

FINAL PROGRAM PERFORMANCE REPORT

AID Grant No. DAN-4193-G-00-1101-00  
Individual Development Grant for the SANREM CRSP

Project Title: Measuring, Monitoring and Improving the  
Sustainability of Mixed Crop-Livestock  
Farming in Semiarid and Savanna Regions

Submitted to: Agency for International Development  
Washington, DC 20523-1802  
J. Bonner, Project Officer, S&T/AGR (5 copies)  
PPC/CDIE/DI (2 copies)

Submitted by: North Carolina State University  
College of Agriculture and Life Sciences  
Department of Animal Science

William L. Johnson, Program Coordinator

SUMMARY

As directed by the grant agreement, North Carolina State University first engaged in active discussions with the leaders and certain investigators of the three Global planning groups, headed, respectively, by Michigan State University, The Ohio State University, and the University of Georgia. The discussions and exchange of information led to the North Carolina State University investigator, W. L. Johnson, becoming fully integrated into the planning process and Global proposal to be presented by the consortium led by The Ohio State University. This proposal, fully endorsed by the North Carolina State University planning team, centers on problems and solutions for the humid tropics, with research planned in Ecuador, Cameroon, the Philippines and Central America. A central role is proposed for the Department of Animal Science of North Carolina State University, within the framework of fully integrated, multidisciplinary and multi-institutional teams of scientists. This role, summarized, is to provide leadership in investigating the animal and pasture related aspects of Integrated Farm Enterprise Management, as they pertain to and interact with other aspects of Integrated Nutrient Management, Integrated Pest Management, Regional Agroecology and Integrated Institutional Management. If the research sites proposed by the Ohio State consortium are approved by AID, much broader participation by the Duke/UNC/NCSU Center for World Environment and Sustainable Development (CEWESD) will be pursued, in the form of complementary research proposals presented to AID and other agencies for supplemental funding.

## I. Accomplishments, Compared to Stated Goals

We are pleased to report that the stated objectives for the planning exercise were accomplished in full. In this section of the report, reference is made to the five objectives stated on page 4 of our August 22, 1991, proposal, as adjusted by the Addendum of September 26.

1. Define the precise target area and ecosystem for a long-term research component of the SANREM CRSP, with primary consideration given to a continuum of humid, to subhumid, to semiarid regions of (respectively) Ecuador, Honduras (Pacific Southwest) and Senegal.

Various activities supported by grant funds contributed to fulfilling this objective. First, there were internal meetings of our own group of investigators from Duke University, the University of North Carolina at Chapel Hill, North Carolina A&T University, and North Carolina State University, to discuss and clarify concepts. Then, Dr. Johnson participated in three site visits with members of the Ohio State University consortium: to Ecuador in November and January, and to Costa Rica in December. He also participated in two planning meetings at Columbus, Ohio, in October and December, respectively. Dr. Isabel Valencia of North Carolina State University also attended the second Columbus meeting.

We thus contributed to, and support, the concept advanced in the Ohio State proposal that research initially focus on the more humid end of the spectrum, and later move toward the semiarid end. We believe that with the limited budget of \$2 million per year currently allocated by AID, the SANREM CRSP should focus initially on the ecosystem that is under the most current pressure, yet offers the best opportunity for near-term solutions. Once methodologies have been developed in the humid tropics, with appropriate indices and valid models for sustainability in place, additional funding can be sought to extend the methodologies and adapt the indices and models into regions with progressively longer dry seasons, greater stress, and inherently poorer prospects for sustainable growth of agriculture.

Devoting half the initial resources to research in the Amazon region of Ecuador, as the Ohio State group proposes, will allow rapid early progress to be made toward achieving the research goals. Simultaneous linking with active on-farm research on SANREM issues in Africa (Cameroon), Asia (Philippines) and Central America (at a site to be determined by the CIAT/CATIE/IICA consortium) will allow continuous cross-fertilization of concepts and methodologies. Research sites in Cameroon, Philippines and Central America will also provide for variability in altitude, steepness, severity of the dry season, population pressures and severity of existing degradation, compared to the Ecuador site.

2. Define specific research priorities for the enhancement of sustainable agriculture in the target area.

Several activities under the planning grant contributed to fulfilling this goal:

- The multidisciplinary group discussions at NCSU and Ohio, and site visits to Ecuador and Costa Rica, as described in the previous section.
- Animal scientists from Cornell University (R.W. Blake), the University of Wisconsin (J. Reed, individual grant recipient) and NCSU (W.L. Johnson) kept in close communication throughout the planning process and held their own coordination meeting in Chicago (early November).
- A review of literature on the role of livestock in mixed farming systems in semiarid regions similar to those encountered in Senegal, was conducted at North Carolina State University, drawing heavily on experience from the Small Ruminant CRSP in Morocco. This review was started before we learned of the USAID/Dakar decision not to permit SANREM planning visits. It was completed with the knowledge that the effort was not wasted and could contribute to a future proposal for the semiarid regions of West Africa.

