit production in developing as well as developed situations. It is thus an excellent opportunity to interact with scientists from around the world regarding rabbit production. We had hoped to have a publication for presentation at the meeting but were unable to get the program activated soon enough.

Item 6. Studies of rabbit performance using *B. pilosa* as well as comparing the performance of the two breeds will be carried out for the duration of the project. Data collection will commence in August 1992 as soon as the breeding program starts and will be carried on for at least one year. After a year, analyses and comparisons will be made and publications prepared.

WORKPLAN - September 12, 1992- September 11, 1993

#### ACTIVITIES AND EXPECTED TIMES OF ACCOMPLISHMENT

1. October 1992 - Transfer of funds to Jamaica. The rabbitry building program will begin immediately. The U.S. purchased equipment and supplies will be shipped to Jamaica. Experimental plots will be laid out and the first crop will be planted. Additional plots will be established to feed the herd.
2. January 1993 - a.) Dr. Bandele to visit Jamaica to work with the co-investigators to collect data to begin studies of *B. pilosa* growth.  
b.) Rabbitry completed and cages constructed. c.) The rabbits will be shipped to Jamaica.
3. February 1993 - Rabbits installed. Weighing and data recording programs commence.
4. May 1993 - Breeding program begins with continued regular weighing and recording of production data from the herd.
5. June 1993 - The second crop of Spanish needle will be planted in the experimental plots and in the plots for feeding the herd.
6. October 1993 - Completion of collection of data regarding crop production for the first planting.

## RELATION OF ACTIVITIES TO RESEARCH PRIORITIES

Most of these activities are related to getting the rabbitry constructed and the research project started. The rabbitry will be constructed and the cages assembled by the Jamaican counterparts. The wire for the cages and other equipment for the rabbitry has been purchased in the U.S. and will be shipped to Jamaica for installation. Rabbits will be purchased and shipped as soon as the rabbitry is available.

Item 2a relates to establishment of the test plots for assessing the growth habit of *B. pilosa*. The program calls for a split plot design with plant density and application or no application of rabbit manure as treatments. The plots are to be established and harvesting of the plots is to be carried out over the course of a year to determine the re-growth potential of the plants as well as determining the annual yield of plant material which can be expected. Thus, the planting made in October 1992 will be studied until October 1993. A second planting will be made in June 1993 which will be studied until June 1994.

Item 5. Studies of rabbit performance using *B. pilosa* as well as comparing the performance of the two breeds will be carried out for the duration of the project. Data collection will commence in February 1993 as soon as the breeding program starts and will be carried on for at least one year. After a year, analyses and comparisons will be made and publications prepared.

WORKPLAN - September 12, 1993- September 11, 1994

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Item 5. Studies of rabbit performance using *B. pilosa* as well as comparing the performance of the two breeds will be carried out for the duration of the project. Data collection will commence in February 1993 as soon as the breeding program starts and will be carried on for at least one year. After a year, analyses and comparisons will be made and publications prepared.

1E.2.(c) Quarterly Reports

QUARTERLY REPORT - September 12, 1991 - December 11, 1991

Accomplishments:

During this period, steps were taken to activate the account for purchase of the materials and equipment to be purchased in the U.S. for shipment to Jamaica. Purchase requisitions were cut for these items. Preliminary steps were taken to arrange the mechanism for transfer of funds to Jamaica for construction of the rabbitry and for their use there.

Although progress has been somewhat slower than anticipated, we are nearly on schedule.

QUARTERLY REPORT - December 12, 1991 - March 11, 1992

Accomplishments:

The accounts at Southern University have been opened for operation of the project. Purchase orders have been pressed for some of the equipment items. Accounts for monies for construction of the rabbitry and payments for co-investigators have not yet been established in Jamaica because our contact in the Ministry of Education who will control the money there has been out of the country. The co-investigators in Jamaica have been collecting seeds and have laid out the experimental plots for studies of B. pilosa growth. Because of the delays in establishment of the accounts, we are beginning to fall behind our schedule.

