PD-ACA-251

Title: Quarterly Technical Report on Nigerian Agriculture and Biotechnology Project

Author: C.A. Fatokun

Cooperative Agreement No: 620-A-00-03-00144-00

Project Title: Nigerian Agriculture and Biotechnology Project (NABP)

Recipient: International Institute of Tropical Agriculture (IITA)

USAID CTO: Dr. Andrew Levin, Agricultural Development Officer (SO2)

Date: July 14, 2004

Nigerian Agriculture and Biotechnology Project (NABP)

Quarterly Report
Reporting period: April to June 2004

Activity Objectives

The Nigerian agriculture and biotechnology project aims to lay the foundation for a sustainable biotechnology program in Nigeria through building institutional and scientific capacity to conduct research, implement priority regulatory guidelines and policies to create the needed environment for biotechnology development. The project also aims to increase public awareness of the benefits of biotechnology. The project has three major components namely: 1) Improved research and development on crops and livestock, 2) Improved implementation of bio-safety guidelines and testing of genetically modified crops and 3) Improved public acceptance of biotechnology.

Progress

Development of insect resistant transgenic cowpea

The overall goal of this component is to develop a genetic transformation and regeneration system for cowpea for bioengineering of valuable traits in cowpea with emphasis on resistance to the cowpea pod borer, *Maruca vitrata*, to which there is currently no known resistance available in cultivated cowpea. In addition, capacity building in the area of basic molecular biology and crop genetic transformation is provided, (i) through individual training in cowpea tissue culture and genetic transformation at the biotechnology laboratory at IITA, and (ii) through technical backstopping of hands-on practical courses carried out in collaboration with SHETSCO, Abuja and UNAAB, Abeokuta.

Research

A draft manuscript on cowpea regeneration entitled 'Plant regeneration from differentiating callus in a range of cowpea [*Vigna unguiculata* (L.) Walp.] genotypes' has been prepared. Intended outlet for publication is Plant Cell Reports. The manuscript will be submitted to the IITA internal review panel during first half of July.

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Capacity building in biotechnology

Training of NARS scientists started in May 2004 with the first trainee Mrs. Salamatu Damagum from the University of Maiduguri. To provide Mrs Damagun the necessary theoretical background in tissue culture and related biotechnologies, a literature study has been included as part of her training program after which hands-on training is provided in media preparation and tissue culture manipulations followed by cowpea regeneration and transformation. Mrs Damagun has completed the initial phase of her training on schedule and is presently conducting an independent experiment on transformation of cowpea. An MSc student and an IT student have been trained in the cowpea regeneration procedure.

Dr. K. Danladi of the advanced biotech lab at SHESTCO is currently at IITA preparing a technical manual in preparation for the workshop in rDNA. Dr Danladi will be at IITA until the end of July when the technical report is expected to be completed. Dr E. Mbanaso from the NRCRI, Umudike will be providing inputs to this manual. The workshop will be held on 3-15 October at Shetsco Complex in Abuja for 20 participants

Dr. S. Uzochukwu of the University of Agriculture Abeokuta (UNAAB) is organizing the workshop on Basic Molecular Biology. Course contents of the workshop and related issues have been discussed and agreed upon. A person has been identified who will prepare the manual. The workshop will be held at UNAAB, Abeokuta from September 6 to 14, 2004.

Assessment of biotechnology applications to improve livestock productivity in Nigerian agriculture

Literature review of the research domain

A Nigerian consultant commenced a literature review to identify constraints to livestock productivity in the country in terms of health, genetic improvement, feed and fodder resources. The report from this literature review will identify those constraints that can be ameliorated by biotechnological approaches.

Participatory rapid appraisals (PRAs)

PRA methods, including focus groups and informal surveys, were used to elicit information on the major constraints impeding livestock productivity in Nigeria and possible solutions as seen by poultry producers and feed millers in the south-west and south-south zones (Team 1) and cattle and small ruminant producers in the north-east zone (Team 2).

All the team members were trained in PRA techniques at Ibadan and in Maiduguri by Dr. Stephen Blakeway before they went to the field. Dr Blakeway was on a consultancy for the USAID sponsored project on Animal Health Priorities in Nigeria. We used the opportunity of his cross country trip to train the teams in the locality where they carried out their surveys. The reports of these PRAs are ready and will be presented at the stakeholders workshops in July.

Identification of biotechnology options

A team of 6 experts is carrying out this exercise. Each expert is responsible for reporting on the state of livestock production and the biotechnology options in his/her geopolitical zone. The activity will identify biotechnology options available to address the constraints in animal health, feeds and nutrition as well as the feasibility of addressing the constraints and opportunities through the identified biotechnology options. The sub-activity which started in May, is still going on but the output will be reported to the stakeholders workshops in July.