North Carolina State University scientists, particularly Drs. Johnson and Valencia, contributed to and endorse the statement of specific research priorities, as articulated in the Ohio State proposal, for the humid tropics of Eastern Ecuador, Cameroon, Philippines and Central America.

3. Select institutions and scientists in the cooperating countries and the US who are willing and qualified to collaborate in long-term research on the selected priority themes.

During the site visits to Ecuador and Costa Rica, Dr. Johnson spent considerable effort in making contacts with national research agencies and universities, as well as IARCs (International Center for Tropical Agriculture, CIAT; International Potato Center, CIP; ICRAF; and CATIE, in Costa Rica). The list of competent potential collaborators, senior and junior, thus generated, is long.

Potential roles for scientists at North Carolina State University, Duke University, and the University of North Carolina at Chapel Hill, all members of the Center for World Environment and Sustainable Development (CEWESD), and North Carolina A&T University (a historically Black university) have also been identified. In the Global proposal as submitted by Ohio State, Dr. Johnson is listed as a full member of the research team. However, if the Ohio State consortium wins the global grant, several other scientists from NCSU, Duke, UNC and NCA&TU will

become involved, in two ways: (a) in supporting roles, such as contributing to design and analysis, and training of graduate students; and (b) developing complementary research proposals for supplementary funding. Drs. Isabel Valencia, Matt Poore, Jack Britt (all of NCSU), Ray McKinnie (NCA&TU), Robert Healy and associates (Duke University) and Richard Bilborrow and associates (UNC-Chapel Hill), all of whom were listed as collaborators in the planning grant proposal, are expected to continue their active involvement.

North Carolina State University already participates in other CRSPs. The Program Directors and NCSU Principal Investigators of two of them, Tropical Soils and Small Ruminants, have expressed enthusiasm about a Cross-CRSP activity for the humid tropics, complementing the Semiarid Cross-CRSP program already proposed for Honduras. The Ohio State Global Research Program for SANREM proposes the Coca-Napo region of Eastern Ecuador for a major Cross-CRSP site for the humid tropics. North Carolina State University enthusiastically endorses this idea and can be expected to participate actively through SANREM (Dr. Johnson and others), Small Ruminants (Dr. Kevin Pond and associates) and Tropical Soils (Dr. Jot Smyth and associates).

4. Determine mechanisms for including farmers in the research program, with appropriate roles in technology evaluation, generation, adaptation and transfer.

For North Carolina State University, farmer participation will be the key to success of the SANREM CRSP. We have participated in previous modestly successful farmer participatory research in Indonesia and have been able to contribute some insights to the Ohio State proposal as to how to improve on past experiences.

One of our activities under the Planning Grant has been to complete a comprehensive literature review on farmer participation as relates to the animal/pasture component of mixed farm systems. While doing this, we developed a computerized data bank of existing literature, some of it published but much of it existing as theses, working papers etc. As a follow-up activity we plan to coordinate with AID-supported INFORUM, at Rodale Institute, regarding access to this data bank.

We believe that one of the key objectives of a static survey in the target research area must be to identify farmer-collaborators for long-term monitoring. We advanced the idea, which has been incorporated into the Ohio State proposal, that at a very early stage of SANREM research (second year) some promising solutions to farmer-identified constraints be offered for farmer adoption, and that this be done in such a way as to set up an on-farm network for monitoring the effect of several interventions. Baseline data, along with the monitoring of a group of control farms with no interventions, will provide the basis for comparative analysis and improved insights about sustainability.

5. Define and propose a role for non-government organizations in the technology generation, validation and transfer process within the target region.

With the Ohio State site visit teams to Ecuador we were in contact with representatives of several NGOs and PVOs who are already active or potentially interested in the Amazon region. Several of these groups have established rapport with indigenous populations and will be indispensable for drawing these earliest Amazon settlers into the SANREM process. Retrieval of indigenous technologies, and the introduction of changes that have potential for improving quality of life while enhancing sustainability, are functions that only these NGO/PVOs can perform. Other groups that we talked with have had moderate success in promoting farmer organizations among the most recent settlers (colonos) in the Amazon. These groups can facilitate access to farmers for static surveys and subsequent validation/monitoring of promising interventions. They can also help in the process of elevating farmer awareness of environmental problems, issues, potential solutions and necessary behaviour changes.

## II. Efforts of the Grantee to be Incorporated into Global SANREM Research Plans

The NCSU Program Coordinator was first informed that his proposal had been accepted for funding by the leader of one of the Global planning groups, who was on the phone asking for a copy of NCSU's proposal. This led to an immediate call to AID for confirmation of this news.