QUARTERLY REPORT - March 12, 1992 - June 12, 1992

Accomplishments:

Most of the supplies for cage construction as well as the equipment for the rabbitry has been received and are in storage at Southern University. Upon arrival of the pickup truck and balance, the materials will be shipped in a container to Jamaica. We are still trying to establish accounts in Jamaica for monies for construction of the rabbitry and payments for co-investigators. A plan has been submitted to the Jamaica Ministry of Education but no reply has yet been received.

The co-investigators in Jamaica have laid out the experimental plots and have begun studies of B. pilosa growth. Since there are, as yet, no rabbits other manures are being used as fertilizers. These experiments will provide some indication of the

growth potential of the crop. Because of the delays in establishment of the accounts, we are behind our schedule.

One of the Jamaican co-investigators (Service) and one of the principal investigators (McNitt) will attend the World Rabbit Congress at Oregon State University in late July and the annual meeting of the American Society of Animal Science in Pittsburgh in early August. During those meetings, a detailed implementation program will be developed.

QUARTERLY REPORT - June 12, 1992 - September 11, 1992

**Accomplishments:**

All of the supplies and equipment for the rabbitry in Jamaica, except for the pickup truck, have been received. We are still trying to establish accounts in Jamaica for monies earmarked for construction of the rabbitry and payments for co-investigators. A plan has been submitted to the Jamaica Ministry of Education and a reply was recently received. This included several minor changes which do not meet the accounting requirements of the University. Therefore, further correspondence to obtain an agreeable compromise will be required before the funds can be transferred.

One of the Jamaican co-investigators (Service) and one of the principal investigators (McNitt) attended the Fifth Congress of the World Rabbit Science Association at Oregon State University in late July and the annual meeting of the American Society of Animal Science in Pittsburgh in early August. Plans were laid out for implementation of the program once the funds are transmitted to Jamaica. Service has approached the Ministry of Agriculture and obtained an import permit for the rabbit breeding stock so as soon as the rabbitry is constructed the rabbits can be purchased and shipped. Dr. Owusu Bandale will travel to Jamaica to help in establishment of the plots to ensure collection of relevant data.

QUARTERLY REPORT - September 12, 1992 - December 11, 1992

**Accomplishments:**

This period has been devoted to making arrangements for the efficient transfer and management of the funds needed in Jamaica to construct the rabbitry. These arrangements have been made and the funds will be released and taken to Jamaica early in 1993 so construction of the rabbitry can begin.

QUARTERLY REPORT - December 12, 1992 - March 11, 1993

Accomplishments:

Dr. Owusu Bandele visited the project site in early March to initiate studies of the growth habits of Bidens pilosa. While there, he laid out and planted the research plots. He also provided training for project personnel on crop management and harvesting and data collection and reporting so they will be able to manage the plots and collect the necessary data. He also finalized plans for construction of the rabbitry and operation of the research program.

Dr. Bandele also delivered to the Ministry of Education and Culture funds that will be used for construction of a rabbitry and operation of the project. The Ministry will open an account for disbursement of the funds. This should be accomplished within about eight weeks at which time construction can begin.

Because of delays in getting the financial arrangements made, we are currently running approximately six months behind schedule as described in our 1992 workplan. We will, therefore, be requesting a non-funded extension of the project to allow time for completion of the research program.

QUARTERLY REPORT - March 12, 1993 - June 11, 1993

Accomplishments:

The funds which Dr. Bandele delivered to Jamaica in March have been made available so construction of the rabbitry has begun.

Some of the plots of Spanish needle established during Dr. Bandele's visits had to be reseeded while others are nearing first harvest. An electronic balance purchased with project funds has been shipped to Elim Agricultural School to allow collection of data regarding yield and growth response of the first crop.

Bids are being requested for shipment of the remainder of the equipment for the rabbitry in Jamaica. We have been informed by the Louisiana Division of Administration that it is impossible to purchase on state contract a vehicle which will then be donated to another agency outside the U.S. USAID has been contacted regarding assistance with purchase of the truck and a computer as described in the original grant document.

A one year, non-funded extension of the project has been requested and a revised timetable submitted to AID.

QUARTERLY REPORT - June 12, 1993 - September 11, 1993

Accomplishments:

Construction of the rabbitry in Jamaica has begun and is progressing well. An electronic balance purchased with project funds was shipped to Elim Agricultural School to allow collection of data regarding yield and growth response of the first crop.