Assessing institutional capacities

Questionnaire surveys combined with institutional visits and interviews of principal officers of national institutions is being carried out by two consultants. This activity started on June 28.The expected output is a list of national institutions with identified capacities in terms of infrastructure, equipment and personnel to help undertake livestock biotechnology research.

Improved implementation of biosafety guidelines and field-testing of genetically modified crops

Contract agreement with the program on biosafety systems (PBS)

A contract agreement is being developed between the program on biosafety systems (PBS) and the NABP to enhance improvement in the implementation of Nigeria biosafety guidelines. Areas where PBS will make input are training for staff of Nigeria Plant Quarantine Service (PQS) and the National Seed Service (NSS) as well as review of Nigeria biosafety guidelines.

Seed longevity studies

Monitoring the longevity of seeds of wild and cultivated cowpea seeds in the field continued. Seedlings are still emerging as at June 2004 from seeds of a wild cowpea relative that were dispersed in the field between October and November 2002.

Increased public acceptance of biotechnology

Workshop for Journalists

A workshop was jointly organized by NABDA, Tuskegee University and NABP from 3 to 5 May 2004 at the Sheraton Hotels and Towers at Abuja. The theme of the workshop was ***Facilitating Biotechnology in West Africa: Communicating issues to Stakeholders.*** It was a forum for journalists to interact with scientists on issues pertaining to biotechnology. Media practitioners were drawn from different sectors of the Nigerian media. Scientists were invited from different West African countries including Benin, Ghana, Mali, Senegal, Gabon, Cameroon, Cote D'Ivoire, Burkina Faso and Nigeria. Resource persons were from within and outside the sub-region. These included Scientists from Tuskegee and their collaborators from different countries and Professor Roger Hull of the John Innes Center, Norwich, UK.

There were 119 participants at the workshop made up of 41journalists out of which six were women. Eighteen of the journalists were from radio and television while 23 came from the print media.

The workshop served as the forum for the launch of the Nigerian Agriculture and Biotechnology Project as well as the West Africa Biotechnology Network. The workshop was rounded up with a tour of the facilities of SHESTCO.

Media coverage of Biotechnology
In the week preceding the workshop, an anti biotechnology write up was published in the Comet Newspaper. The publication attributed biotechnology efforts in Nigeria to Monsanto. However, following the workshop, more balanced articles have appeared in *The Guardian, Daily Times, This Day, Daily Sun, Businessday, Income Opportunities*, and *The Comet*. *Insider Weekly*, a weekly magazine also published an edition devoted to biotechnology. The publications of balanced articles are indications of better understanding of the issues involved in biotechnology. Many radio and television houses have also used clips from the workshop and from interviews granted by different scientists during the workshop. During this period, the Ibadan branch of the NGO, *Friends of the Earth* released two public statements against genetically modified crops.

Support to Journalists
A database has been created for journalists and weekly pieces of information on the global biotechnology outlook are made available to them electronically. About 50 journalists are already enjoying this facility.

Establishment of Biotechnology Information Center at Abuja
The NABP established a Biotechnology Information Center at Abuja in collaboration with the Nigeria Biotechnology Development Agency (NABDA). The center has about 20 computers connected to the internet. The center is based in the premises of NABDA at Abuja. NABDA is close to the building used by the Nigerian Union of Journalists at Abuja. This makes it close enough to assist journalists to access information on biotechnology. It is expected that this proximity to the NUJ office will make it easier for the journalists to access information through the internet.

Survey of biotech awareness in Nigeria
Six Institutions have been selected to undertake a survey of biotech awareness in Nigeria for NABP. These are The Obafemi Awolowo University, Ile-Ife, Nigerian Institute for Social Economic Research (NISER). University of Nigeria, Nsukka, Institute of Agricultural Research (IAR) Zaria. University of Maiduguri, and NABDA. The instrument for the survey has been harmonized and team members have been trained on the methodology. The survey will start in July.

Database of NGOs
The project is compiling a database of Nigerian NGOs to assist in targeting them for the public awareness program. A NGO named BIOGROW, which promotes biotechnology awareness is assisting with the compilation.

Changes in project and composition of key personnel
The implementation plan that was approved during last quarter has now been fed to the MS Project software. The spreadsheet was printed and presented to the NABAC meeting of June 30, 2004. The final draft wil be sent to Dr Levin in July for final approval.

Problems or special opportunities which are critical to the progress of NABP
Efforts were made to have a one day workshop on biotechnology for members of the National Assembly in Abuja in May. This could not take place because the legislators had some urgent issues to address on the dates fixed for the activity. New dates for the workshop will be agreed with officials of the National Assembly.