By the second week of October we were in active conversation with the leaders and key scientists of the other two consortia as well. One of them also called us; the third, after a discreet wait, was called by us.

As implied in the preceding section, communication with the Ohio State group was smooth, natural, and mutually rewarding. We were immediately asked to attend their "team-building" meeting in Columbus, at their expense. We were invited to join them in the initial site visit to Ecuador. We were subsequently asked to assist in the formal contacts with CIAT/CATIE/IICA for joint development of a Central America proposal. We were invited to the second large planning session in Columbus, and asked to join the "writing" team that went to Ecuador in January. As this process matured, and the concepts being discussed were solidified, we came to feel very comfortable as part of the Ohio/Fort Valley/Cornell/Penn State/Kentucky/Wisconsin/Colorado State/NC State group. Our interests match well, our talents are highly complementary. We look forward to active collaboration as a part of this consortium.

Copies of letters or memoranda from D. Hansen to W. Johnson, I. Valencia to D. Hansen, and W. Johnson to D. Hansen are attached.

Interaction with the Georgia consortium was brief and not fruitful. Dr. Hargrove called W. Johnson on October 7; immediately thereafter we sent him a copy of our proposal. On October 23 we talked again and discussed potential site visits; the mutual interest in Central America and West Africa was noted. The next, and final, communication (again, by phone) was on November 5, when we were informed that the Georgia consortium had decided not to include our proposal.

Interaction with the Michigan State consortium was much more extensive and almost resulted in a joint site visit to Senegal. Had the Dakar Mission not denied clearance (copy of FAX from J. Bonner to W. Johnson is attached), Dr. Johnson would have traveled to Senegal in coordination with members of the MSU group. On several occasions during October and early November, we had cordial phone conversations with colleagues at MSU, Utah State, Nebraska, Winrock, Rodale and Langston-- all members of the MSU consortium. However, the bottom line was that the consortium felt themselves to be already fairly complete. This viewpoint was communicated in a letter from R. Harwood to W. Johnson on Nov. 11 (copy attached).

### III. Status of Grant Expenditures

North Carolina State University has actively and enthusiastically pursued the fulfillment of its stated goals, and in so doing has about exhausted its budget. A preliminary status report, to be confirmed when all the bills are in, follows.

Item	Original budget	Actual expenditure	Cost-sharing
Salaries & wages	\$ 3,749	\$ 4,224	\$ 15,015
Benefits	641	338	3,423
Travel & per diem:			
-domestic	-0-	1,646	
-international	5,830	3,936	
Other direct costs	1,499	1,575	
<b>TOTAL DIRECT COSTS</b>	<b>\$ 11,719</b>	<b>\$ 11,719</b>	<b>\$ 18,438</b>
Indirect costs	3,281	3,281	5,163
<b>TOTAL (estimated)</b>	<b>\$ 15,000</b>	<b>\$ 15,000</b>	<b>\$ 23,601</b>



International Programs  
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Phone 614-292-7252  
TELEX: 272894 OSUA UR

January 4, 1991

**MEMORANDUM:**

**To:** Individual Development Grant Recipients

Jess Reed, Wisconsin  
Jean-Paul Chavas, Wisconsin  
Kevin McSweeney, Wisconsin  
William Johnson, North Carolina State  
David Swift, Colorado State

**From:** D.O. Hansen, Principal Investigator, SANREM Comprehensive Planning Grant

**Subject:** Preparation of Global Plan

We are in the process of preparing a draft of the full Global Plan. We hope to have it completed by January 15. In order to include you in our proposal, we will need the following information from you:

- (1) An abbreviated curriculum vita, ideally no more than two pages long, which follows the format of the attached model; and
- (2) A letter expressing interest in participating in our SANREM and concurring with Ohio State University assuming the Management Entity role for the CRSP.

Thanks beforehand for your prompt attention to this request. We look forward to your collaboration with our group.

enc./Model C.V.

c.c. R. Lal

Post-It™ brand fax transmittal memo 7671		# of pages ▶ 2
To	WM. JOHNSON	
From	HANSEN	
Co.		
Dept.		
Fax #	919-515-7780	

doh/SANREM

Johnson



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Dr. David O. Hansen  
Associate Dean and Director  
International Programs in Agriculture  
The Ohio State University  
113 Agricultural Admin. Bldg.  
2120 Fyffe Road  
Columbus, OH 43210-1099

January 10, 1992

Dear Dr. Hansen:

On behalf of the Center for World Environment and Sustainable Development, I wish to reiterate our interest in participating with your consortium in the SANREM CRSP.

We envision initial collaboration with Drs. William Johnson, Richard Bilborrow and myself, in the context of our successful SANREM Individual Development planning grant proposal. However, we anticipate eventual incorporation of other faculty in our universities in the research enterprise.