QUARTERLY REPORT - September 12, 1993- December 11, 1993

Accomplishments:

No progress has been made on this project in the reporting period because the period of the grant has expired. No reply has been received from AID regarding a non-funded extension which was requested in June 1993. Further information was provided to the Program Management Division on October 29, 1993 (copy of letter attached.) Because of expiration of the grant, funds cannot be utilized as planned.

The rabbitry in Jamaica is nearing completion and the workers are awaiting the supplies for construction of the cages. These are on hand at Southern University but cannot be shipped until the extension is granted so the funds can be used.

Because of the delays, the program presented in the work plan for 1993/1994 is already approximately four months behind schedule. It is almost certain that another non-funded extension will be required to complete this project.

QUARTERLY REPORT - December 12, 1993 - March 11, 1994

Accomplishments:

Notification of extension of the grant through September 12, 1994 was received on February 25, 1994. The account has been reactivated at the Southern University Business Office and a purchase requisition for shipment of the goods for furnishing the rabbitry has been submitted. The rabbitry in Jamaica is nearing completion and, as soon as the supplies arrive, they will begin constructing cages and getting the rabbitry ready for the rabbits.

Because of the delays in obtaining the extension the program presented in the work plan for 1993/1994 is several months behind schedule. A request for a second non-funded extension is currently being prepared.

QUARTERLY REPORT - March 12, 1994 - June 11, 1994

Accomplishments:

Some delay has been experienced in arranging shipment of the goods for furnishing the rabbitry to Jamaica but the order for that should be released in the near future. The rabbitry building in Jamaica is complete except for installing windows and the electrical and plumbing fixtures. As soon as possible, the wire for the cages will be shipped so the cages can be constructed and the actual experimentation with the rabbits begun.

Personnel in Jamaica are carrying out cultural studies with Bidens pilosa using poultry, goat and cattle manure as fertilizers. I have been informed by Mr. Ruel Service of the Ministry of Education and Culture that the following personnel are being reimbursed on the project:

<u>Position Individual</u>	<u>Payment/Annum</u>	
Animal Health/Nutrition	Mr. Peter Hanson	\$1000
Feed Agronomist	Mr. Kenneth Bailey	1000
Principal	Mr. Winford Taylor	750
Farm Manager	Mr. A. Soares	250
Accountant	Mr. Colin Sinclair	250

Because of the delays in obtaining the extension and problems with the shipping, the program presented in the 1993/1994 work plan is many months behind schedule. A request for a second non-funded extension is currently being prepared.

QUARTERLY REPORT - June 12, 1994 - September 11, 1994

Accomplishments:

The purchase order for shipping the supplies to build the cages and furnish the rabbitry was cut and the materials were picked up by the shipping agency for packing to be shipped on September 19, 1994. Word was received that the rabbitry in Jamaica is complete so once the supplies arrive, cage construction and equipping the rabbitry can commence.

Application for a second one-year, non-funded extension was submitted on August 4, 1994.

1E.2.(d) Special Reports

None

## 1E.2.(e) Annual Activity Reports

ANNUAL ACTIVITY REPORT - September 12, 1991 - September 11, 1992

### Accomplishments:

During this first year of the project, the materials and supplies that had been specified in the proposal for purchase in the U.S. and shipment to Jamaica were ordered and all except the pickup truck have been received and are in storage at Southern University awaiting shipment to Jamaica.

Agreement has not yet been reached between the Jamaica Ministry of Education and Southern University regarding management of the monies earmarked for use in Jamaica. This has delayed implementation of the project because the monies are needed there for construction of the rabbitry before the rabbits can be shipped and the research program initiated.

The Jamaican co-investigators have collected seeds, laid out plots and done some preliminary growth studies with Bidens pilosa but this has not been actively pursued because of lack of funds. Some preliminary feeding trials using Bidens pilosa have also been carried out in the Southern University research rabbitry. These have provided baseline dry matter a feed intake data which allow better estimation of the amounts of fresh material needed to feed the rabbits. R. Service has approached the Jamaican Ministry of Agriculture and obtained an import permit for the rabbit breeding stock so as soon as the rabbitry is constructed the rabbits can be purchased and shipped.