Many members of NABAC do not have ready access to the internet and this calls for sending documents in hard copies. The internet bulletin board created by IITA which is intended to enable all members access information in time is not being used by most members.

A two-hour radio phone-in program took place on Saturday May 8 from 8.00 to 10 am on the network service of Radio Nigeria, Abuja. The program was broadcast all over the country from where calls were received. Most of the callers showed interest in biotechnology and the potential benefits that the country can derive from the technology. A businessman who called from Kaduna wanted to know of investment opportunities in biotechnology. Those who participated in the live radio program were Dr. Andy Levin, Prof. C.P. Omaliko and C. Fatokun.

Project launch
The NABP was launched officially at the Sheraton Hotels and Towers, Abuja on Monday May 3, 2004. The Honourable Minister for Science and Technology, Professor Turner Isoun performed the launch. Also present at the launch ceremony were the Charge d' Affaires of the United States of America in Nigeria Mr. Rick Roberts, the Director of USAID Mission, Abuja Ms. Dawn Liberi, the Director General of IITA Dr. Hartmann and Dean of the College of Agriculture, Tuskegee University Professor Walter Hill. The representatives of the parties signed a memorandum of understanding between the Federal Government of Nigeria, the United States Agency for International Development and IITA at the occasion. The project launch also coincided with the launch of

West Africa Biotechnology Network (WABNET) and the commencement of a three-day workshop on communicating biotechnology in the West and Central Africa region. About 40 Nigerian media practitioners participated in the workshop along with scientists from other countries in the sub-region.

NABAC

The quarterly meeting of NABAC took place on June 30 at the office of NABDA. The meeting reviewed the events at the project launch and the activities carried out under NABP. The meeting was informed of the establishment of the biotechnology information center at NABDA, and the project implementation plan was displayed following feeding the data to MS Project software. A logo to be used for identifying the project was selected from among those produced by the multi media unit at IITA.

Priorities for the coming quarter

Component 1

1. Technology transfer from the University of Davis on genetic transformation of cowpea.
2. Further cowpea genetic transformation experiments will be pursued.
3. A manual for training in rDNA technics will be developed and printed.
4. Preparations for the training of 20 Nigerian scients in rDNA technics at the Sheda Science and Technology Complex (SHESTCO) 3-15 October 2004 will be carried out during this period.
5. NABP will provide support to the University of Agriculture Abeokuta to conduct a training in biotechnology.
6. Contract agreements will be signed between IITA and CSIRO for the development of bioengineered cowpea with resistance to insect pests.
7. A tripartite agreement will be signed between the National Root Crops Research Institute, DDPSC and IITA for the development of bioengineered cassava.
8. Contract agreement will be developed between the Purdue University and IITA for *ex ante* impact studies on bioengineered cowpea.
9. A staff of the Institute for Agricultural Research will be at IITA for training in plant genetic transformation using cowpea.
10. Two workshops for stakeholders one at Ibadan and the second at Maiduguri, each includes 20 persons from a wide range of institutions such as livestock producers, government ministries, research institutes, universities, NGOs, private sector, USAID, IITA and ILRI, will be conducted. The outputs of activity 3 and results of the PRAs will serve as background materials for the workshops.
11. Information gathered through the various stages of the priority setting exercise will be synthesized to highlight the opportunities. The results of the synthesis will be presented to a 2-day workshop for policy makers composed of a focus group of about 15 participants including the Minister of Agriculture and Rural Development, the Minister of Science and Technology, the Director of Federal Department of Livestock and Pest Control Services, the Director of Agricultural Sciences, the Directors of NABDA, NVRI, NITR, NAPRI and IAR&T, Vice Chancellors of the universities of Agriculture, selected Deans/Heads of Livestock Production in the universities, staff of biotechnology related companies and key staff of USAID, ILRI and IITA.

Component 2

12. A contract agreement will be developed and signed between the PBS and NABP.
13. A Nigerian scientist will participate in an international training in biosafety taking place at the Ghent University, Belgium in August.
14. Some members of the National Biosafety Committee (NBC) will visit the Donald Danforth Plant Science Center (DDPSC), St. Louis and some fields where bioengineered crops are being tested. Bioengineered cassava with resistance to virus was developed at DDPSC.

Component 3

15. Scientists drawn from various institutions in the country will carry out a focus group survey of biotech awareness in the country.
16. Multiple training on biotechnology for policy makers in the Federal Ministries of Environment, Agriculture and Rural Development and Science and Technology.
17. Follow up training for media practitioners.
18. Training will be conducted for NGOs with interest in environment, agriculture, etc.
19. Production of public awareness materials.

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