We look forward to working with you in the future; the strength of the consortium and your outstanding leadership of the proposal planning workshop make me confident that we are well qualified to meet the challenges of the SANREM program.

Sincerely,

Dr. Isabel M. Valencia  
Executive Officer



# North Carolina State University

College of Agriculture and Life Sciences

Department of Animal Science  
Box 7621  
Raleigh, N.C. 27695-7021  
(919) 515-2769  
FAX: (919) 515-7730

January 16, 1992

Dr. David Hansen  
Director, International Programs in Agriculture  
113 Agr. Admin. Bldg., 2120 Fyffe Road  
Columbus, OH 43210-1099

Dear Dr. Hansen,

With this letter I wish to confirm my interest and enthusiasm about being included in the scientific team for the Ohio State consortium's SANREM CRSP global proposal. Working and traveling with other scientists of the consortium during the planning phase has been a rewarding experience. I appreciate the confidence that you and others have shown regarding the ideas advanced from North Carolina State University about sustainable agriculture in the humid tropics and, specifically, the role of livestock in the agroecology and farm enterprises of the region.

As implied in our individual grant proposal, one of the strengths of North Carolina State University is our breadth and depth of experience with humid tropical problems. Our Department of Animal Science has been directly involved in the humid tropics of South America and Asia since the mid 1960's. Our College of Agriculture and Life Sciences (CALS) is currently involved with three CRSP's, all of which have given us collaborative research experience in the humid tropics for more than a decade. At the inter-university level, the new Center for World Environment and Sustainable Development (CEWESD) provides a vehicle for interdisciplinary collaboration among scientists from Duke, UNC-Chapel Hill and NCSU. We are confident that the SANREM CRSP, if organized and focussed as proposed by the Ohio State-led consortium, will permit scientists from all three of the CEWESD universities to develop projects and generate funding that will strengthen and complement SANREM core research.

We shall eagerly await further developments regarding the SANREM program and look forward to the prospects of a continued fruitful collaboration.

With sincere regards,

A handwritten signature in cursive script that reads "William L. Johnson".

William L. Johnson  
Professor of Animal Science

cc. Leonard Bull, Head, Animal Science  
Thurman Grove, Asst. Dean for Intern. Programs, CALS  
Robert Healy, Director, CEWESD  
Isabel Valencia, Exec. Officer, CEWESD

## MICHIGAN STATE UNIVERSITY

C. S. MOTT FOUNDATION CHAIR OF SUSTAINABLE AGRICULTURE  
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November 11, 1991

Dr. William Johnson  
Animal Science Department  
Box 7621  
North Carolina State University  
Raleigh, NC 27695

Dear Dr. Johnson:

We appreciate your sharing with us your IDG proposal for SANREM. We have carefully gone through each of the proposals to identify those that may add a substantial piece that was not present in our original partnership. Our group is broad, having been assembled from the outset to cover the major areas which we anticipated to be needed in the CRSP. That included a significant capability in livestock and rangeland management. As you know, we have that capacity at Utah State, Langston, Winrock, here at MSU, and with David Swift at Colorado State who had originally been with our group before CSU, as an institution, joined with another group for the first proposal to AID.

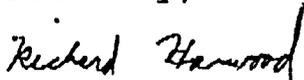
We are now waiting for our field design teams to return and report in mid December with identification of specific program needs.

As we discussed by phone today, your linking and coordination with our design team in Senegal to explore possible collaboration in that country would make sense, given that you will tentatively be there at the same time. As it looks at the moment, however, we may not receive clearance from Senegal.

We will make final decision on the shape of the program as our teams return in December.

Again, many thanks for your interest.

Sincerely,



Richard R. Harwood

RRH/ac

cc: Kim Wilson

# FACSIMILE TRANSMISSION

Agency for International Development

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## Sustainable Agriculture Programs

Office Telephone: (703) 875-4337  
Facsimile Now: (703) 875-4384 or 875-4379

MESSAGE FOR: Dr. W.L. Johnson

OFFICE/ROOM/MAIL STOP: Dept. of Animal Science, NC State U

FAX NUMBER: 919-515-7780 OFFICE TELEPHONE: 515-2769

Sender: Dr. Jim Bonner

Office: R&D/AGR

**Note: If any part of this message is missing or illegible, please advise sender.**

NUMBER OF PAGES, INCLUDING COVER PAGE: 1 TODAY'S DATE: 11/14/91

SUBJECT: SANREM CRSP Planning Grant Activities-Travel Request

COMMENT/MESSAGE: Ref: Your faxed letter dated 11/12/91 requesting country clearance to Senegal, I regret to inform you that country clearance for yourself (and the MSU planning consortia, as well as any planning activity or consortia visit) has been denied by USAID/Dakar. While USAID/Dakar has expressed a strong interest in the program, the planned timing conflicts with the bilateral program development and difficult negotiations. Thank you for your understanding in this matter.