One of the Jamaican co-investigators (Service) and one of the principal investigators (McNitt) attended the Fifth Congress of the World Rabbit Science Association at Oregon State University in late July, 1992 and the annual meeting of the American Society of Animal Science in Pittsburgh in early August, 1992. These meetings provided an opportunity for the investigators to meet with rabbit researchers and other animal scientists with a wide variety of backgrounds and interests. The former meeting was especially useful as it provided an opportunity to discuss rabbit production in the developing situation and using non-traditional feeds.

### Future program:

Because of delays in establishing accounts in Jamaica, the project is nearly a year behind schedule. As soon as the accounts have been established and the funds transferred, the schedule will commence a year late with only slight modification from the program outlined in the proposal.

ANNUAL ACTIVITY REPORT - September 12, 1992 - September 11, 1993

Accomplishments:

Much of the early part of this period was devoted to making arrangements for the efficient transfer and management of the funds needed in Jamaica to construct the rabbitry. Dr. Owusu Bandele visited the project site in early March to initiate studies of the growth habits of Bidens pilosa. While there, he laid out and planted the research plots. He also provided training for project personnel on crop management and harvesting and data collection and reporting so they will be able to manage the plots and collect the necessary data. He also finalized plans for construction of the rabbitry and operation of the research program.

Dr. Bandele also delivered to the Ministry of Education and Culture funds that will be used for construction of a rabbitry and operation of the project. The Ministry opened an account for disbursement of the funds so construction of the rabbitry was started.

An electronic balance purchased with project funds was shipped to Elim Agricultural School to allow collection of data regarding yield and growth response of the first crop.

On June 25, 1993 a one year, non-funded extension of the project was requested and a revised timetable submitted to AID. This request has been approved but written notification has not yet been received.

ANNUAL ACTIVITY REPORT - September 12, 1993 - September 11, 1994

Accomplishments:

No progress has been made on this project early in the reporting period because the period of the grant had expired and no reply had been received from AID regarding a non-funded extension which was requested in June 1993. Because of expiration of the grant, funds could not be utilized as planned. Notification of extension of the grant through September 12, 1994 was received on February 25, 1994. The account was reactivated at the Southern University Business Office and a purchase requisition for shipment of the goods for furnishing the rabbitry submitted.

The rabbitry in Jamaica is nearing completion and the workers are awaiting the supplies for construction of the cages. These are on hand at Southern University but cannot be shipped until the extension is granted so the funds can be used.

Personnel in Jamaica carried out cultural studies with Bidens pilosa using poultry, goat and cattle manure as fertilizers. Mr. Ruel Service of the Ministry of Education and Culture reported that the following personnel were involved in the project:

<u>Position</u>	<u>Individual</u>
Animal Health/Nutrition	Mr. Peter Hanson
Feed Agronomist	Mr. Kenneth Bailey
Principal	Mr. Winford Taylor
Farm Manager	Mr. A. Soares
Accountant	Mr. Colin Sinclair

The purchase order for shipping the supplies to build the cages and furnish the rabbitry was cut and the materials were picked up by the shipping agency for shipment on September 19, 1994. Word was received that the rabbitry in Jamaica is complete so once the supplies arrive, cage construction and equipping the rabbitry can commence.

#### Future Program

Application for a second one-year, non-funded extension was submitted on August 4, 1994. It is intended that the project will be completed as originally planned. Now that the rabbitry is complete and the materials available for cage construction, the actual animal research can be carried out.

#### 1E.2.(f) Technical and Research Reports and Publications

None

## APPENDIX II

### USE OF SPANISH NEEDLE (BIDENS PILOSA) AS A DIET FOR TWO BREEDS OF RABBIT IN JAMAICA

Grant Number DAN-5053-G-00-1064-00

#### FINAL EQUIPMENT INVENTORY

The following equipment was purchased under this grant:

1. Mettler Electronic Top Loading Balance
2. Steel Desk, 60"x30" double pedestal
3. File Cabinet, 4 drawer, legal
4. Storage Cabinet

These items have been shipped to Elim Agricultural School in Jamaica and, under the terms of the grant, become the property of the school on termination of the grant.